

Co-Creation of Value-in-Use through Co-Productive Business Processes: An Empirical Case Study based on the Hybrid Offerings of the German Opticians Trades.

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Abstract

This doctoral thesis investigates the co-creation of value-in-use through hybrid offerings, focusing on the optician industry as a case study for the German skilled crafts sector. The study addresses three key objectives: to develop a theoretical framework of value-in-use co-creation in hybrid offerings, to design a qualitative methodology for analysing online customer reviews and to map customer satisfaction factors onto service process stages to understand how quality attributes shape value-in-use. The research is founded on the Service-dominant Logic and augmented by a Consolidated Quality Framework. It explores the manner in which tangible and intangible components collaborate to co-create value-in-use through hybrid offerings during a co-productive business process. Symbolic Interactionism provides a social-philosophical foundation, shedding light on how meanings are constructed through the dynamic interactions between customers and providers, while Constructivist Grounded Theory (CGT) provides a systematic methodology for deriving theoretical insights from empirical data. The empirical approach uses a multi-stage coding process and thematic analysis of over 24,000 OCRs from 370 German opticians, enabling a comprehensive examination of customer experiences. Using a combination of automated coding tools and CGT, the research uncovers valuable insights into the key drivers of customer satisfaction and perceived service quality in the optician sector.

The thesis makes three primary contributions. First, it advances the theoretical understanding of hybrid offerings by developing a conceptual framework that explains how value-in-use is co-created through co-productive business processes and dynamic customer-provider interactions. Second, it contributes methodologically by designing a customised qualitative approach – centred on Constructivist Grounded Theory and online customer reviews – that enables the systematic investigation of value perceptions in hybrid offering environments. Third, it offers empirical insight into how tangible and intangible quality attributes shape customer satisfaction, using process mapping to reveal how value-in-use is co-created or co-destroyed across the sub-processes of a Generic Business Process. The findings not only refine existing theoretical frameworks but also provide actionable guidance for service design, customer interaction and quality management in co-productive service settings.

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List of Abbreviations

AI	Artificial Intelligence
CGT	Constructivist Grounded Theory
CQF	Consolidated Quality Framework
GBP	Generic Business Process
IQF	Integrated Quality Framework
OCR	Online Customer Review
RQ	Research Question
SC	Skilled craft
SI	Symbolic Interactionism
SDL	Service-dominant Logic
ZVA	Zentralverband der Augenoptiker

1. Introduction

1.1 Research Aim and Objectives

1.2 Theoretical Framework

1.3 Research Scope and Significance

1.4 Research Structure

The traditional distinction between products and services has long been a dominant feature of business strategy and academic discourse. Historically, products have been viewed as tangible, standardised, and enduring, while services have been characterised as intangible, customised, and ephemeral. This dichotomy remains a prevalent feature of marketing textbooks (Kotler and Keller, 2016, p. 391; Gbadamosi, 2013, p. 167), also more recent versions acknowledge that merged offerings of products and services, e.g. fast food, are possible (Kotler *et al.*, 2023, p. 35). Conversely, the notion that a strict product-centric transactional approach is no longer viable in the modern business landscape, where value-in-use for customers is contingent upon integrated services, is not a novel proposition (Grönroos, 1997, p. 416). The integration of products and services into hybrid offerings is identified as a relevant strategy for organisations aiming to provide comprehensive solutions, as opposed to offering isolated products or services. (Schaarschmidt *et al.*, 2018, p. 120; Ulaga and Reinartz, 2011, p. 6). These offerings challenge the traditional product-service dichotomy by demonstrating that value-in-use is co-created through the seamless integration of tangible and intangible components (Luo *et al.*, 2023, p. 2; Ulaga and Reinartz, 2011, p. 21).

Nevertheless, although hybrid offerings are becoming increasingly recognised in a variety of industries, they have long been an integrative component of value-in-use delivery in the skilled craft (SC) sector. Traditionally, SC businesses have built their reputation and competitive advantage on their ability to customise products and services according to individual customer requirements (Zentralverband des deutschen Handwerks, 2024a, p. 7). For example, opticians provide not only physical products such as glasses but also personalised services like eye examinations, consultation sessions, and product adjustments tailored to each customer's needs. This integration of tangible and intangible resources to create unique value-in-use reflects the hybrid nature of

their offerings, demonstrating that SC businesses have inherently operated beyond the product-service dichotomy.

This example can be extended to other SC sectors. In the joinery industry, companies often offer bespoke furniture as well as additional services such as design advice, on-site measurement, and installation. Rather than simply producing standardised items, carpenters engage with customers to understand their specific requirements and then incorporate these preferences into the design and manufacturing process. The resulting furniture is thus co-created through a blend of tangible output (the furniture) and intangible services, ensuring that the final product meets the customer's exact needs. In fact, it can be argued that it is the high degree of customisation - or the high degree of hybridity - that distinguishes the skilled crafts from industrial production (IHK Ostbrandenburg, 2024).

But the importance of even more customised solutions is also growing in the craft trade sector. Research by the Fraunhofer-Institut für Arbeitswirtschaft und Organisation IAO (2016) highlights that the success of SC businesses increasingly depends on their ability to provide hybrid offerings, as customer expectations for personalised, high-quality solutions rise. Recent studies also show that SC businesses that develop their portfolio to focus on integrated solutions are better positioned to compete in dynamic markets (Strina *et al.*, 2021). However, the discussion still frames these services as ancillary rather than an integral part of the core business - a view that has been increasingly challenged in academic discourse over the last 20 years (Vargo and Lusch, 2017, p. 46, 2004, p. 2).

From a business strategy perspective, the shift towards the provision of product-service value bundles that are tailored to the specific needs of individual customers, e.g. in conjunction with Industry 4.0 or mass customisation strategies, still represents a significant challenge even for many industrial manufacturers (Ariyananyagam *et al.*, 2021). This is particularly true in view of the fact that such strategies are based on and driven by cloud computing, big data and AI technologies (Bundesministerium für Wirtschaft und Energie, 2017; Gesellschaft für Arbeitswissenschaft, 2023). From the researcher's perspective, in this context, the economic importance of the craft

sector in Germany and its effective business models are often overlooked in economic research.

One exception is the Deutsches Handwerksinstitut (DHI) and its affiliated institutes. Here, the impact of digital transformation, with a particular focus on the use of artificial intelligence, has been the subject of at least some of the academic publications (Deutsches Handwerksinstitut e.V., 2023). One possible explanation for the observed partial neglect is the persistent distinction between vocational and academic training, a long-standing feature of the German education system that is increasingly being criticised (Zentralverband des deutschen Handwerks, 2023). As the researcher knows from his own teaching experience in this field, the training of master craftsmen does not place significant emphasis on topics such as customer service, process design or quality management and its relationship to value creation. In the standard textbook used throughout Germany for the training of master craftsmen, only a small part of the 804 pages is devoted to quality management (Bernasch-Lieber *et al.*, 2020, p. 494).

With regard to the practical aspects, the findings of a business excellence study, which was privately financed by the Würth company, a prominent technical supplier to the construction industry, indicated that leading German SC companies rely significantly on quality and customer relationships to gain a competitive advantage (Adolf Würth GmbH & Co. KG, 2015). The exact reasons for this discrepancy between research on the business process of skilled crafts, their hybrid offerings and their lived business practice remain unclear. However, it may result in the loss of potential opportunities for mutual learning and development in research, as well as in the skilled crafts sector and the wider industry.

In order to make up at least some of the lost ground, this research project draws on a body of theory that has been increasingly established over the last two decades. The Service-Dominant Logic (SDL) can provide a conceptual framework for understanding hybrid offerings from a service-oriented perspective. It does so by redefining value creation as a co-creative process that occurs through interactions between providers and customers (Vargo and Lusch, 2004, p. 5). SDL posits that the value of a product is not intrinsic but is contingent upon the customer's experience, perception, and engagement with

the value-in-use of the service provided. Furthermore, it can be derived from tangible or intangible components or a combination thereof (Vargo and Lusch, 2004, p. 6). This theoretical lens is particularly pertinent for SC businesses, where products and services are inherently integrated to co-create value-in-use (Böhmman and Krcmar, 2007, p. 239; Vargo and Lusch, 2004, p. 2). Although SDL has the potential to elucidate these dynamics, its application to SC sectors remains underexplored. The few existing studies often struggle to capture the complex interplay between tangible and intangible resources in hybrid offerings (Leimeister and Glauner, 2008, p. 248; Luczak, 2004).

The aim of this dissertation is to contribute to the field of research on hybrid offerings in the context of the German craft sector. In order to achieve this, the research attempts to bridge the gap between theory and practice by empirically investigating value co-creation processes in the context of an empirical case study from the skilled crafts sector. This will advance theoretical development while providing actionable insights for industry practitioners. The German optician industry, with its emphasis on bespoke and interactive service experiences, provides an ideal context for examining the dynamics of co-created value-in-use from hybrid offerings. The sector combines tangible product components (e.g. spectacles) with intangible service components (e.g. eye health assessments, fitting advice), which by their nature require customer involvement, dialogue, and co-production processes. As will be shown, these characteristics of the industry are well suited for examining the co-creation processes of value-in-use in hybrid offerings.

1.1 Research Aim and Objectives

The overarching aim of this thesis is to advance the theoretical understanding of hybrid offerings, with a particular focus on the co-creation of value-in-use.

In addition, it seeks to empirically validate and discuss elements of selected theories in a case study within the German skilled crafts. The researchers' aim is to enhance the understanding of the social and economic dynamics underlying the co-creation of value-in-use in hybrid offerings, anchored in a theoretical framework that integrates the co-production and delivery processes of quality attributes and the processes of quality perception and evaluation.

The research is grounded in the ‘meta-framework’ (Lusch and Vargo, 2014, p. 203) of the axioms, premises and concepts of the Service-Dominant-Logic (SDL) developed by Vargo and Lusch (2004, 2008; 2014). As the SDL is a work in progress with many open questions, the Integrated Quality Framework (IQF) proposed by Golder *et al.* (2012) will also be introduced as a suitable complementary mid-range theory. The IQF will be discussed on the assumption that its foundation in the SDL can contribute to the clarification of the broad and often fuzzy concepts of ‘quality’ and ‘value’ and their interrelations. The aim is to reduce the high level of abstraction contained in the SDL, thereby facilitating the bridging of the gap between (meta)theory and business research practice, an approach suggested by Lusch and Vargo (2014, p. 211) themselves.

The defined research questions are designed to explore and develop a robust theoretical framework, while also applying these theories to understand business processes in a real-world setting. In addition, there is a particular focus on developing an empirical research methodology that integrates Constructivist Grounded Theory with data-driven auto-coding procedures to facilitate the analysis of large data sets. The study is thus structured around theory development, methodological innovation, and empirical application to ensure contributions to both the academic and practical spheres.

The rationale of the research is guided by the following three objectives and associated research questions:

Objective 1: To explore how value-in-use is co-created in hybrid offerings through inherently co-productive business processes and to present this process as a conceptual framework.

RQ1 – Theoretical Contribution: How can a model of value-in-use co-creation in hybrid offerings be developed by integrating a co-productive business process design within existing theoretical frameworks from marketing and quality management?

This study aims to develop a comprehensive conceptual framework that captures how value-in-use is co-created in hybrid offerings through dynamic interactions between service providers and customers. To achieve this, the research will analyse and integrate key concepts – such as value co-creation, co-production and value co-destruction – drawing on established theoretical frameworks including Service-Dominant Logic,

the Integrated Quality Framework and customer value theory. The resulting model will serve as a basis for understanding how these interactional processes shape perceived value-in-use, with particular attention to their application in the empirical context of the German optician industry.

Objective 2: To develop a context-sensitive research approach that integrates principles of Constructivist Grounded Theory with systematic data collection, enrichment and analysis procedures.

RQ2 – Methodological Contribution: How can a customised qualitative research approach be developed and applied to systematically analyse online customer reviews in order to investigate value-in-use co-creation in hybrid offerings?

This study seeks to develop a systematic and iterative research approach for analysing online customer reviews to capture how value-in-use is co-created in hybrid offerings. The methodology will be guided by the principles of Constructivist Grounded Theory, enabling the identification of key elements that influence customer satisfaction and perceived value. The research will implement a multi-phase coding and analysis procedure designed to ensure both theoretical sensitivity and empirical rigour. To support this process, the study will generate an enriched dataset through the use of AI-driven tools and data management techniques, enabling efficient organisation, contextual interpretation and pattern discovery. By applying this customised methodology, the study aims to contribute to the advancement of qualitative service research using large-scale, customer-generated data.

Objective 3: To identify and analyse the quality-related factors that influence customer satisfaction within hybrid offerings by examining customer experiences in the German optician industry.

RQ3 – Empirical Contribution: How do tangible and intangible quality attributes shape customer satisfaction in hybrid offerings and how can these factors be systematically mapped onto the sub-processes of a Generic Business Process to reveal the co-creation of value-in-use?

This study aims to apply a case study approach grounded in online customer reviews to systematically identify and analyse the factors that shape customer satisfaction in hybrid offerings. The research will map

these factors onto the sub-processes of a Generic Business Process (GBP) in order to explore how tangible and intangible attributes interact across different service stages to co-create – or, in some cases, co-destroy – value-in-use. By focusing on how value-in-use emerges through dynamic, individualised and relational experiences during co-production, the study seeks to provide a process-based understanding of customer satisfaction. These insights are intended to inform both service design practice and theoretical discussions on value-in-use formation in hybrid offering environments.

1.2 Theoretical Framework

The theoretical part of this research starts with the introduction of the term ‘hybrid offerings’ that will be introduced in context of a discussion concerning the insufficiency of the classical product-service-dichotomy and its ingrained ‘goods-centricity’ criticised by Lusch and Vargo (2014, p. 6) and other authors, e.g. Levitt (1960) already over sixty years ago or more recently Gummesson (1995b).

The literature review continues with a discussion of the SDL framework in its recent revision (Lusch and Vargo, 2014; Vargo and Lusch, 2016; 2016; Vargo and Lusch, 2017; 2017) with regard to hybrid offerings. A special focus will be on the term ‘service’, as the SDL discusses it from a very broad actor-to-actor perspective. In their argumentation, the authors postulate that the SDL represents a reoriented economic philosophy that understands ‘service’ as the natural outcome of every business process, including those processes that provide service indirectly through tangible goods (Vargo and Lusch, 2004, p. 2; Lusch and Vargo, 2014, pp. 12–13). Every service then, being seen as the result of the application of specialised competences during processing of tangible and intangible resources, allows a beneficiary/customer the creation of individual and context-specific value-in-use (Lusch and Vargo, 2006c). It will be argued that even if the distinction between goods and services might become obsolete, the design of the co-production process will still be relevant for all hybrid offerings.

The further proceeding of the theory part discusses the process of value creation in detail. In accordance with the SDL, value – as an outcome of service

provision and integration or application – will consequently be defined as ‘value-in-use’, meaning that value is always co-created by the beneficiary through perception, application and evaluation of a service delivered through tangible or intangible resources (Lusch and Vargo, 2014, p. 75). From the quality management point of view, when value is described as value-in-use, it can no longer be seen as an intrinsic, pre-existing attribute of a product or service, which is tagged by a price and transferred through transaction processes.

Instead, value creation must be perceived as an ongoing and – in case of hybrid offerings – a relational process that emphasises the customer’s experiences, logic and ability to extract value-in-use out of a service which is designed, processed and provided solely by a producer or alternatively co-produced during temporarily provider-customer interaction (Grönroos and Voima, 2013, p. 135).

Therefore, the locus of value-in-use co-creation has to be discussed as well as the distinction between value-in-use co-production and co-creation. To facilitate this, the midrange theory of the Integrated Quality Framework (Golder *et al.*, 2012) will be introduced and discussed concerning its relevance for the understanding of value-in-use co-creation. Based on the IQF, some more light will be shed on the interrelation between specific quality attributes and the beneficiary’s internal processes of value-in-use co-creation for hybrid offerings.

For the management of the co-production process, it is essential to understand and systematise the influential factors on perceived value-in-use. This leads to a discussion of quality spheres and attributes. Especially the concept of ‘relationship’ requires a more detailed look, as the individual phenomenological perception and evaluation of value-in-use is finally an outcome of its contribution to the fulfilment of situationally activated but long-term oriented human needs – or in the diction of Lusch and Vargo (2014, p. 114): the increase of system viability.

It will be argued that for hybrid offerings the individually perceived and evaluated value-in-use is in total not only an asynchronous outcome of previously produced quality attributes but as also a synchronous effect of the process design and the relationship. In order to provide empirical evidence, this study seeks to capitalise on the ongoing evolution of information technology and

the context it provides for customers to evaluate and document their experiences with a service delivery process as well as the usage of hybrid offerings. Today, customers are active online before, during and after interactions with hybrid offering providers, which creates masses of information about their experiences (Bernasch-Lieber *et al.*, 2020; Ostrom *et al.*, 2015, p. 129; Rust and Huang, 2014, pp. 207–210). In other words, people leave online traces as a form of public social information (Kozinets, 2020, p. 16). Much of this traceable information is available over a longer period of time and presents new opportunities for understanding customer requirements. Nevertheless, collecting and analysing textual online data generated by customers is still a challenge for researchers, as the corresponding methods are relatively new in comparison to longer-established research approaches (Bichler *et al.*, 2008; Baron and Russell-Bennett, 2016, p. 674).

One approach that has emerged as a useful research tool in recent years is the collection and analysis of online customer information (Heinonen and Medberg, 2020, p. 659). In the methodology chapter it will be explained, how the analysis of the value-in-use co-creation process of hybrid offerings can benefit from data collection operations grounded in Symbolic Interactionism (Blumer, 1969) and Constructivist Grounded Theory (Charmaz, 2014). In addition, text mining and content analysis methods are applied. As the data source, customers reviews posted on Google will be used, as online customer feedback is a valuable and accessible data source to identify quality attributes, determine the degree of customer satisfaction and to gain information for potential value-in-use improvements (Linderman *et al.*, 2004, pp. 595–600; Birch-Jensen *et al.*, 2020, p. 816; Yang and Fang, 2004, p. 310). Regarding the relevance of the qualitative data included in the reviews, it is assumed that quality attributes, which are perceived during the co-production and usage processes and remembered and addressed during the evaluation writing process, are critical for customer satisfaction (Yang and Peterson, 2002, p. 31; Cadotte and Turgeon, 1988, p. 75). In the context of an empirical case study, the developed method will be applied to a sample of reviews on the hybrid offerings of German opticians. The study will demonstrate why the optician trades are particularly suitable for research aimed at enhancing the understanding of the value-in-use creation process for hybrid offerings as they often rely on dialogical customer feedback and the physical participation of their customers to be able to co-

create value-in-use (Birch-Jensen *et al.*, 2020, p. 816). A sample will be drawn through a selection process based on objective criteria such as type of location (e.g. large cities vs. rural towns) and number of Google reviews.

1.3 Research Scope and Significance

The significance of this research lies in its comprehensive exploration of hybrid offerings within the German skilled crafts, an area that has not yet been extensively studied. Hybrid offerings, which integrate tangible and intangible components, play a crucial role in how the skilled crafts co-create and deliver value-in-use to customers. However, much of the existing literature focuses on large-scale service industries or purely digital business models, leaving a notable gap in understanding how small and medium-sized enterprises (SMEs), particularly in skilled crafts, manage and optimise these offerings.

This study addresses this gap by conducting a comprehensive case study within a selected industry from the German skilled craft sector. Within this sector, the optician industry is uniquely positioned to provide insights into value-in-use co-creation processes because it combines highly tangible components (e.g. glasses, lenses) with intangible components (e.g. eye tests, consultations and fitting services). By their very nature, these businesses provide a mix of tangible and intangible service components that are interdependent, making them ideal for studying the complexities of hybrid offerings. This is a characteristic that this sector has in common with other German healthcare professions such as hearing aid acousticians or orthopaedic technicians, so the findings are transferable to other sectors.

Another important contribution of this research is its attempt to bridge the gap between theoretical frameworks and real-world business processes. While theoretical models offer broad principles for understanding service exchange and quality management, their application to SMEs and skilled crafts is often limited. This study provides empirical evidence to refine these frameworks, demonstrating their applicability in a real-world business context and offering practical insights into how these theories can inform and improve business practices. By situating hybrid offerings within the optician industry, the research illustrates how businesses can implement these theoretical principles to create

value-in-use, optimise service quality, and manage customer interactions more effectively.

From a practical perspective, the findings of this study have significant implications for optician businesses and other SMEs within the skilled crafts sector. As digital transformation and customer expectations continue to evolve, businesses face the challenge of integrating new service components to remain competitive. This research provides opticians with a structured framework for leveraging their hybrid offerings effectively. The insights gained from analysing online customer reviews (OCRs) will inform businesses about the critical touchpoints that influence customer satisfaction and perceived quality. By understanding these factors, opticians can develop targeted strategies to enhance their service offerings, strengthen customer relationships, and ultimately improve business performance.

The study's empirical approach, focusing on OCRs, also highlights the practical importance of online platforms in modern business environments. At a time when customers increasingly rely on digital channels to share their experiences, online reviews serve as a rich source of data for businesses to understand customer perceptions and areas for improvement. By using OCRs as a primary data source, this research demonstrates how companies can use publicly available data to gain valuable insights into customer needs, expectations, and pain points, further reinforcing the importance of hybrid offerings in driving customer value.

Additionally, this research underscores the importance of co-creation in the skilled crafts sector. It argues that these businesses do not 'simply' provide products but engage in co-productive relationships with their customers. This interaction not only delivers the service, but also creates the opportunity for customers to participate in the value-creation process. Such an approach can lead to greater customer satisfaction, loyalty, and positive word-of-mouth, all of which are critical for the long-term success of SMEs. By providing empirical evidence of these co-creation dynamics, the study contributes to the broader discourse on customer engagement and relationship management, emphasizing the need for businesses to view customers as partners rather than passive recipients.

In conclusion, the significance of this research is twofold: theoretically, it extends and refines the understanding of theoretical constructs within the SME context of skilled crafts, and practically, it bridges the gap between abstract theoretical frameworks and practical business processes. The study provides valuable insights and frameworks for opticians and other SMEs to enhance their service offerings. By demonstrating the critical role of integrating tangible and intangible elements in co-creating value-in-use, the research provides a blueprint for businesses to navigate the evolving landscape of customer expectations and digital engagement.

1.4 Research Structure



Figure 1 Research Structure

- **Chapter 2** explores and defines the concepts of hybrid offerings and value-in-use through a detailed examination of existing theoretical models, in line with the research aim. The chapter commences with an investigation of the concept of value-in-use, tracing its origins and significance within the field of business management theory. It provides a critical analysis of various customer value models, in order to illustrate how customers perceive and create value-in-use. The chapter then goes on to examine the characteristics and conceptualisations of hybrid offerings, addressing the complexities and nuances involved in combining tangible and intangible resources. It concludes by synthesising these insights to highlight gaps in the existing literature and establish a basis for the subsequent analysis of value-in-use co-creation in hybrid offerings.

- **Chapter 3** builds on the previous exploration of value-in-use and hybrid offerings by examining the theoretical frameworks that inform these concepts. It provides a comprehensive examination of the SDL and the IQF, demonstrating their significance in grasping the concept of value-in-use co-creation through hybrid offerings. The chapter looks at the core principles of SDL, placing services at the heart of economic exchange and highlighting the importance of co-creation in value generation. Furthermore, it examines how the IQF provides a structured approach to managing quality within hybrid offerings, integrating both tangible and intangible components. It introduces the concept of value spheres – provider, joint, and customer – and examines the interactions within these spheres that facilitate value co-creation. The chapter goes on to explore the possibility of value co-destruction and proposes a Consolidated Quality Framework (CQF) that brings together the principles of SDL and the IQF. By consolidating the frameworks, the chapter paves the way for analysing and discussing the dynamics of co-creation and value-in-use perception.
- **Chapter 4** sets out the research design and methodological approach that has been employed to investigate the concept of value-in-use co-creation within hybrid offerings in the German optician industry. It first presents the methodological and epistemological foundations, focusing on pragmatism and interactionism, and discusses their implications for the research project. The chapter then presents the research strategy, which integrates Constructivist Grounded Theory and uses a multi-phase coding approach to systematically analyse online customer reviews. It provides a detailed account of the data collection process, including sampling, data extraction and pre-processing procedures and justifies how the coding process aligns with the developed theoretical framework. It also addresses ethical considerations relating to data protection to ensure compliance with research standards. By outlining a rigorous and systematic approach, the chapter lays the foundation for the empirical case study, ensuring that the methodology is robust, replicable, and aligned with the overall research objectives.

- **Chapter 5** takes a detailed look at the German optician industry as a prototypical example of hybrid offerings. It illustrates how, through the integration of tangible and intangible resources, value-in-use is co-created. The chapter begins by introducing the research area and justifying the choice of the optician industry as a suitable case for studying hybrid offerings. It then outlines the data collection process, detailing the use of online customer reviews as the primary data source and explaining the sampling and pre-processing methods used. The chapter then demonstrates how the coding method developed in the previous chapter is applied to capture customer perceptions of value-in-use and satisfaction. It also explains procedures for quality assurance of the coding process. By implementing the methodology, the chapter demonstrates its feasibility in a real-world business context.
- **Chapter 6** provides an in-depth examination of the empirical data from the OCR dataset, using a variety of analytical methods to uncover patterns and insights. The chapter begins with an assessment of the structural characteristics of the dataset. This ensures that the demographic and regional representation of opticians is consistent with the objectives of the study. The chapter then examines quantitative aspects such as review frequency, rating distribution and review length to identify overarching trends and customer rating behaviours. The analysis then moves on to the analysis of categorical and thematic coding data. This approach allows a comprehensive examination of recurring patterns and themes, identifying key factors that shape customer perceptions of value and satisfaction. Correlation and co-occurrence analysis is used to identify links between different themes and categories within the dataset, providing a more detailed understanding of customer feedback. By visualising the key findings, this chapter sets the stage for interpretation and discussion in the following chapter.
- **Chapter 7** begins with an interpretation of the key findings from the data analysis. It then revisits the concepts of value-in-use and hybrid offerings and discusses them in the context of the empirical findings. The next

step is to challenge the core frameworks of this research by assessing how the observed patterns in customer feedback fit with their premises and assumptions. The chapter then provides an evaluation of the dynamics of potential value-in-use co-destruction within the German optician industry. The final part of the discussion evaluates the chosen methodology and its socio-philosophical assumptions, while suggesting improvements to the research strategy. By linking the empirical analysis with theoretical constructs and practical implications, the chapter provides a comprehensive evaluation of the research findings, ensuring that they contribute to both academic knowledge and business practice.

- **Chapter 8** presents a synopsis of the key findings of this research project, demonstrating its contributions to both theoretical and practical aspects in the context of hybrid offerings. Furthermore, several recommendations are made for practitioners, business research and the field of quality management theory in general. These include practical approaches and suggestions for adjustments to organisational policies and processes, as well as a summary of potential avenues for further research. It also makes recommendations for theory development, suggesting new constructs and interdisciplinary approaches that could enhance the theoretical and practical understanding of hybrid offerings. Finally, the chapter addresses important limitations, acknowledging the constraints of the research, before it concludes with some final remarks.

2. Literature Review 1: Concepts

2.1 The Concept of 'Value in use'

2.2 The Concept of 'Hybrid Offerings'

2.3 Conclusion

The purpose of this chapter is to review the existing literature on the concept of value-in-use and the characteristics of hybrid offerings. The literature review will provide a theoretical foundation for understanding how customer value is created, perceived, and evaluated. The discussion will commence with an examination of the concept of value-in-use. This comprises an examination of the concept of value within the context of business management theory, including an analysis of its roots and relevance. Furthermore, a variety of customer value models will be examined to facilitate a comprehensive understanding of how customers perceive and create value-in-use.

Subsequently, the characteristics of hybrid offerings will be discussed. This section explores the various conceptualisations and attributes that define this type of customer-beneficial offer. The concept of the goods-services continuum, the value bundle concept and the integrative concept will be introduced in order to highlight the complexities and nuances involved in hybrid offerings. Attributes such as complexity and the relational aspects of hybrid offerings are also addressed to provide a detailed understanding of their unique characteristics.

Throughout the chapter, a critical perspective will be maintained, with a focus on identifying gaps in the existing literature and highlighting areas where further research is needed. The chapter will conclude with a summary of the key insights and their implications for the study of value-in-use co-creation through hybrid offerings in chapter 3.

2.1 The Concept of 'Value-in-use'

2.1.1 Roots and Relevance of 'Value'

In today's developed human societies there is a wide variety of organisations. Their actual system designs vary according to the nature, number, and quality of their internal processes. They are also shaped by their internal and external relationships and by the social environment in which they operate. But perhaps

at most, their processes are shaped by the nature of their purpose - the particular 'value' they seek to create for themselves as well as for other social actors. (Vargo and Lusch, 2004, p. 5).

From a general perspective, the final purpose of any type of organisation, being understood as an 'economic and social actor' (Vargo and Lusch, 2008, p. 9), is to create potential 'value' for other actors, e.g. individuals, other organisations, households or nations, through the integration and processing of resources (Lusch and Vargo, 2014, pp. 74–78). The potentiality of 'value' only becomes realised when the beneficiary uses or consumes the process outcome, meaning that he integrates it in his own processes in accordance with his own motivation to realise a desired benefit by fulfilling an existing need (Grönroos and Ravald, 2011, p. 8).

According to this logic, at least one actor must benefit from the processes carried out and executed within the organisational system. If this is not (or no longer) the case, the organisation will sooner or later become extinct, as no one will be interested in maintaining it. Pragmatically, it can be argued that there is no 'value' without a beneficiary who experiences, perceives and (consciously or unconsciously) evaluates the outcome of an organisational process in the context of his or her own needs, motivations, and goals.

If one follows this initially intuitive perspective, 'value' as an outcome of organisational processes becomes more or less inevitable coined as user-biased or "customer-grounded" (Grönroos and Voima, 2013, p. 133). Even though there is still an ongoing discussion concerning the locus of value creation in interactive actor-to-actor processes (Grönroos and Ravald, 2011, p. 7), value realisation during usage and consumption processes had even been recognised by early scholars of economics:

"The word value, it is to be observed, has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called, 'value in use' the other 'value in exchange'." (Smith, 1778 [1776], p. 34)

Although the distinction of 'value-in-use' as the customer perspective and 'value-in-exchange' as the economic perspective was introduced centuries ago,

the academic discussion and research tended to concentrate on ‘value-in-exchange’. Lusch and Vargo (2014, pp. 31–49) give a brief but concise overview how the dominant focus on ‘value-in-exchange’ has shaped the corpus of academic theories as well as the research direction. The notion, that value can be created by actors and exchanged for other values, can be found in influential models and concepts like the value chain of Porter (1985) in relation with business strategy or the generic concept of Kotler (1972) for the field of marketing. Also a quite early publication on the topic, the text of Kotler (1972) gives some good first examples for the broadness of the term ‘value’ and the potential risk of ambiguity and inconsistency which might occur (Grönroos and Voima, 2013, p. 133; Gummerus, 2013, p. 19; Sánchez-Fernández and Iniesta-Bonillo, 2007, p. 428; Khalifa, 2004, p. 646).

Value as an exchangeable attribute of an entity	<i>“A transaction is the exchange of values between two parties.” (Kotler, 1972, p. 48)</i> <i>“The marketer is attempting to get value from the market through offering value to it.” (Kotler, 1972, p. 50)</i>
Value as something which can be created by marketing processes	<i>“Marketing is the attempt to produce the desired response by creating and offering value to the market.” (Kotler, 1972, p. 50)</i> <i>“The marketer creates and offers value mainly through configuration, valuation, symbolization, and facilitation.” (Kotler, 1972, p. 50)</i>
Value is a subjective perception	<i>“A product is something that has value to someone.” (Kotler, 1972, p. 47)</i> <i>“Value is completely subjective and exists in the eyes of the beholding market.” (Kotler, 1972, p. 50)</i>
Values as psychological predispositions of a person	<i>“Instead of trying to persuade a person to see the social object as serving his existing values and interests the agent tries to shift the subject's values in the direction of the social object.” (Kotler, 1972, p. 50)</i> <i>“The marketer is a specialist at understanding human wants and values and knows what it takes for someone to act.” (Kotler, 1972, p. 53)</i>

Table 1 Examples for the usage of the term ‘value’ in Kotler (1972)

The conceptualisation illustrated in the table has been further developed and refined, but the transactional core concept is still intact:

“Value, a central marketing concept, is primarily a combination of quality, service, and price (qsp), called the customer tried.[...] We can think of marketing as the identification, creation, communication, delivery, and monitoring of customer value.” (Kotler and Keller, 2016, p. 33)

Such an understanding of customer value is an illustrative example of a marketing mindset which tries to link highly individualistic needs and values on

the customer side with preproduced values ingrained in goods and service, which are enhanced and delivered by also value-creating marketing processes of organizations. In the logic of Kotler, marketers have to understand which needs and values are pre-existing within a given market. They must then apply elaborated marketing practices to create and deliver value-containing offering (Kotler and Keller, 2016, p. 57). The customer scrutinizes the offering whether it meets his (subjective) wants and values. If so, an exchange process is initiated and values (e.g. money) flow back from the market to the organizations (Kotler and Keller, 2016, p. 33). If this does not happen in a sufficient manner, marketers did not analyse and/or understand the market right, which has led to the creation and offering of the 'wrong' values (Kotler and Keller, 2016, p. 58). Referring to a recent meta-analysis on 'customer value' by Zeithaml *et al.* (2020b), such an approach to 'customer value' can be described as situated in a positivist paradigm, where reality is seen as objective, observable and measurable by customers, companies and researchers. Furthermore, the idea that the market actor 'customer' only needs to be analysed sufficiently to create and offer the 'right' value is directly related to the uncritical promises and beliefs of today's data-driven disciples, e.g. in the context of big data and related correlations (M. Alguliyev *et al.*, 2017, p. 32). But since the time of the early marketing concepts, all data is meaningless or counter-productive if the underlying real-life processes (= data sources) are not understood well enough – especially when it comes to the black box of human brain processes and the resulting human behaviour (Bischof, 1993, p. 41).

In order to understand the relevance of 'value' to the management and improvement of business processes, a model of human value creation is required. In the further context of this work, the scope of the term 'value' will be narrowed in its potential meaning to the customer's side of experience and evaluation. However, even with a narrower focus, customer value remains a kind of 'umbrella term' with a broad semantic scope (Woodall, 2003, p. 1). Depending on the concepts and preferences of the respective author, it may contain elements of other concepts from marketing, quality management or business strategy, or may even be entirely made up of them (Chernatony *et al.*, 2000). Therefore, and as customer value is one of the core concepts of this work, it is necessary to develop a better understanding of possible definitions and underlying premises.

2.1.2 Concepts of Customer Value

Even though the academic discussion of customer value is wide-spreading and sometimes comprises a certain lack of clarity (Gummerus, 2013, p. 20; Gallarza *et al.*, 2011, pp. 186–188; Zeithaml *et al.*, 2020b, p. 410), several authors have tried to structure and systematise the published approaches. Based on an extensive literature review, Woodall (2003, p. 7) identifies five primary forms of customer value. Khalifa (2004, p. 647) groups existing approaches and definitions in three categories. Sánchez-Fernández and Iniesta-Bonillo (2007, p. 430) distinguish between uni-dimensional and multi-dimensional research streams on customer value. Zeithaml *et al.* (2020b, p. 411), in their review of customer value research over the last thirty years, offer a high-level classification of three research paradigms: 'positivist', 'interpretive' and 'social constructionist'.

Gummerus (2013) as well as Eggert *et al.* (2018) also conduct meta-reviews of foundational research streams. Based on the available findings and an additional literature review, she identifies four prevailing logics of customer value (Gummerus, 2013, pp. 21–22). Although the chosen categorisation is slightly different structured, three of the research streams reviewed by Gummerus, namely 'value as means-ends', 'value as benefits/sacrifices' and 'value as experience outcome', are largely consistent with the findings of Khalifa (2004), Woodall (2003) as well as Sánchez-Fernández and Iniesta-Bonillo (2007). The fourth category, value as phenomenological, refers to the value-concept of the SD-Logic, a research stream which was not discussed in the earlier works (Gummerus, 2013, p. 26). Eggert *et al.* (2018, p. 86) contribute to the discussion as they outline the theory evolvement of the 'customer value' concept from 'value-in-exchange' to 'value-in-use'.

The following section will give a non-exhaustive overview about the main characteristics of the research streams and their definition of customer value. It follows the categorisation of Gummerus (2013), but enhances it by a fifth kind of customer value which is discussed by Khalifa (2004, pp. 648–649), the so-called 'value-component model'.

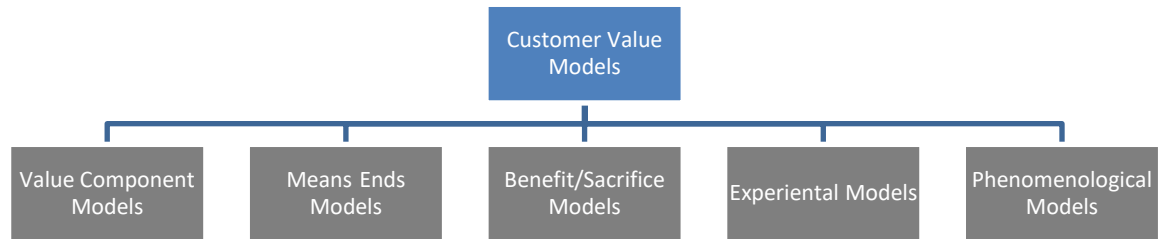


Figure 2 Customer Value Models by Gummerus (2013) and Khalifa (2004)

2.1.2.1 Value Component Models

Value component models are typically widespread in the fields of product design and quality management. Generally, they follow the rationale that the customer value of a good or service is an outcome of perceived components and their attributes. This can include 'Quality' and 'Service Provision' as well as 'Company Personnel', 'Organisation Image', 'Price' and 'Overall Costs' (Goetsch and Davis, 2013, p. 102). The objective of customer value analysis is to determine the attributes which customers value most (Goetsch and Davis, 2013, p. 103). A classical model of attribute categorisation is the so-called Kano-model of customer perception of value. The original version, which was presented by Kano *et al.* (1984), has been refined, adapted and extended by several researchers (Mikulić and Prebežac, 2011; Shahin *et al.*, 2013).

Kano *et al.* distinguish between three major quality attributes which deliver value for the customer (Shahin *et al.*, 2013, pp. 342–344; Khalifa, 2004, 2004, pp. 648–649). 'Must-be' or basic attributes are generally expected by customers but not further mentioned or even consciously noticed. Their absence will lead to a high dissatisfaction, hence they are also called 'dissatisfiers'. One-dimensional or performance attributes deliver value for the customer as they are expected and explicitly requested by customers. Furthermore, as more a customer can receive from such a performance attribute for the same costs of purchase, as higher is the value of the product or service for him, leading to higher satisfaction at least in theory. They are also called 'satisfiers'. The third category of attributes are the attractive attributes or 'delighters'. These attributes are not expected by customers, e.g. a perceived product quality which is much

better than assumed. The result of such a perception is a positive surprise. From the value perspective, the presence of such delighting attributes delivers an extra value for the customer. On the other hand, the absence does not lead to dissatisfaction, as the attribute is not expected and therefore cannot be missed.

In business practice, value component models are often used in structured product development processes. But in case of their sole application they contain a certain risks of blind spots, especially concerning the influence of the interactive and experiential creation process of value as well as the fade-out of the sacrifice side of the value equation (Khalifa, 2004, p. 649).

2.1.2.2 Means-Ends Models

Means-ends models of customer value aim to make a contribution to the understanding of how means, especially goods or services with their specific attributes, can facilitate the achievement of desired end states for their users (Gutman, 1982, p. 60). Ends in this sense are personal values which are considered as important for the customer in a given consumption situation (Khalifa, 2004, p. 653; Gutman, 1982, p. 60). Those mental values, which are better described as individual goals or purposes, should not be confused with 'customer value', which is an outcome of the attribute performance of products or services in use situations (Woodruff, 1997, p. 142).

Woodruff (1997, pp. 142–143) propose a hierarchic model of customer value, which is based on a means-ends-chain. During the process and usage of goods or services, customers form preferences for certain attribute performance bundles [Level 1], which are based on the degree of facilitation they offer to achieve desired consequence experiences [Level 2]. Those consequences of attribute performance are reflected in value in use and possession value. On the highest level of the hierarchy, customers learn how consequences in use situations contribute to the achievement of desired goals and purposes [Level 3]. The degree of disconfirmation (positive or negative) between learned preferences on every level of the hierarchy influences the perceived value of a good or service, which in turn leads to correlating satisfaction with single attributes as well as to a global feeling of overall satisfaction (Woodruff, 1997, p. 143).

Premise of means-ends models is a strong assumption of rational and purpose-driven choice behaviour of consumers, as experiences on every hierarchic level lead to evaluation-based learning from an performance-preference-comparison and in consequence to the (again rational) adaption of customer behaviour (Gummerus, 2013, p. 26; Woodruff, 1997, p. 143).

Means-ends models can make a valuable contribution to the understanding of how attribute bundles manifested in goods or service could be linked to psychological states like value perception and satisfaction. But they are criticised for the fact, that they do not pay much attention to the trade-offs between benefits and sacrifices, which as well influence decision making and behaviour of customers (Khalifa, 2004, p. 655).

2.1.2.3 Benefit/Sacrifice Models

In general, benefit/sacrifice models see the source of customer value in the trade-off of sacrifices and benefits. In its simplest version, customer value is the outcome of a ratio between good or service quality and financial costs (Gummerus, 2013, p. 27). One of the early, more sophisticated elaborations of a benefit/sacrifice model was presented by Zeithaml (1988). Building on the means-end model of Gutman (1982) and the perceived value model of Dodds and Monroe (1985) as well as on own research, Zeithaml (1988, p. 13) presented four definitions of value from the customer perspective. These are (1) value is low price, (2) value is whatever I want in a product, (3) value is the quality I get for the price I pay, and (4) value is what I get for what I give. In the following discussion, Zeithaml (1988, p. 14) aggregates these four cursory definitions in an overall proposition:

“Perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given.”

The benefit/get components may include specific quality dimensions (Patterson and Spreng, 1997, p. 423; Ulaga, 2003, p. 682) as well as relationships (Grönroos, 1997, p. 411; Schmitz, 2014, p. 140). Sacrifice/give components can be monetary and non-monetary, e.g. time, energy or effort (Gummerus, 2013, p. 27; Zeithaml, 1988, p. 14).

This proposed definition of customer value has the logical consequence, that at least in theory the net value of a purchase decision can become negative (Zeithaml, 1988, p. 14), an assumption which is not shared by all other customer value models, e.g. the phenomenological SDL approach.

Despite its high popularity in the field of marketing (Gummerus, 2013, p. 28), there are several points of critique concerning the sacrifice/benefit model and its underlying means-ends concept. First, it can be questioned that the mainly information-processing three-level hierarchy presented by Woodruff (1997) as well as the cost calculation process of Zeithaml (1988) are really sufficient to illustrate the complex mental processes of value creation and evaluation (Payne *et al.*, 2008, p. 87; Sánchez-Fernández and Iniesta-Bonillo, 2007, p. 441). Furthermore, means-ends models tend to have a strong bias to rational choice decision making in purchasing/consumption processes, a premise that has been critically discussed during the last two decades (Gummerus, 2013, p. 27). The assumption that value can be assessed on the basis of objective facts alone is also challenged by models that attribute a central role to the individual and interactive and construction of value by the customer (Zeithaml *et al.*, 2020b, p. 418).

Another issue is that the actual trade-off between benefits and sacrifices is highly influenced by the duration and/or context of consumption or usage. For example, if one aims to measure the customer value of durable goods, the issue of the exact measurement point might arise, as the perception of value-influencing attributes (e.g. longevity) might develop (Grönroos, 1997, p. 412). Furthermore, the trade-off will change across consumption situations. As another example, it can be assumed that a fresh pint of beer has a low or even a negative net value during a fitness training, but a considerably higher when being together with friends in a local pub. The 'contextuality of value' (Lusch and Vargo, 2014, p. 23) will be discussed in-depth in the SDL section of this work.

2.1.2.4 Experiential Models

As an answer to the felt insufficiency of the unilateral view of a customer as a rational analyser of trade-offs and purposeful decision maker, models of customer value were proposed that concentrate on the individual experiences of

customers with products or services (Gummerus, 2013, p. 28). The research stream was highly influenced by the seminal works of Hirschman and Holbrook (1982), Holbrook and Hirschman (1982) and further developed and structured by Holbrook (1994), Holbrook (1999) and Sánchez-Fernández *et al.* (2008).

Holbrook (1994, p. 27, 1996, p. 138) defines customer value by four premises.

1. Customer value is always an outcome of an interactivity between a subject and an object, which means that the attributes of an object are not pre-existing values, but their value must be realised in interaction with a subject.
2. Customer value is relativistic in three ways: The utility of an object is compared with the one of other objects (1). It varies from one individual to another (2). It is situational and therefore context-specific (3).
3. Customer value is highly dependent on the preferences of the customer.
4. Customer value is an outcome of experiences with the product or service and lies not in the act of purchase.

Based on these premises, Holbrook (1999, p. 12) has proposed a typology of customer value which includes three dimensions and eight logically distinct types/categories of customer value.

		Extrinsic	Intrinsic
Self oriented	Active	EFFICIENCY	PLAY
	Reactive	EXCELLENCE	AESTHETICS
Other oriented	Active	STATUS	ETHICS
	Reactive	ESTEEM	SPIRITUALITY

Table 2 Typology of Customer Value (Holbrook, 1999)

Despite the fact, that many authors view this complex typology as superior to uni-dimensional systemizations of customer value, e.g. Sánchez-Fernández and Iniesta-Bonillo (2007, p. 442), Sánchez-Fernández *et al.* (2008, p. 97), Grönroos and Voima (2013, p. 144), Jahn and Drengner (2014, p. 37), it has certain limitations. Sánchez-Fernández *et al.* (2008, pp. 98–102) criticise that the theoretical and conceptual approach of Holbrook is difficult to operationalise for empiric research. Furtetmore, Gummerus (2013, p. 29) mentions the fact,

that the typology focuses on benefits and pays little attention to sacrifices, since Holbrook understands customer value as a holistic assessment.

2.1.2.5 Phenomenological Models

The phenomenological approach to customer value which was introduced and further developed by the seminal works of Vargo and Lusch (2004, 2008; 2014), is maybe the most challenging one for traditional notions of customer value in sense of subjective customer value experience, perception and evaluation (Eggert *et al.*, 2018, p. 87; Zeithaml *et al.*, 2020b, p. 418).

As Ballantyne and Varey (2006, p. 336) explain, Vargo and Lusch (2004, p. 7) understand value always as 'value-in-use', meaning that value for a beneficiary derives from the application/usage of tangible or intangible resources and is not inherent per se in an object or service. Lusch and Vargo (2014, p. 57) further describe 'value-in-use' as "benefit, an increase in the well-being of a particular actor". With this definition, they, analogous to Holbrook, draw a distinction from traditional concepts of 'value', which related the term strongly to a monetary ascription of financial value to goods and services. Furthermore, their definition of 'value-in-use' implicates that, mathematically speaking, the value of a service (always being understood as value-in-use) cannot become negative. Eating spoiled fish at a restaurant does not deliver negative value-in-use (a kind of disservice), but simply no value-in-use. Value-in-use, if occurring, must always be positive in the sense of increased well-being. This assumption is to a certain degree counter-intuitive, as actors will probably perceive the outcomes of consumed services not only more or less positive, but also neutral or even negative in relation to their well-being. It must be at least questioned why the authors decided to narrow the term 'value-in-use' only to positive outcomes. One clue could be the bridging link that they try to build to system theory and ecology when they relate the value of service exchange to the "impact on viability of a system (actor)" (Lusch and Vargo, 2014, p. 78), a perspective that is also endorsed by Andreassen *et al.* (2016, p. 26). This fertile but nevertheless highly aggregated and therefore still vague definition must be further scrutinized to make it applicable for the understanding of value-in-use creation through the processes of economic actors. In order to address this topic, the concept of 'value-in-use co-destruction' will be discussed in chapter 3.

In comparison with Holbrooks experiential model, the phenomenological approach shares several assumptions, like the premises that customer value is interactive, relativistic and preference-specific. But maybe as the strongest difference, it neglects any external possibility of direct assessment of the value-in-use a customer experiences and perceives, e.g. by applying certain categories of value like the ones proposed by Holbrook (Lusch and Vargo, 2014, p. 78). The rationale behind this premise is the aforementioned black box phenomenon of humans' internal brain processes when it comes to perception, information processing or evaluation. In most cases, a beneficiary can evaluate and describe the value-in-use of a service from his or her internal, phenomenological perspective (Macdonald *et al.*, 2011, p. 678). But from the external point of view, e.g. a business manager, it becomes much more difficult to understand or even categorise which kind of individually perceived value-in-use has been emerged from service consumption or usage (Macdonald *et al.*, 2011, p. 680).

At this point, it should be stated that the locus of value realisation lies never in the outcome of a business process itself. Instead, the actual value-in-use of any service, whether it is rendered by tangible or intangible resources, is inevitable dependent on the actual needs and motivations of the beneficiary who uses the delivered resources in a given context (Chandler and Vargo, 2011, p. 41; Vargo and Lusch, 2016, p. 18). This beneficiary can also be understood as an integrator of external (e.g. physical components) and internal resources (e.g. knowledge about product application) with the purpose to achieve a desired benefit (Lusch and Vargo, 2014, p. 75). Due to the process complexity of resource integration and the black box problem, customer value as value-in-use in notion of the SDL can only be defined at an abstract level, as an opportunity to increase the wellbeing or viability of a particular actor (Lusch and Vargo, 2014, 57, 114). Such a definition might be suitable to set a first cornerstone for a theoretic framework, but it is quite dissatisfying to deduce implications for quality management practice from it, e.g. the design of specific quality attributes. Vargo and Lusch (2017, p. 51) themselves realise this problem and the corresponding necessity of mid-range theory development, which must build a bridge between the metatheory of SDL and its application in business management as well as its testing and validation in academic research. Also, Zeithaml *et al.* (2020b, p. 426) see as important but challenging "research

avenue” to understand the interplay between business processes and co-created customer value. Concerning the value-in-use (co-)creation process based on quality attributes of hybrid offerings, this work will try to make a small contribution by proposing a theory-based consolidated quality framework in chapter 3. To achieve this, the phenomenological conceptualisation of customer value as 'value-in-use' is embedded in the broader theoretical framework of the so-called 'service-dominant logic'. Furthermore, it will be elaborated how the subjectively bound value-in-use of hybrid offerings is created and perceived by the beneficiary.

In summary, customer value-in-use becomes only realised when an individual consummatory act is conducted. Such a highly subjective perspective on customer value obviously differentiates strongly from more traditional perspectives like the sacrifice/benefit model, where value is still bound to a rational choice approach. Furthermore, value-in-use in the original definition of Lusch and Vargo (2014) is always positive, whereas the trade-off conceptualization of Zeithaml (1988) allows a negative value of customer value. For now, it should just be clarified, that Lusch and Vargo (2014, pp. 71–72) define every produced service, whether it is provided by tangible or intangible resources, as potential value-in-use (from the customer perspective) or proposed value-in-use (from the provider perspective). Chapter 3 takes a closer look at the generic process in which the potential/proposed value-in-use of hybrid offerings is co-created through interaction between economic actors.

2.1.3 Concept Integration and Premises

The purpose of this chapter was to provide a compact overview of selected value models. Five major streams of research, previously categorised and reviewed by several other authors, have been presented and discussed. Although the premises and scope of the models differ in many details, there are some similarities and interdependencies. This is expectable, as they are all different configurations of the same phenomenon (Khalifa, 2004, p. 655). They all share the assumption that customer value is determined by customers' perceptions and not by suppliers assumptions or intentions (Khalifa, 2004, p. 647). So, what differences them is the chosen perspective of the various research streams, especially when it comes to empirical research projects.

Value Model	Concept of Customer Value
Value Component Models [VCM]	Customer value is an outcome of the combination of categorizable attributes associated with a good or service offering.
Means-Ends Models [MEM]	Customer value is the degree in which the attributes of a good or service and the consequences of their usage support the achievement of a desired purpose.
Benefits/Sacrifices Models [BSM]	Customer value is the degree to which benefits from goods or service usage exceed necessary sacrifices.
Experiential Models [EXM]	Customer value is a categorizable, context- and user-specific holistic experience of good or service usage which is influenced by customer knowledge about comparable alternatives and customer preferences.
Phenomenological Models [PHM]	Customer value is the highly individual perception in how far the usage of a good or service increases the well-being/viability of the beneficiary.

Table 3 Synopsis of Customer Value Concepts

If one were to attempt to synthesise the five streams of research into an integrative draft of customer value creation, it could be described by six premises:

1. **Premise 1:** Value-in-use is always influenced by the quality attributes of an offering [VCM].
2. **Premise 2:** The configuration of attributes alone does not determine the degree and nature of value-in-use, because a beneficiary integrates the delivered performance of the quality attributes with other internal or external resources to achieve a desired purpose [MEM/PHM].
3. **Premise 3:** The integrated resources, especially internal ones such as application knowledge or prior experience, are always highly individual and therefore experience and context specific [EXM/PHM].
4. **Premise 4:** In order to carry out the process of resource integration, the beneficiary must always invest some of his available resources (at least human energy) to integrate external resources into his internal processes, i.e. he must sacrifice some resources in order to receive a benefit through an increase in his viability or well-being [BSM/PHM].
5. **Premise 5:** The experience of the increase in well-being or viability can, if at all, only be subjectively perceived and evaluated by the beneficiary himself [EXM/PHM].
6. **Premise 6:** A definite external value-in-use assessment is never possible, because a phenomenological experience is by definition always

individual, as it happens in the dynamic, ever-changing process context of life itself [PHM].

The remainder of this work will build on and work with these premises to increase the understanding of customer value, by summarising them under umbrella-term 'value-in-use'. However, before the process of co-creating value-in-use can be further discussed, the categorisation problem of 'hybrid offerings' needs to be considered.

2.2 The Concept of 'Hybrid Offerings'

2.2.1 Dichotomy of Hybrid Offerings

There is a long tradition in marketing and quality management to refer to the term 'product' when it comes to the denomination of the outcome a business process delivers to its customers. For example, the global quality management norm ISO 9001 introduced the term 'service' in its core text not until 2015, when a revised version was published. Only since then the phrase 'products and services' was used to describes business process outcomes (DIN, 2015a, pp. 51–52).

In addition, in marketing theory and research many authors have explained that they subsume intangible services under the term 'product' by distinguishing two kinds of products, 'tangible goods' and 'intangible services'. But this proceeding facilitates the emergence of a strong bias to tangibility when the term 'product' is used (Vargo and Lusch, 2004, p. 2; Gummesson, 1995a, p. 8).

However, there is a long history of critique of the dominance of the tangible product orientation in marketing research and practice, articulated by early scholars and practitioners several decades ago under the term "marketing myopia" (Levitt, 1960; Shostack, 1977). But nevertheless, the academic discourse concerning an accurate dissolution of the notorious product-service-dichotomy (Grönroos and Voima, 2013, p. 133; Ulaga and Reinartz, 2011, p. 21) as well as the "product-centric mindset" (Sawhney, 2006, p. 366) has not come to an end yet. Some definitions still bear a certain taste of shiftlessness, as the terms and definitions section of the ISO 9000:2015 imposingly demonstrates:

“3.7.6 product: output of an organization that can be produced without any transaction taking place between the organization and the customer [...] The dominant element of a product is that it is generally tangible.” (DIN, 2015b, p. 44)

“3.7.7 service: output of an organization with at least one activity necessarily performed between the organization and the customer [...] The dominant elements of a service are generally intangible.” (DIN, 2015b, p. 44)

In addition to the consolidation of the ‘tangible product vs. intangible service’ dichotomy, these definitions add a second dichotomic differentiator which can be paraphrased by ‘production process involvement of customer yes vs. no’. Such a monolithic view of a product as a process output which can be independently, virtually god-like forged in the depth of an organisations’ process system is very assailable when it encounters real-world processes. In fact and with the words of Kotler (1972, p. 47), “a product is something which has value for someone”. Without the ‘someone’ and his value appreciation, an organisations’ process outcome remains a ‘something’. But as discussed earlier, value for someone, which is here called value-in-use, bears always elements of transaction, at least concerning communicative information exchange. Processes need assigned beneficiaries who decide whether their outcomes have value-in-use (for a profound critique of the ‘product concept’ see Grönroos, 1997).

As the discussion of the SDL Framework in chapter 3 will show, there are approaches that aim to resolve the product-service dilemma at a higher level. In this section, the limitations of the dichotomous perspective will be further explored on the basis of the characteristics of hybrid offerings.

2.2.2 Concepts of Hybrid Offerings

As with many concepts in marketing research, the term ‘Hybrid Offerings’ is not clearly defined and definitely not as extensively researched as pure goods or service offerings (Ulaga and Reinartz, 2011, p. 6). This lag might be a consequence of the still prevailing goods-service-dichotomy, whereas in practice the combination of services and goods to a specific value bundle is not new to many industries (Schaarschmidt *et al.*, 2018, p. 119). For example, in

the B2B sector many mechanical engineering companies and IT companies combine their products with long-lasting service contracts including maintenance and fast support in case of breakdowns (Luo *et al.*, 2023, p. 1). In the B2C sector, customers can choose combined offerings which contain product and service components as wine tasting and sales (Dressler and Paunovic, 2019, p. 110).

But despite their increasing economic relevance (Leimeister and Glauner, 2008, p. 248; Böhmman and Krcmar, 2007, pp. 240–241), the interdependencies between tangible and intangible components of hybrid offerings as well as their influence on customer value are still in an early stage of research (Brosig *et al.*, 2022, p. 6; Leimeister and Glauner, 2008, p. 248).

From the literature review, at least three conceptualisation approaches of 'hybrid offerings' can be identified. All three have in common that they not only generate a process outcome through the integration of tangible and intangible resources, but they also allow the creation of value-in-use through the quality attributes of tangible and intangible process outcomes. But not all share the view that hybrid offerings are simply a combination of tangible goods with additional intangible services in a value bundle. As the next section will show, they have very different views on the meaning of 'hybridity'.

2.2.2.1 Goods-Services-Continuum Concept

It is noteworthy that despite the ongoing discourse on the product-service dichotomy in the early 21st century, the theoretical foundations of marketing have a long-standing tradition of acknowledging that the majority of offerings in the market cannot be

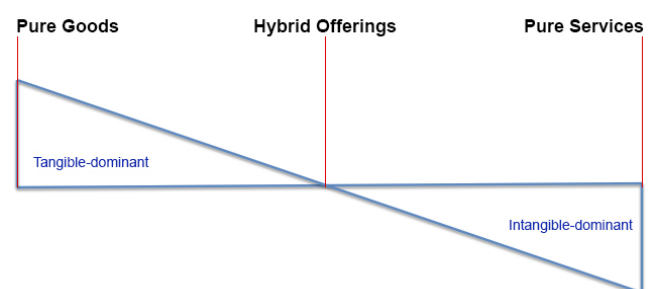


Figure 3 Goods-Service-Continuum adopted from Shostack (1977)

easily classified as either purely a product or a service. Discussing this issue, Shostack (1977, p. 74) suggested a 'molecular model', which contains the idea that market entities (offerings) should be understood as a combination of discrete tangible and/or intangible elements, which are linked together in molecular-like wholes. Through the analysis of a marketing offerings

molecular elements, it can be classified whether it is more tangible-dominant or more intangible-dominant. As higher the dominance and weighting of intangible elements, as more the offering shows a 'service character'. With this approach, every market offering can be arrayed on a tangible-intangible continuum (Shostack, 1977, p. 75).

Marketing scholars like Philip Kotler adapted the model and coined the phrase of a 'Goods-Services-Continuum'. Based on this concept, Kotler and Keller (2016, p. 422) distinguish five categories of offerings. At the particular ends of the continuum scale are 'pure tangible goods' (e.g. a toothpaste) or 'pure services' (e.g. babysitting). The second category is tangible-dominant, a 'tangible good with accompanying services' (e.g. a car). The fourth category is service-dominant, a 'major service with accompanying minor goods and services' (e.g. air travel). And as the third category exactly in the middle of the continuum reside 'hybrid offerings', which share an equal amount of tangible and intangible elements (e.g. a restaurant).

In this definition, combining tangible with intangible elements alone in one offering would not make an offering 'hybrid'. It is also necessary, that the tangible and intangible molecular elements are more or less well-balanced. Hybrid offering, would then be special cases in the universe of potential and existing goods and services. Apart from the fact, that the 'weight' of tangible and intangible molecular elements might be difficult to measure in practice, the idea of molecular decomposition found its way in the value-creating view in marketing as Grönroos (1997, p. 416) postulates:

"The product as a pre-fabricated package of resources has to be broken down into its parts, a set of resources needed to create a good customer perceived value."

2.2.2.2 Value Bundle Concept

Whereas in the first concept the classification of an offering as being 'hybrid' is an outcome of evaluation of its molecular elements, the 'value bundle concept' pursues a different approach. In its notion, an offering becomes 'hybrid' when it combines formally independent but to each other compatible and addable products and services in one value bundle (Meyer and Shankar, 2016, p. 133). This approach plays an important strategic role in industrial B2B contexts

(Eggert *et al.*, 2011, p. 663), e.g. when a technical product is offered in combination with maintaining or financing contracts, but it is also wide-spread in B2C markets (Meyer and Shankar, 2016, p. 133).

Advantages of hybrid value bundles for the customer are often grounded in the price of the bundle, which is lower than if all bundle components would be bought independently (Meyer and Shankar, 2016, p. 134). For the provider, selling value bundles is attractive as they can increase revenues from a single customer as well as allow differentiation from competitors (Eggert *et al.*, 2011, p. 668). Sometimes, those value bundles have also a certain potential of innovation, as they combine existing goods and services in a way which is new for a certain market. If this is the case, providers have the chance to build a new competitive advantage (Ulaga and Reinartz, 2011, p. 21; Shankar *et al.*, 2009, p. 95). In a B2B context, this strategy is often linked to the concept of 'servitization of business' (VanDerMerwe, 1988, p. 314).

In marketing theory, the value-bundle concept can also be found in context with the term 'augmented product' (Kotler and Keller, 2016, p. 390) as well as in the 'added-value' strategies of brand management (Chernatony *et al.*, 2000, p. 52). Classically, value bundles are very product-focussed, in the sense that a core good is augmented with value-adding services (Ulaga and Reinartz, 2011, p. 6). But it is also possible, that a formally pure service offering becomes hybrid through integration of value-adding products, e.g. when a fitness studio offers contracts in combination with a non-alcoholic fitness drink flat rate for a special price (Bruhn and Straßer, 2014, p. 307).

One of the key differences between the value bundle concept and an integrated approach to hybrid offerings is that each component of the value bundle, whether tangible or intangible, can be marketed as a stand-alone entity.

2.2.2.3 Integrative Concept

The third concept of hybrid offerings reserves the term 'hybrid' for such value bundles, which can no longer be reasonably disintegrated or decomposed in their goods and service components (Schmitz, 2014, p. 139; Leimeister and Glauner, 2008, p. 248). In the academic discussion, such value bundles were also described as 'integrated solutions' (Windahl and Lakemond, 2010, p. 1278) or 'customer solutions' (Sawhney, 2006, p. 365). Leimeister and Glauner (2008,

p. 249) point out that in the solution context the terms 'solution' and 'hybrid products' are often used synonymic.

The aspect of integration can be found as a core attribute in most solution-orientated definitions of hybrid offerings (Tuli *et al.*, 2007, p. 4). Sawhney *et al.* (2006, p. 78) present a prototypic definition of the concept:

"A solution is a customized, integrated combination of products, services and information that solves a customer's problem."

It is not necessary that the hybrid offering is an outcome of just a single providers business, as the integrated solution can also be delivered through a kind of hybrid network, in which provider of goods and services work together in a highly integrative way to offer 'partnered hybrid offerings' (Becerril-Arreola *et al.*, 2017, p. 86). But also in this case, the hybrid offering remains non-decomposable at least for the customer, as he requires both the tangible good as well as the intangible service component of the offering to create value-in-use (Becerril-Arreola *et al.*, 2017, p. 88). A practical example is the provision of a smart home device with installation and online update support, along with a mobile app that provides energy usage statistics and optimisation tips. Thereby, the concept of integrative hybrid offerings/solutions separates itself from mere value-bundle offerings, whose goods-services components are regularly sold together but could be purchased independently. Another difference is that through the offering of integrated hybrid solutions, the focus of the company often changes from transaction to relationship and from general efficacy to efficiency of the solution within the customers own processes (Oliva and Kallenberg, 2003, pp. 167–169).

Engelhardt *et al.* (1993, p. 417) present a generic model which allows the differentiation of distinct hybrid offerings by the two dimensions 'integration of external factors' and 'degree of intangibility'. Both dimensions are typically highly influenced by the nature of the integrated factors as well as the purpose of the hybrid offering for the customer. For intangibility, reaching the minimum would mean that the product must be understood as a tangible good without any services elements, whereas complete intangibility would make it a mere service without any tangible elements. In business practices, these extrema on

the continuous scale are hardly if even found in its purest form (Engelhardt *et al.*, 1993, p. 408).

The degree of external factors integration in the production process, which e.g. might be goods, information, patents or any other external resource provided by a customer, can be higher or lower, whereas the extreme positions in its purest form are also normally not found in business practice (Engelhardt *et al.*, 1993, p. 407). It is important to recognise that this dimension only refers to those external factors which are provided by the customer and not generally to all external resources which might be required for the production process, e.g. those which are bought by the provider from other external suppliers.

Integrating customer-provided external factors in the production processes inevitable leads to co-production and customisation, attributes which are typically for hybrid offerings (Engelhardt *et al.*, 1993, p. 421; Vargo and Lusch, 2004, pp. 10–11).

Leimeister and Glauner (2008, pp. 249–250) shift the focus of the dimensions slightly as they propose the degree of ‘customer interaction’ as an alternative to ‘integration of external factors’. Although these are differently connotated concepts which are not clearly defined by both authors, the assumption seems to be justifiable that in business practice a high correlation exists between the degree of external factor integration and co-productive customer interaction. As the degree of external factor integration can make a useful contribution to the understanding of co-production processes, the conceptualisation of Engelhardt *et al.* will be preferred here, whereas the aspect of interaction should be included as a subordinate variable.

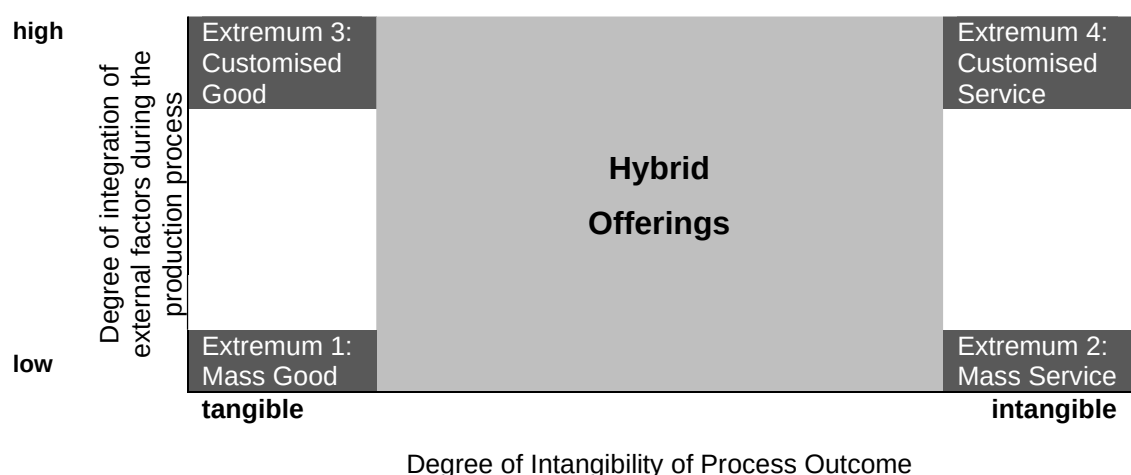


Figure 4 Model of Hybrid Offerings (adapted from Engelhardt *et al.*, 1993)

In the presented version, the model can be understood as an extension to the goods-service-continuum by adding a second dimension ‘external factor integration’ to the unidimensional approach of Shostack (1977).

2.2.3 Characteristics of Hybrid Offerings

The previous chapters discussed the theoretical frameworks and concepts surrounding hybrid offerings. With a basic understanding established, attention now turns to the specific attributes that define hybrid offerings. This chapter focuses on the key dimensions of complexity and relationship that are critical to understanding the unique characteristics of hybrid offerings. By examining these attributes, the aim is to lay the groundwork for the further exploration of hybrid offerings in real-world business contexts.

2.2.3.1 Complexity

The complexity of hybrid offerings lies in the intricate interplay of different attributes, e.g. the heterogeneity of components/resources and the degree of customisation or customer process integration. Therefore, and as an alternative to model of Engelhardt *et al.* (1993), Burianek *et al.* (2007) present an approach that aims to specify hybrid offerings through the development of an attribute typology. For Burianek *et al.* (2007, p. 9), the common denominator of hybrid offerings is their inherent complexity. They propose to objectify the level of complexity by measuring seven dichotomous and continuously scaled attributes (Burianek *et al.*, 2007, p. 11):

Attribute	Scale	
Type of customer value	Product-orientation	Outcome-orientation
Scope of offering	Partial	Extensive
Amount/Heterogeneity of components	Low	High
Degree of technical integration	Low	High
Degree of customer value process integration	Low	High
Degree of Customisation		
Temporal dynamic/variability	Low	High

Table 4 Attributes of Complexity for Hybrid Offerings

The degree of complexity results from the parameter-value of the seven attributes, whereas complexity increases as more the attributes for a specific offering could be described as 'being on the right side' of their particular scales.

The consideration of complexity in context with hybrid offerings (Burianek *et al.*, 2007, p. 8) is a valuable perspective that has relevance for production process design and management, as well as an empirical analysis and classification of a specific hybrid offering. A counter argument is that complexity might be more accurately understood as an outcome of hybrid offering design, rather than as a defining characteristic. The act of dining out can be considered as an usage of a hybrid offering, yet the underlying processes may not necessarily be complex. This is exemplified by the ordering of a meal at a local food truck, which is a relatively straightforward process. From an academic standpoint, a certain degree of restraint concerning the concept of 'complexity' is also comprehensible, given the dearth of empirical research examining the validity of the proposed dimensions and their potential interferences (Burianek *et al.*, 2007, p. 23). This justified argument can be countered with the suggestion that complexity should not be seen as an absolute attribute of hybrid services per se, but can be lower or higher depending on the type of the underlying business process design. The nature and extent of the relationship between the actors and the tangible as well as the intangible resources they contribute to the co-production process are likely to be significant factors in the emergence of increasing complexity (Jancenelle, 2021, p. 3).

It can be taken in account, that the complexity which arises from the integration of customer resources can be a common feature of co-production processes, e.g. for many skilled crafts. However, the incorporation of customer resources can also serve as a catalyst for additional complexity in an existing production process which does not incorporate customer resources by default. In this sense, a simple haircut is inherently complex, as there is usually a continuous feedback loop between the customer and the hairdresser during the service. Furthermore, in addition to their appearance wishes, it is imperative that customers bring their hair into the process as a tangible resource, and the hairdresser must adapt her service process to this. In contrast, the production process of the range of coffee offered by a coffee house is usually quite standardised and not inherently complex, despite the potential for a large

number of variants. However, should the customer be permitted to bring their own to-go cup, for example due to legal requirements, the complexity of the then co-productive process will increase to a certain extent: The barista will be required to make an additional enquiry, the customer's cup must be clean and free of residue ('only clean to-go mugs are accepted') and, if necessary, fit under the coffee machine.

2.2.3.2 Relationship

A second characteristic of hybrid offerings is that they are, by default, relational. As chapter 3 will show, the interaction between providers and customers is not merely transactional, but involves a deeper, more continuous engagement. This relationship-centric view underscores the importance of customisation and integration, with higher levels of these elements often correlating with increased customer satisfaction and perceived value. Also, conceptualising 'relationship' as a constitutional aspect of hybrid offerings could help to address a potential issue that may arise from the proposed model put forth by Engelhardt *et al.* By marking the four extrema as systematic valuable but mere theoretic constructs, Engelhardt *et al.* (1993, p. 415) draw the conclusion that every offering, which can be observed in business practice, includes elements of intangible services as well as a certain degree of external factor integration. However, in such a broad sense, nearly every market offering must be marked as 'hybrid', which would render the term 'hybrid offering' a tautology. Furthermore, such an all-embracing perspective would negate the solution-oriented character, which has been identified as a defining feature of hybrid offerings by several researchers (Schmitz, 2008, p. 667).

To solve the problem of excessive generalisation, an approach could be helpful which is presented by Schmitz (2014, pp. 139–140). The author suggests three attributes of hybrid offerings, which are 'integration', 'customisation' and 'relationship'. Analogous to the two-dimensional model of hybrid offerings from Engelhardt *et al.* (1993), 'integration' addresses the non-decomposability of hybrid offerings which distinguishes them from mere product-service bundles. 'Customisation' is closely linked to external factor 'integration', including the rationale that as higher the degree of customisation as more intensive the interaction between provider and customer. The extrema are also excluded, as a solution always requires the integration of external factors, at least information

provided by the customer. Generally, both dimensions are also compatible with the two key dimensions of 'customisation' and 'integration' Sawhney (2006) suggested for the definition and categorisation of solution-orientated hybrid offerings. As the third attribute or dimension, Schmitz (2014, p. 140) suggests the 'relationship' between provider and customer, which is not included in the two-dimensional approaches of Engelhardt *et al.* (1993) or Sawhney (2006).

This proceeding is in line with other researchers, who criticise that the relational aspect between the supplier and the customer is often ignored in marketing research in general (e.g. Ravald and Grönroos, 1996, pp. 24–25) as well as in definitions of hybrid offerings (e.g. Tuli *et al.*, 2007, pp. 4–5). Based on their research on the customers understanding of 'solutions', Tuli *et al.* (2007, p. 5) suggest a more process-centric definition, which describes hybrid offerings/solutions as

“... a set of customer–supplier relational processes comprising (1) customer requirements definition, (2) customization and integration of goods and/or services and (3) their deployment, and (4) postdeployment customer support, all of which are aimed at meeting customers’ business needs.”

In an qualitative empiric study, Schmitz (2014, pp. 147–151) found evidences that the characteristics of the relationship have a significant influence on the perceived customer value of the solution, making 'relationship' a constitutional value-creating characteristic of hybrid offerings. As higher the degree of external factor integration and therefore provider-customer interaction, as more probable is the development of a relationship between provider and customer, whereas the relationship in itself can be an additional and independent origin of customer value increase (Schmitz, 2014, p. 150).

The incorporation of the 'relationship' dimension into the two-dimensional model proposed by Engelhardt *et al.* appears to offer a viable solution to the issue of hybrid offerings. This is due to its coherence with the other two dimensions: the conceptualisation of hybrid offerings as solutions and the growing emphasis on the value of relationships in both conceptual and empirical works. (Graf and Maas, 2014, 2014, p. 66; Ravald and Grönroos, 1996, p. 23).

2.2.4 Defining Hybrid Offerings

The objective of this chapter is to elucidate the term 'hybrid' in the context of business process outcomes offered to customers. As evidenced by the literature review, at least three concepts can be distinguished. In the conceptual framework of this research, an integrating approach will be adopted, combining the discussed core propositions in one coherent definition:

Hybrid offerings represent a co-produced combination of tangible and intangible business process outcomes that cannot be decomposed without a significant reduction in value-in-use for the beneficiary. As more external resources provided by the customer are integrated through provider-customer interaction, the complexity of the co-production process and therefore the degree of 'hybridity' increases. The emergence of at least a temporary relationship between provider and customer is a natural side-effect of co-produced hybrid offerings.

From the perspective of this research, the degree of hybridity of an offering increases in line with the necessity for greater customer interaction, due to the extent of integration of external, customer-provided resources into the internal business processes of the provider. In other words, hybridity arises when co-production occurs, and the intricacy of the co-production process is determined by the extent to which external customer-provided resources, whether tangible or intangible, must be integrated to deliver the desired value-in-use. An alternative, more expansive interpretation of the SDL would posit that all services are inherently hybrid, given that interaction and therefore co-creation is a constant and fundamental aspect of any process which creates value-in-use. This would lead to the conclusion that each value-in-use proposition proposed by a provider must be classified as a 'hybrid offering', analogous to a 'service'. In order to ensure the veracity of the proposed definition and to prevent circular logic, hybrid offerings are understood here as those services (in the sense of the SDL) which involve co-productional business processes based on resource-integrating customer-provider interactions. Furthermore, the process outcomes

consist of tangible and intangible components, whereas the degree of tangibility can vary in accordance with the nature of the service.

The Characteristics of Hybrid Offerings

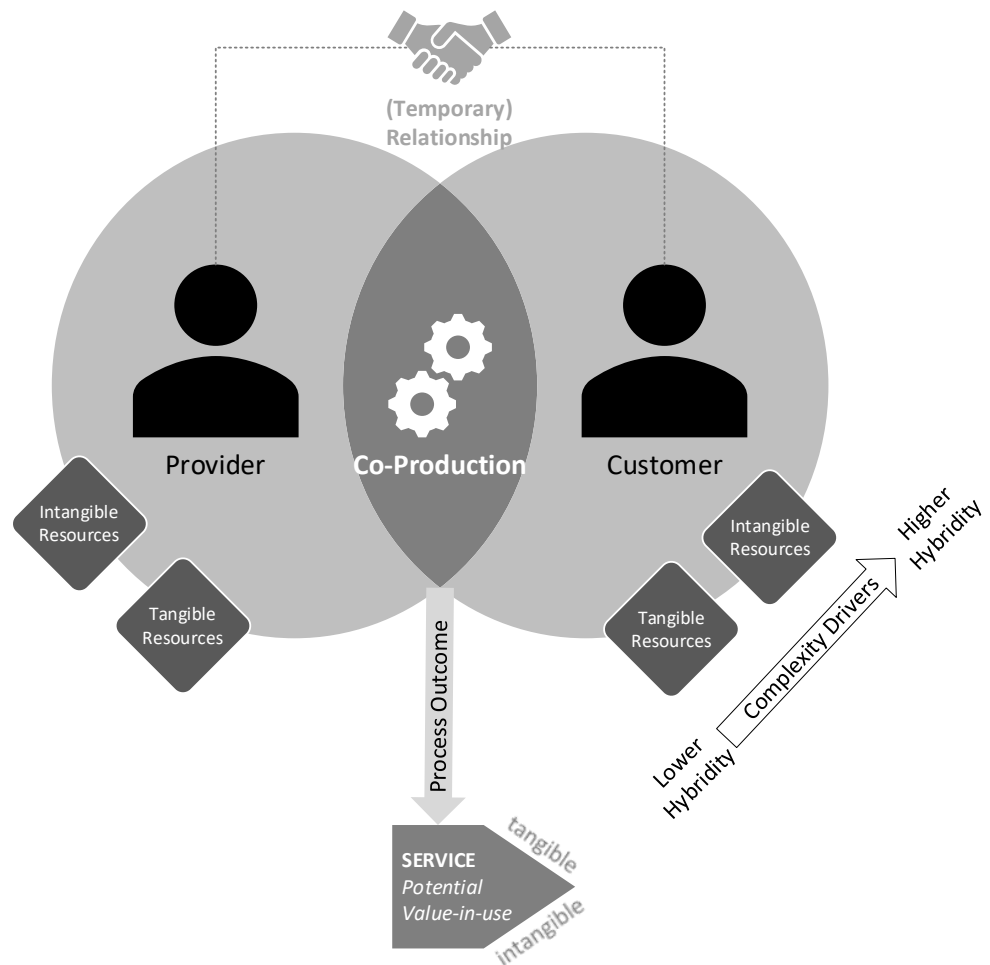


Figure 5 The Characteristics of Hybrid Offerings

As opposed to other areas of research, hybrid offerings are therefore not understood as mere ‘solution-bundles’ of added services and provided goods (Schaarschmidt *et al.*, 2018, p. 120). Furthermore, the degree of hybridity is not defined by increasing intangibility (or decreasing tangibility), as this would only replicate Kotler and Kellers (2016) goods-services continuum with hybrid offerings in the middle of the scale: hybridity increases when complexity increases. As co-production activities include interaction, they inevitably require as certain amount of communication between the two or more social actors. Therefore, it will be assumed that a relationship develops which can be short-term or of longer-term duration (Vargo and Lusch, 2004, pp. 10–11). The

following chapter will build upon the preceding discussion of hybrid offerings by examining them in the context of established theoretical frameworks.

2.3 Conclusion

The objective of this chapter was to address the first part of RQ1, which involved clarifying the concepts underpinning this study and laying the groundwork for developing a conceptual model of value co-creation in hybrid offerings. To this end, the chapter examined how to distinguish and define such offerings and the value they generate, within the context of existing theoretical approaches.

A review of the literature illuminated the foundational concepts of value-in-use and the distinctive characteristics of hybrid offerings. The investigation began with an analysis of the conceptual origins and significance of the term 'value-in-use' in business management theory. This highlighted the evolution of the term 'value' and its multifaceted interpretations in the context of customer experiences and business transactions.

A critical analysis was conducted on a range of customer value models, including those based on value components, means-ends, benefits and sacrifices, experiences and phenomenology. These models provided a comprehensive framework for understanding the processes by which customers perceive and create value in use. The review emphasised that value-in-use is not an inherent attribute of products or services, but rather a construct that is co-created through interactions between providers and customers. This perspective aligns with the social constructionist paradigm described by Zeithaml *et al.* (2020b, p. 420) and with Service Dominant Logic, which will be examined in the next chapter.

Discussion of hybrid offerings also revealed the limitations of the traditional product-service dichotomy in capturing the nuances of contemporary business offerings. Concepts such as the goods-services continuum, the value bundle concept and the integrative concept were examined to illustrate the various ways in which hybrid offerings can be conceptualised. Additionally, attributes such as complexity and relational aspects were addressed to emphasise the

intricate nature of hybrid offerings and their potential for co-creating value in use.

The literature review also identified shortcomings in existing research, particularly with regard to the empirical validation of theoretical models and the practical implications of co-creating value-in-use in hybrid offerings. These gaps highlight the need for an integrated conceptual framework that explains how value in use is co-created through inherently co-productive business processes. As a first step towards this, a working definition of hybrid offerings was proposed: they are defined as integrated combinations of tangible and intangible resources that cannot be reasonably decomposed without diminishing their value proposition to the user.

However, answering RQ1 fully requires more than conceptual clarification and definition. The next step is to embed these concepts within established theoretical frameworks from marketing and quality management – specifically, Service Dominant Logic, the Integrated Quality Framework and customer value theory – and integrate principles of co-productive business process design. This integration will lead to the development of a comprehensive conceptual model that captures the dynamic interactions through which value-in-use is co-created, co-produced and, in some cases, co-destroyed. This model, which is developed in Chapter 3, will fulfil the theoretical contribution sought in RQ1 and provide the basis for the subsequent empirical investigations.

3. Literature Review 2: Frameworks

3.1 Framework 1: Service dominant Logic

3.2 Framework 2: Sphere Model

3.3 Framework 3: Integrated Quality Framework

3.4 Consolidation of Frameworks and Proposed Conceptual Model

3.5 Conclusion

This chapter builds directly on the conceptual foundations established in Chapter 2. It continues and completes the answer to RQ1 by embedding the clarified concepts of value-in-use and hybrid offerings within established theoretical frameworks from marketing and quality management. Whilst Chapter 2 addressed the definitional and conceptual aspects of these constructs, RQ1 also requires the development of a comprehensive conceptual framework that explains how value-in-use is co-created in hybrid offerings through inherently co-productive business processes.

In order to achieve this objective, the chapter undertakes a comprehensive analysis and synthesis of seminal theoretical perspectives, encompassing the Service-Dominant Logic, the Integrated Quality Framework and pertinent customer value theory. These frameworks provide the conceptual scaffolding for understanding how provider and customer interact dynamically within a co-productive process, how such interactions shape perceived value-in-use, and how they can also lead to value-in-use co-destruction.

The subsequent chapter synthesises these insights into a conceptual model of value-in-use co-creation in hybrid offerings. The model captures the interplay between business process design and interactional value-creation mechanisms, offering a structured representation of the spheres, activities and quality attributes that contribute to – or detract from – value-in-use. The resulting framework will serve as the theoretical foundation for the empirical case study presented in later chapters, guiding both data analysis and interpretation.

3.1 Framework 1: Service-dominant Logic

In 2004, Vargo and Lusch (2004) published their seminal work in which they challenged an economic model that has been a cornerstone of marketing

management and research for several decades. Their call for a “fundamental shift in worldview” (Vargo and Lusch, 2004, p. 2) aimed to abandon the long-time dominant logic of marketing which had a strong focus on tangible goods and transactional exchange of value (Vargo and Lusch, 2004, p. 1). As a counterproposal, they emphasised that the worldview of economics must shift from the paradigm of exchange of goods to the exchange of service. Together with other authors like Gummesson (1995b, pp. 250–251) they argue that all goods only produce value through their usage, meaning that they deliver a service for the person who uses it to satisfy its individual needs. In other words, every offering, whether it contains tangible resources or not, must be viewed as an appliance for service provision which provides beneficial value-in-use (Vargo and Lusch, 2004, p. 9), a perspective they call the ‘service-dominant logic’ of marketing.

In the field of marketing and management research, the implications of this proclaimed paradigm shift have been discussed extensively during the last years (e.g. Vargo and Lusch, 2008; Grönroos and Voima, 2013; Bruhn and Hadwich, 2014b; Galvagno and Dalli, 2014; Lusch and Vargo, 2006c). But nevertheless, the argumentative foundation of the service-dominant-logic is still more in the state of heuristic assumptions than of a empirically grounded theory of real-world service exchange (Hartwig *et al.*, 2021, p. 95; Vargo and Lusch, 2017, p. 54). Lusch and Vargo (2014, p. 211) themselves describe their model as a “meta-idea” or “metatheory” (Vargo and Lusch, 2017, p. 47) at a high level of abstraction. It might lead to a new theory for activities of actors in markets as well as later on to a more general theory of social and economic exchange. Additionally, other authors like Bruhn and Hadwich (2014a, pp. 26–27) admit some positive practical implications of the new service and value-oriented logic for business management as well as research. But on the other hand, they criticise the fuzziness of SDL core concepts like ‘service value’, which poses difficulties for the application of the value of services in scientific research projects.

Since its first introduction in 2004, Vargo and Lusch published several enhancements, changes and refinements of their initial model (Lusch and Vargo, 2006a; 2008; 2014; 2016, 2017). In its most recent conceptualization,

the SDL framework consists of eleven foundational premises, whereas five of them are further specified as superordinate 'axioms'.

However, despite legitimate criticisms and some important open questions, it should be shown that the axioms of SDL can provide a stable theoretical framework within which hybrid offerings with their specific characteristics can be embedded. The following discussion refers to the newest version of the SDL (Lusch and Vargo, 2014; Vargo and Lusch, 2016), whereas older publications will be referenced where appropriate. An overview of the historic development can be found in Vargo and Lusch (2016, p. 8). As the phenomenological value-in-use concept of the SDL has been discussed in chapter 2.1.2.5, the focus should now be on the broader metatheoretical framework and its relevance for a better understanding of value-in-use creation through hybrid offerings.

3.1.1 Axioms and foundational premises of the SDL

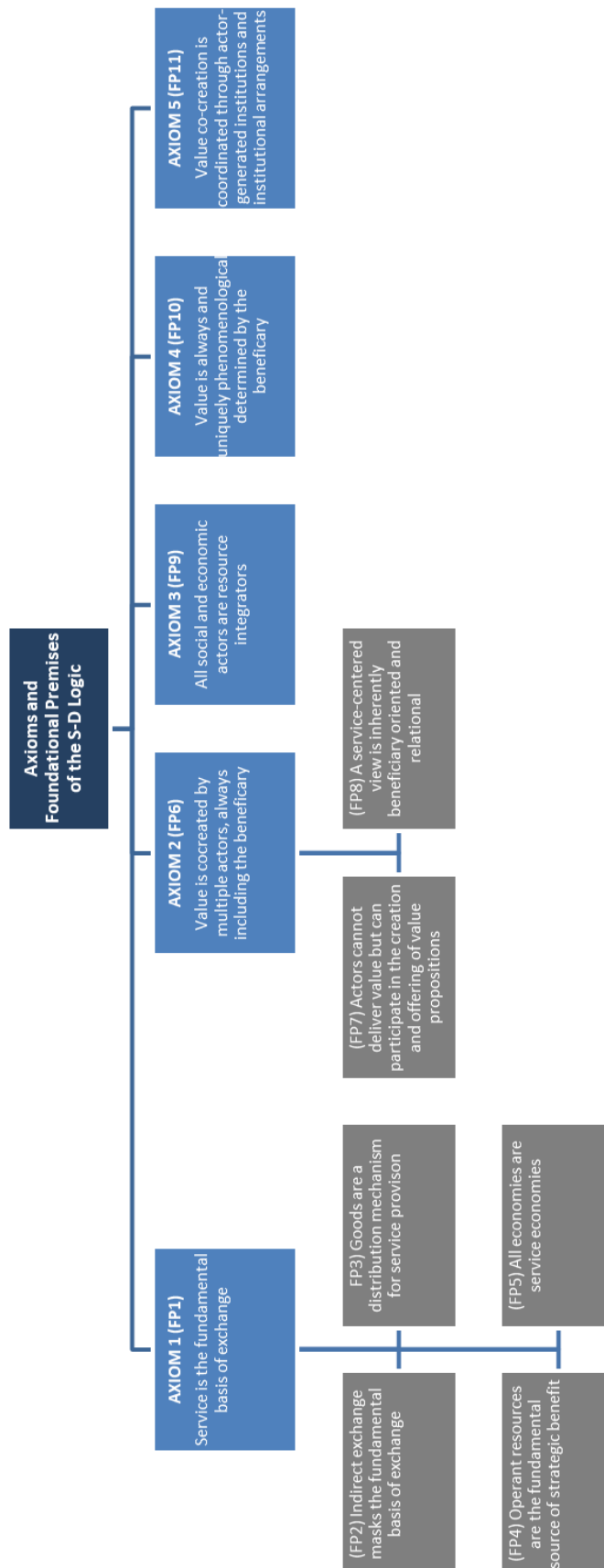


Figure 6 Adapted from Vargo and Lusch 2014, 2016

3.1.1.1 Service as Base of Exchange

Foundational Premise 1: Service is the fundamental basis of exchange.

The first axiom and foundational premise builds the base of the whole S-L logic. Its rationale is, that social actors exchange service for service with the aim to enhance their system viability. The specific kind of service an actor can offer is grounded in his 'operant' resources, which in the wording of Lusch and Vargo (2014, p. 57) are physical and mental skills. They must be distinguished from so-called 'operand' resources, which are characterized as static and often tangible, e.g. natural resources or manufactured goods. Operant resources are necessary to use or apply these and therefore, generate a benefit from them. Through the application of operant resources on operand resources, the operand resources deliver a service for the actor (Lusch and Vargo, 2014, p. 58; Vargo and Lusch, 2008, p. 6).

The economic logic of service-for-service exchange is a good starting point to break up the goods-service dichotomy which has been discussed before. Hybrid offerings are an obvious mixture of operand and operant resources, whose combination delivers a service as value-in-use for the customer both through its tangible and intangible business process outcomes. The foundational premises 2-5 elaborate the first axiom in more detail.

Foundational Premise 2: Indirect exchange masks the fundamental basis of exchange.

The foundational premise 2 addresses the problem that in modern economies services are no longer directly interchanged between the actors (Lusch and Vargo, 2014, pp. 58–62; Vargo and Lusch, 2004, p. 8). As societies grow and become more complex, they tend to develop institutions like a monetary system and intermediary organisations like traders which help their actors to calculate, coordinate and plan the use of their individual resources. As a result, service exchange becomes much more effective. But in turn, the now more and more indirect exchange of service creates distance and impersonality between the actors, an effect which is even accelerated as individual actors join together in larger organizations to produce services for other actors.

Hybrid offerings, in turn, de-mask indirect exchange as they naturally integrate the service customer at least to a certain degree.

Foundational Premise 3: Goods are distribution mechanisms for service provision.

Another factor which hampers the insight that service is the fundamental basis of exchange arise from the mere fact the most service provisions are indirectly delivered through goods (Lusch and Vargo, 2014, pp. 62–64; Vargo and Lusch, 2004, pp. 8–9). As mentioned above, goods only deliver a service which creates value-in-use for a beneficiary if they are used through the application of operant resources. Furthermore, all goods are an outcome of the application of operant resources on operand resources, whose potential value is realised when they render a service for a beneficiary, which is individually perceived as value-in-use. Consequently, without the application of operant resources, a good has no value-in-use.

As hybrid offerings always require co-production activities, customers have to provide operant and sometimes also operand resources for the business process. By doing this, they have an influence on the creation of potential value-in-use through customisation. Furthermore, as the combination of tangible and intangible resources is non-decomposable, the service provision of tangible (goods) components of a hybrid offering becomes apparent.

Foundational Premise 4: Operant resources are the fundamental source of strategic benefit.

Understanding the role and application of operant resources is essential for every actor to create value-in-use for himself or to produce a value proposition for other social actors (Lusch and Vargo, 2014, pp. 64–66; Vargo and Lusch, 2016, pp. 7–8). As more disposal the operant resources of an actor are to help other actors in their quest for value-in-use co-creation, as more he will benefit himself, as service exchange is reciprocal – at least in modern market economies. From a strategic point of view, an actor must therefore strive to continually optimise his operant resources.

In correlation to the given degree of complexity, business processes which deliver hybrid offerings require performant operant resources. Without sufficient knowledge and skills, the business process design will be suboptimal, and the potential value-in-use will be below the achievable optimum as well. This may include a component of knowledge transfer to provide customers with the necessary operant resources as well.

Foundational Premise 5: All economies are service economies.

The fifth foundational premise is a logical consequence if the preceding premises are accepted. Here, Vargo and Lusch (2004, p. 10) aim at the historical distinction of economic eras, which in their notion is artificial and unreasonable. The increasing growth of the service sector within a given modern economy is just an effect of developing specialization and outsourcing, but not a fundamental change of the economic nature itself, which since ancient times relies on direct or indirect service for service exchange (Lusch and Vargo, 2014, p. 67). As it will be discussed in case study, hybrid offerings like the ones provided by skilled crafts have a long economic tradition.

3.1.1.2 Value is Co-created by Actors

Foundational Premise 6: Value is cocreated by multiple actors, always including the beneficiary.

The second axiom and sixth foundational premise refers to the fact that value-in-use always arises from interdependent interaction between actors, which are themselves participants in larger social networks (Vargo and Lusch, 2016, p. 9). This premise can best be understood when the resource-integrating nature of value co-creation is considered. Actors integrate operant and operand resources from several sources (e.g. from other actors) during their value creation process. Some of them might be internal available (e.g. own knowledge), but often at least some of them are produced and delivered by other actors. The beneficiary might be the main cocreator of value, but he is also dependent on the value creation processes of other actors, such as he again influences the value co-creation process of other actors.

This effect might be best explained through the systemic nature of social interaction. All human beings are members of a larger social systems, e.g. a family. So, if the value-in-use of the alimentary service provided by a healthy organic food manufacturer increases the viability of the mother, additional value-in-use will be co-created for her children through increased probability of longevity of her caring mother as well as her insights in good nourishment through own experiences. As an outcome of experiential increase of health for the mother, she might provide her children with new operand resources (healthier food) as well as operant resources (e.g. insights in her well-being as

well as nutrition knowledge), which in turn increases their viability as well. At the end, the interdependent network character of social systems can lead to increased viability of the system in whole if the viability of a single element (actor) of the system is increased (Vargo and Lusch, 2016, p. 9).

But although value co-creation might include multiple actors, concrete value-in-use realisation is nevertheless experiential and therefore phenomenological bound to the perception of the single actor, meaning that it is different for every beneficiary and must be assessed separately (Vargo and Lusch, 2016, p. 10). It is important to consider that co-creation of value-in-use must not necessarily congruent with 'co-production', meaning that the beneficiary plays an active role in the production process of another actor (Vargo and Lusch, 2016, p. 8). Co-production is a typical characteristic of hybrid offerings, whereas co-creation of value-in-use is an emergent effect of human systems which are characterised by specialization and interdependency.

Foundational Premise 7: Actors cannot deliver value but can participate in the creation and offering of value propositions.

As consistent subordinate of the co-creation axiom 2, foundational premise 7 emphasizes the circumstance that actors, e.g. a company, cannot preproduce value-in-use and implement it in a yet to deliver offering (Vargo and Lusch, 2016, p. 10). Instead, they can only make value propositions for potential beneficiaries. This can include an ongoing process of value co-creation, e.g. when the service providing actor offers additional information about maintenance or alternative usage opportunities. Concerning hybrid offerings, only the joint combination and application of operant and operand resources by all actors allows value creation. Co-creation emerges through interaction during the business process as well as through the temporary or longer-lasting relationship between the actors (Vargo and Lusch, 2017, p. 60).

Foundational Premise 8: A service-centred view is inherently beneficiary oriented and relational.

Foundational premise 8 is another logical derivation from axiom 2. Vargo and Lusch (2008, p. 8) understand beneficiary orientation as a positive statement and not as a kind of strategic decision, e.g. in context of customer relationship management. As value-in-use is an outcome of a co-creation process, the service offering actor and the beneficiary of the service cannot be separated

(Lusch and Vargo, 2014, p. 74). In consequence, a relation always emerges as actors are engaged in an interactive process, being it through direct service exchange or indirectly through service provided by goods.

In case of hybrid offerings, the direct interaction intensifies the relation between the beneficiary of the service and its supplier. Hence, real co-creation of value-in-use can occur as actors in direct interaction can adapt their behaviour instantly to increase (or decrease) the potential value-in-use. Business process design must take this in account to optimise the value proposition they can deliver (Vargo and Lusch, 2017, p. 60).

3.1.1.3 All Actors are Resource Integrators

Foundational Premise 9: All social and economic actors are resource integrators.

The third axiom is grounded in the concept of the 'generic actor' who integrates internal or external operant and operand resources in his own process of value co-creation (Lusch and Vargo, 2014, pp. 74–75). The term 'generic' refers to the presupposition that from a 'zoomed-out' perspective, it is not necessary to draw a distinction between a 'producer' and a 'consumer'. Both types of actors are beneficiaries of what they obtain in a reciprocal exchange process, as they exchange 'service for 'service rights' (usually represented by money). Through their individual combination of service-delivering resources, actors can create new resources, which again might be integrated in value co-creation processes of other actors and so on. Lusch and Vargo (2014, p. 161) describe this network of more or less loosely interconnected actors as a self-contained and self-adjusting 'service ecosystem', in which value-in-use is co-created mutually through rule-coordinated service exchange. In brief, value co-creation is an emergent effect of resource integration activities of social and economic actors, which strive to increase their respective system viability.

Hybrid offerings are palpable examples of reciprocal resource integration. Not only the beneficiary integrates resources delivered by a provider to create value-in-use, but the provider himself must integrate operant and operand resources delivered by the beneficiary in his (business) processes to be able to make a value proposition.

3.1.1.4 Value is determined by the Beneficiary

Foundational Premise 10: Value is always uniquely and phenomenologically determined by the beneficiary.

The phenomenological character of value-in-use, which is addressed in the fourth axiom, has been discussed before in 2.1.2.5. It is important to understand that although value co-creation is an outcome of the resource integration activities of multiple actors, each experience of a service and the value-in-use it delivers for the beneficiary is unique, as the context as well as the integrated operand and operant resources always bear a moment of variance (Lusch and Vargo, 2014, p. 78). This variance, which is a natural effect of the time- and situation-bound existence of every actor, makes value-in-use inherently contextual. Therefore, the individual viability effect can only be assessed by the beneficiary himself, if at all.

But although the final value-in-use evaluation happens solely on the beneficiaries' side, providers of hybrid offerings can use the attributes of interaction and relationship to influence the value-in-use perception of beneficiaries.

3.1.1.5 Value Co-Creation is Coordinated

Foundational Premise 11: Value co-creation is coordinated through actor-generated institutions and institutional arrangements.

The fifth axiom was added about more than a decade later than the publication of the first draft. Vargo and Lusch (2016, p. 18) justify their decision by arguing that actors not only experience value-in-use contextual but their experience is always embedded in and coordinated and facilitated by 'institutions' and 'institutional arrangements' (Vargo and Lusch, 2016, pp. 17–20). 'Institutions' are any form of formal or informal codified laws, norms, rules, conventions or other social codifications which enable actors to exchange service and service rights in service ecosystems under time and cognitive constraints (Vargo and Lusch, 2016, p. 11). 'Institutional arrangements' are interrelated sets of single institutions which facilitate coordination of activities in service ecosystems, e.g. an economic market with his complex rules (institutions) of exchange (Vargo and Lusch, 2016, p. 17). With reference to the structuration theory of Giddens

(1984), Vargo and Lusch (2016, p. 13) emphasises that institutions are both the outcome and the context of value-in-use co-creation activities of social actors.

From an analytical point of view, it is therefore always necessary to consider not only the individual but also the institutional context of value-in-use co-creation processes for hybrid offerings. Otherwise, the individual evaluation of value-in-use conducted by a beneficiary can never be fully understood (Vargo and Lusch, 2016, p. 19).

3.1.2 Embedding Hybrid Offerings in the SDL

In chapter 2.2.4, a definition for hybrid offerings was proposed which combines elements of value concepts in a structured way. From a theoretical perspective, the proposed definition is consistent with the axioms and premises of the SDL. The combination of tangible and intangible business process outcomes refers to the resource-integrating activities of actors (FP9). The activities which design the combination rely on the existing operant resources of the provider actor (FP4). Therefore, they can be a source of strategic benefit for the provider. In case the chosen combinational design delivers an above-average value-in-use for the customer/beneficiary, it will probably be preferred and recommended by beneficiaries.

Furthermore, the non-decomposable combination of operand and operant resources (including resources of the beneficiary himself) renders a service for the beneficiary (FP1, FP5). His contextual value-in-use would not emerge if the components of the hybrid offering would be broken up (FP2, FP3). Hybrid offerings deliver an interaction-grounded, customised and relation-initialising value-in-use for beneficiaries, which offers them the chance to increase their viability.

In consequence, hybrid offerings cannot be substituted by pure goods or services, as both approaches would decrease the value-in-use for the beneficiary, which means that he had to integrate additional resource from other providers to achieve the same outcome. As this would require additional internal resources, e.g. time and life energy, the real effort required to generate the same value-in-use would be higher. Instead of building the complete roof, a roofer might just deliver the pre-cut wooden beams and roof tiles to a house builder. By doing the building work himself, the house builder will save some of

his service rights (money), but he has to spend a lot of his internal resources. Furthermore, he needs sufficient operant resources to do the work (e.g. knowledge). On the other hand, the invest of internal resources might be compensated by a strong emotional feeling of autonomy and trust in the own capabilities if the DIY project is finally successful, which might increase the value-in-use of the project in total.

Hybrid offerings are characterised by a forward and a backward integration of resources (FP9), meaning that the business actor integrates resources provided by the beneficiary (backward integration) to deliver a proposed value-in-use which the beneficiary then integrates in his own processes (forward integration). With respect to the example of the roofer and the house builder, the roofer needs at least some operant resources from the beneficiary, e.g. technical information concerning the required size and dimensions of the roof, to pre-cut the wooden beams. The builder then integrates external operant (information) and operand (wood) resources in his own roof production process which is based on operand resources (machines) and has been designed through the application of his own operant resources (knowledge and skills).

Eventually, the co-creation of value-in-use by hybrid offerings is not possible without reciprocal resource integration. Through reciprocal interaction in a circular and dynamic co-production process system, the business actor participates in the value-in-use co-creation processes of the beneficiary (FP6, FP7, FP8). As relationship is a defining attribute of hybrid offerings, value-in-use is not only an outcome of the delivered service, but it is also influenced by the quality of the phenomenological perceived and institutional coordinated relationship which occurs between both actors during interactive co-production (FP10, FP11).

3.2 Framework 2: Sphere Model

According to an extensive analysis of published research which deals with the topic of 'value co-creation' (Galvagno and Dalli, 2014) the term was first coined by Prahalad and Ramaswamy (2004, p. 4; 2000, p. 80). They introduce 'co-creation' by acknowledging the changing roles of the traditional market partners: Customers and providers start to interact and collaborate more and more beyond the traditional price-driven exchange system. As the cause of this

ongoing transformational process, they identify a historic change of the role of customers, which is driven by new possibilities of information access and interpersonal connection through web technologies (Prahalad and Ramaswamy, 2004, pp. 4–5). It is important to understand that Prahalad and Ramaswamy see ‘co-creation of value’ not as a revolutionary new perspective of marketing theory, but as evolutionary emerging from technologic transformations in the market environment (Prahalad and Ramaswamy, 2000, p. 80). In their opinion, before the triumphal procession of the internet the creation of value was solely based on the production activities of companies.

“In the conventional value creation process, companies and consumers had distinct roles of production and consumption. Products and services contained value, and markets exchanged this value, from the producer to the consumer.” (Prahalad and Ramaswamy, 2004, p. 5)

Companies must adapt to the new influence and activity of their customers if they want to maintain their market share and competitiveness.

“We see a new frontier in value creation emerging, replete with fresh opportunities. But successful prospecting will require framing and practicing value creation in a fundamentally different way from that of the past.” (Prahalad and Ramaswamy, 2004, p. 9)

Their appraisal that there is an ongoing transformational process which changes the nature of value creation stands in sharp contrast to the axioms/premises of the SDL, especially axiom 2. But nevertheless, it might be accepted that at least for certain industries the degree of co-production founded co-creation of value-in-use increases due to new technological possibilities.

Today, many authors agree that both terms refer to related but nevertheless not synonymous concepts (Galvagno and Dalli, 2014, p. 644; Grönroos and Voima, 2013, p. 137; Vargo and Lusch, 2008, p. 7; Etgar, 2008, p. 98). In a former version of their premise 6, Vargo and Lusch (2004, p. 10) used the term ‘co-production’ to refer to an interactive produce-customer process of value production. But short time later, they introduced a revised version of this premise, where the term ‘co-production’ was abandoned in favour of ‘co-

creation': "The Customer is always a Co-Creator of Value" (Lusch and Vargo, 2006a, p. 284).

In their justification, they introduced a useful distinction between both concepts, which was accepted and referred to by several other authors later e.g. Etgar (2008, p. 98). They describe co-creation and co-production as nested concepts, whereas co-production is a component of co-creation. It involves the active participation of the customer in the production process of the offering (Vargo and Lusch, 2008, p. 8; Lusch and Vargo, 2006a, p. 284).

Etgar (2008, p. 98) follows their argumentation and presents a five-stage model of consumer involvement in co-production processes. Grönroos and Voima (2013, p. 139) follow a similar argumentation by stating that "if the system is closed to the customer, co-production cannot take place in the production process." But the provider may invite the customer to join as a co-producer (e.g. co-designer, co-developer) at different points of the production process, which broadens the joint sphere and enables co-creation of value (Grönroos and Voima, 2013, p. 141).

From the point of view of this work, opening a system to co-production activities based on operant and operand resources provided by customers means to design and produce a hybrid offering. Therefore, the co-creation of value-in-use will be considered as a general concept that encompasses a co-production process during which companies make value propositions and customers generate value-in-use by providing and applying their own operant and operand resources (Vargo and Lusch, 2008, pp. 7–8; Grönroos and Voima, 2013, p. 138; Galvagno and Dalli, 2014, p. 644).

3.2.1 Value-in-use Creation as a Cooperative Process

In the previous chapter, the basic premises and framework conditions of the service-dominant logic were worked out. In the following, the generic processes in which value-in-use is created or destroyed will be examined in more detail. Value-in-use creation in contemporary markets is increasingly viewed as a cooperative process involving multiple stakeholders, including customers, firms, and other partners (Vargo and Lusch, 2008, p. 5). This perspective is consistent with the SDL, which posits that value-in-use is co-created through interactions among these stakeholders (Grönroos and Voima, 2013, pp. 137–138). This

section explores the theoretical underpinnings of value creation as a cooperative process and examines key concepts and models that illustrate the dynamics of co-creation and co-production (Payne *et al.*, 2008, p. 85).

3.2.1.1 Value-in-use Co-Creation Spheres

The concept of value spheres, introduced by Grönroos and Voima (2013, p. 141), provides a useful framework for understanding how value is created in different contexts. These spheres include the 'Provider sphere', the 'Joint Sphere' and the 'Customer Sphere':

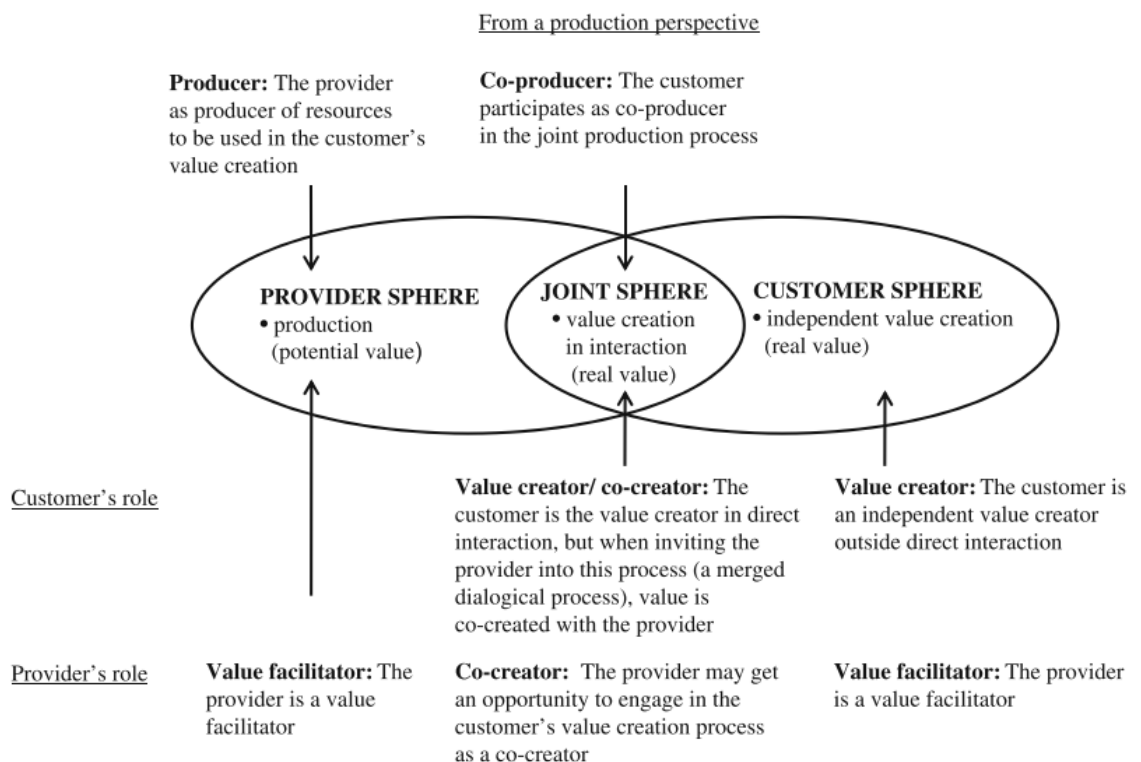


Figure 7 Value-in-use Co-Creation Spheres (Grönroos and Voima, 2013)

Provider Sphere

The Provider Sphere encompasses the activities carried out by the provider, typically a company, in preparing and delivering an offering. It includes the production of goods or services and the development of value propositions. In this sphere, the provider utilizes operant and operand resources to create potential value-in-use, which is then offered to the customer (Grönroos and Voima, 2013, p. 141). The activities of the provider sphere are usually internal and focus on preparing the offer for customer interaction, drawing on the organisation's competencies. (Lusch *et al.*, 2007, p. 9).

Joint Sphere

The Joint Sphere is where the interaction between the provider and the customer takes place. This interaction can include co-design, co-development, and co-production activities where the customer is actively involved in the creation process. Interaction in this sphere is crucial for customising the offering to the specific needs and preferences of the customer, thereby enhancing the value-in-use proposition (Grönroos and Voima, 2013, p. 141; Payne *et al.*, 2008, p. 90). This sphere is characterised by dialogical interaction involving communication and feedback loops, which are essential for effective co-creation (Ballantyne and Varey, 2006, p. 344).

Customer Sphere

This is where customers use the offering and integrate it into their own processes and contexts. Value-in-use is realised in this sphere as the customer uses the offering to achieve desired outcomes and benefits. The customer's perceptions and experiences during this phase are critical, as they ultimately determine the value-in-use of the offering (Grönroos and Voima, 2013, p. 142). The Customer Sphere emphasises the importance of individual experience and the contextual nature of value-in-use co-creation, where each customer's unique situation and goals influence their perception of value-in-use (Chandler and Vargo, 2011, p. 39).

Grönroos and Voima (2013, p. 145) emphasise that value-in-use co-creation is not limited to a single sphere, but occurs across these interconnected spheres. The interaction and integration of resources in the Joint Sphere is particularly important as it facilitates the co-creation of value-in-use by both the provider and the customer (Grönroos and Voima, 2013, p. 145; Vargo and Akaka, 2009, p. 38). This multi-sphere approach highlights the dynamic and relational aspects of value-in-use co-creation, where value-in-use emerges from the collaborative efforts of multiple actors (Echeverri and Skålén, 2011, p. 355).

3.2.1.2 Co-Production of Value-in-Use

Co-production represents a subset of the broader concept of value-in-use co-creation, characterised by the active participation of clients in the production process of the provider (Vargo and Lusch, 2008, p. 8). Golder *et al.* (2012, p. 13) describe co-production as the involvement of customers in the creation of

the product or service, encompassing activities such as co-design and co-development. This involvement can occur at different stages of the production process and can take different forms, depending on the nature of the offering and the industry context (Farr, 2018, p. 625; Piller *et al.*, 2004, p. 437). For example, in mass customisation, customers provide detailed information about their preferences, which the firm uses to produce customised products (Fogliatto *et al.*, 2012, p. 18). Today's car industry is an example of co-production, where customers choose different options and features for their cars and the manufacturer builds the car to those specifications (Piller *et al.*, 2004, p. 442). The customisation process ensures that the final product closely matches the customer's expectations, thereby increasing satisfaction and perceived value-in-use (Franke and Schreier, 2010, p. 1029).

The degree of customer involvement in co-production can vary. In some instances, customers may merely provide feedback or preferences, whereas in others, they may engage in the design and development process in a more active capacity. Etgar (2008, p. 99) outlines a comprehensive model of consumer co-production, detailing a structured approach through which consumers participate in the production process. This model is divided into five distinct stages, each integral to understanding and facilitating consumer engagement in co-production.

1. **Development of antecedent conditions:** This initial stage addresses the broader contextual factors that must be in place for co-production to be appealing or feasible for consumers. These include economic conditions, technological advancements, and cultural factors that collectively create an environment conducive to consumer participation in production processes. These conditions help define the potential scope and nature of co-production activities that might be undertaken (Etgar, 2008, pp. 99–101).
2. **Development of motivations:** In this stage, Etgar discusses the motivations that drive consumers to engage in co-production. These motivations can be economic (cost savings, value for money), psychological (satisfaction from involvement, perceived control), and social (community building, social recognition). This stage is crucial for

understanding the personal benefits consumers seek when they decide to engage in co-production (Etgar, 2008, pp. 101–103).

3. **Cost-Benefit analysis:** Here, consumers evaluate the perceived benefits against the potential costs of engaging in co-production. This analytical process helps them decide whether the advantages of active participation outweigh the effort, time, and resources they must invest. This stage is pivotal for transitioning from mere interest to actual participation in co-production activities (Etgar, 2008, p. 103).
4. **Activation:** This stage involves the actual decision to engage in co-production. Activation is influenced by the outcomes of the cost-benefit analysis and can also be affected by situational factors such as immediate needs, availability of alternatives, and ease of participation. It marks the transition from planning to doing, where consumers start their active involvement in the production process (Etgar, 2008, pp. 103–105).
5. **Evaluation of outcomes:** In the final stage, consumers assess the outcomes of their co-production efforts against their expectations and the goals set during the motivation stage. This evaluation helps consumers determine the success of their involvement and influences their willingness to engage in future co-production activities. It also provides feedback that can inform business strategies and improve future co-production initiatives (Etgar, 2008, p. 105).

Etgar emphasises the dynamic nature of co-production and its potential benefits not only to consumers but also to businesses seeking to leverage consumer involvement for enhanced customisation and improved product offerings. The model can serve as a theoretical framework for academic study and a practical guide for businesses aiming to implement co-production strategies effectively (Etgar, 2008, p. 106).

3.2.2 Value-in-use Destruction as a Cooperative Process

While much published research focuses on value co-creation, it is also important to understand the concept of value co-destruction (Plé and Chumpitaz Cáceres, 2010, p. 431). Value-in-use co-destruction may be defined as processes or interactions that diminish or negate the value-in-use of a product or service from the perspective of the customer, the service provider or other

stakeholders (Echeverri and Skålén, 2011, p. 355). From a managerial perspective, it is of importance for companies seeking to increase customer satisfaction and loyalty to understand that co-creation of value is not the only possible outcome of an interactional process, as co-destruction of value-in-use can also occur (Plé and Chumpitaz Cáceres, 2010, p. 435).

Value-in-use co-destruction can occur at any stage of the production process and can be caused by several factors.

1. **Misalignment of expectations:** The misalignment of expectations is a significant factor in value-in-use co-destruction. When there is a significant discrepancy between the expectations of the customer and the actual delivery of the provider, co-destruction can occur. This discrepancy can originate from inadequate communication, overpromising, or underdelivering (Plé and Chumpitaz Cáceres, 2010, p. 432; M. Smith, 2013, p. 1903; Prior and Marcos-Cuevas, 2016, p. 540).
2. **Poor service quality:** Inconsistent or subpar service quality represents a significant cause of value-in-use co-destruction. For instance, delays, errors, or inadequate customer support can give rise to feelings of dissatisfaction and a perception of a loss of value-in-use (Järvi *et al.*, 2018, p. 75) (Sweeney *et al.*, 2015, p. 329).
3. **Negative co-creation interactions:** The co-creation process necessitates the active participation of both the provider and the customer. Should these interactions be negative, such as through conflicts, misunderstandings, or a lack of cooperation, they can result in the destruction of value (Echeverri and Skålén, 2011, p. 358; Laamanen and Skålén, 2015, p. 382).
4. **Inadequate customisation:** Failing to adequately customise a product or service to meet specific customer needs can result in the co-destruction of value-in-use. It is possible that customers may feel that the offering does not cater to their unique requirements, which could result in dissatisfaction (Bu *et al.*, 2021, p. 1663).
5. **Resource mismanagement:** Both customers and providers must integrate their resources effectively in order to achieve successful value-in-use co-creation. In the event that either party fails to contribute their

resources in an adequate manner, such as time, information or skills, the co-creation process may be impeded, potentially leading to co-destruction (Plé and Chumpitaz Cáceres, 2010, p. 435). Furthermore, the inefficient utilisation of resources during the service delivery or co-creation process can also result in value-in-use co-destruction. It is possible that customers may perceive that they are not receiving adequate value-in-use for their investment (Prior and Marcos-Cuevas, 2016, p. 541)

In conclusion, value-in-use co-destruction occurs when interactions within the service ecosystem result in negative outcomes due to misalignments, misunderstandings, or conflicting objectives among actors. Unlike the absence of value-in-use co-creation, co-destruction involves active processes that undermine potential value. An approach for managing co-destruction in context of the optician industry will be discussed in chapter 7.4.

3.2.3 Understanding the Dynamics of Value-in-use

The concepts of co-creation and co-production are distinct yet interrelated. Co-creation refers to collaborative processes where both customers and providers engage in creating value-in-use through interactions and shared experiences (Vargo and Lusch, 2008, pp. 7–8). Value-in-use emerges through the integration of resources during usage, highlighting the relational aspect of value-in-use co-creation (Vargo and Lusch, 2006, p. 44). In contrast, co-production involves the customer's active role in the production phase, encompassing tangible or intangible contributions such as customisation, assembly or knowledge (Vargo and Lusch, 2008, p. 8). In terms of the Sphere Model (Grönroos and Voima, 2013, p. 141), co-production takes place in the Joint Sphere. This distinction underscores the different phases and types of customer engagement in the value-in-use co-creation process.

As discussed by Prahalad and Ramaswamy (2004, p. 5), co-creation involves engaging customers as active participants in the generation of personalised experiences. This process encompasses feedback loops, service experiences and relational dynamics. In this context, customers become co-creators of value-in-use, contributing to innovation based on their insights. Co-production, however, is focused on the customer's involvement during the actual production

of a good or service, becoming a resource in a company's production process (Grönroos and Voima, 2013, p. 140). This includes activities where customers influence the process outcome directly.

While co-creation and co-production highlight positive collaboration, the potential for co-destruction of value must also be considered. This occurs when interactions during the co-production process in the joint sphere lead to negative outcomes, diminishing overall value-in-use (Echeverri and Skålén, 2011, p. 367). The misuse of resources both on the customer and the companies side during co-production might be a cause for value co-destruction as well as miscommunication or unmet expectations during interactions (Plé and Chumpitaz Cáceres, 2010, p. 432).

Nevertheless, research evidence suggests that integrating customer feedback into co-creation and co-production enhances service quality and satisfaction (Payne *et al.*, 2008, p. 91). Businesses engaging customers at various stages can tailor offerings more precisely to needs. However, the potential for co-destruction highlights the importance of managing interactions carefully. Empirical studies demonstrate that co-creation leads to higher satisfaction and loyalty. When customers perceive themselves as contributors, their attachment and satisfaction increase (Ind *et al.*, 2013, p. 14). This underscores the importance of viewing customers as partners in value-in-use co-creation. For example, unsuitable designed processes, e.g. with a high degree of formality, might lead to higher costs on the customers side, illustrating the balance required to avoid co-destruction by process design (Fang *et al.*, 2008, p. 334). It is therefore beneficial for those charged with formulating management strategies to have a full understanding of the differentiating factors between co-creation, co-production and co-destruction.

The fostering of co-creation may entail continuous dialog through the establishment of platforms for feedback and experiences (Prahalad and Ramaswamy, 2004, p. 6). However, co-production strategies influence the production process design directly by enhancing customer involvement. Consequently, it is essential that these processes are perceived as distinct yet integrated in order to enhance the co-creation of value-in-use in total. The recognition of the differences between co-creation, co-production and co-destruction enables companies to optimise collaborative value-in-use co-

creation, enhancing customer experience and service delivery. By leveraging co-creation, businesses build stronger relationships with customers, fostering loyalty (Ind *et al.*, 2013, p. 21). Meanwhile, co-production allows customers to feel ownership, potentially leading to an increase of satisfaction and commitment (Bendapudi and Leone, 2003, p. 25).

Despite the benefits associated with co-creation and co-production, there are inherent challenges and risks. The potential for co-destruction of value-in-use highlights the delicate balance required in managing customer interactions. In the event of misalignment between expectations, interactions and feedback, dissatisfaction may ensue, thereby undermining the intended benefits of collaborative engagement (Echeverri and Skålén, 2011, p. 367; Plé and Chumpitaz Cáceres, 2010, p. 432). Concerning process outcomes, a self-serving bias could occur, which is the tendency of a customer to claim a greater degree of responsibility for success and a lesser degree of responsibility for failure in a situation in which an outcome is produced jointly (Bendapudi and Leone, 2003, p. 15).

Moreover, the resources required to effectively facilitate co-creation and co-production, such as advanced technology and skilled personnel, can be substantial, posing a challenge for especially for smaller organisations (Eikebrokk *et al.*, 2021, p. 361). Coordination of resources and provided information (e.g. customer feedback) might increase, which require additional resources to manage the co-creational/co-productive business processes (Ma *et al.*, 2017, p. 3028).

Furthermore, not all customers desire extensive involvement in production processes. An excess of customisation options might result in a phenomenon known as 'paradox of choice', which has the potential to negatively impact the customer experience (Kinjo and Ebina, 2015, p. 292). In such instances, consumers may feel overwhelmed by an array of options, leading to a decrease in satisfaction (Scheibehenne *et al.*, 2010, p. 421). Consequently, companies should consider to undertake a comprehensive assessment of their target audience's expectations and capabilities before implementing extensive co-creation or co-production strategies (Kinjo and Ebina, 2015, p. 296).

In conclusion, while Co-Creation and Co-Production offer significant opportunities for enhancing value-in-use and fostering loyalty, it is important to exercise caution when designing and managing these processes. It is incumbent upon companies to remain vigilant with regard to the potential risks of co-destruction, and to ensure that their strategies are aligned with customer expectations and organisational capabilities.

3.3 Framework 3: Integrated Quality Framework

Value co-creation and value co-destruction are complex phenomena because they involve multiple actors and interactions, are dynamic and iterative, depend on subjective perceptions and contextual factors, require effective integration of resources, and are influenced by the management of expectations and experiences. Nevertheless, understanding and managing these complexities is critical for organisations seeking to maximise value-in-use co-creation and minimise value co-destruction (Macdonald *et al.*, 2016, p. 114).

The Integrated Quality Framework (IQF) proposed by Golder *et al.* (2012) is a comprehensive model that aims to bridge the gap between theoretical quality concepts and practical applications in business processes (Homburg *et al.*, 2017, p. 397; Woratschek *et al.*, 2020, p. 778; Akter *et al.*, 2019, p. 211). It integrates perspectives from different disciplines, including quality management, marketing and service science, to provide a holistic approach to understanding and improving quality in both production and service contexts (Golder *et al.*, 2012, p. 1). The relevance of this framework is particularly evident when applied to hybrid offerings, which inherently combine tangible and intangible elements to create value-in-use through a dynamic process of co-production and value co-creation (Böhmman and Krcmar, 2007, p. 250; Vargo and Lusch, 2004, p. 11). In the context of IQF, this involves the seamless integration of production, experience, and evaluation processes to ensure that each phase contributes positively to the overall quality and satisfaction perceived by the customer. As suggested by Golder *et al.* (2012, p. 3), each process is operationally closed, with the consequence that the IQF included three separate quality states: 'Produced Attribute Quality', 'Experienced Attribute Quality' and 'Evaluated Aggregated Quality'.

Value-in-use co-destruction occurs when interactions between the quality processes lead to negative outcomes that reduce the overall perceived value-in-use. This can be due to mismatched expectations, poor execution of quality control measures, or negative emotional responses from customers (Plé and Chumpitaz Cáceres, 2010, p. 433). In the terminology of the IQF, value co-destruction would be an outcome of a negative quality disconfirmation (Golder *et al.*, 2012, p. 11). The IQF can help to identify quality risks by providing a structured approach to monitor and adjust processes, ensuring that negative impacts are minimised and corrective actions are taken promptly (Golder *et al.*, 2012, p. 15). By understanding both value co-creation and co-destruction within the IQF, companies can better manage the quality of their interactions with customers, ensuring a higher likelihood of customer satisfaction and sustainable value creation (Macdonald *et al.*, 2016, p. 97).

This chapter aims to improve the understanding of value-in-use co-creation processes by introducing the IQF to integrate the production and delivery process of quality attributes on the supplier side with the experience-based processes of quality perception and evaluation on the customer side. In doing so, the IQF will be used, at least in part, as an explanatory framework for the empirical case study.

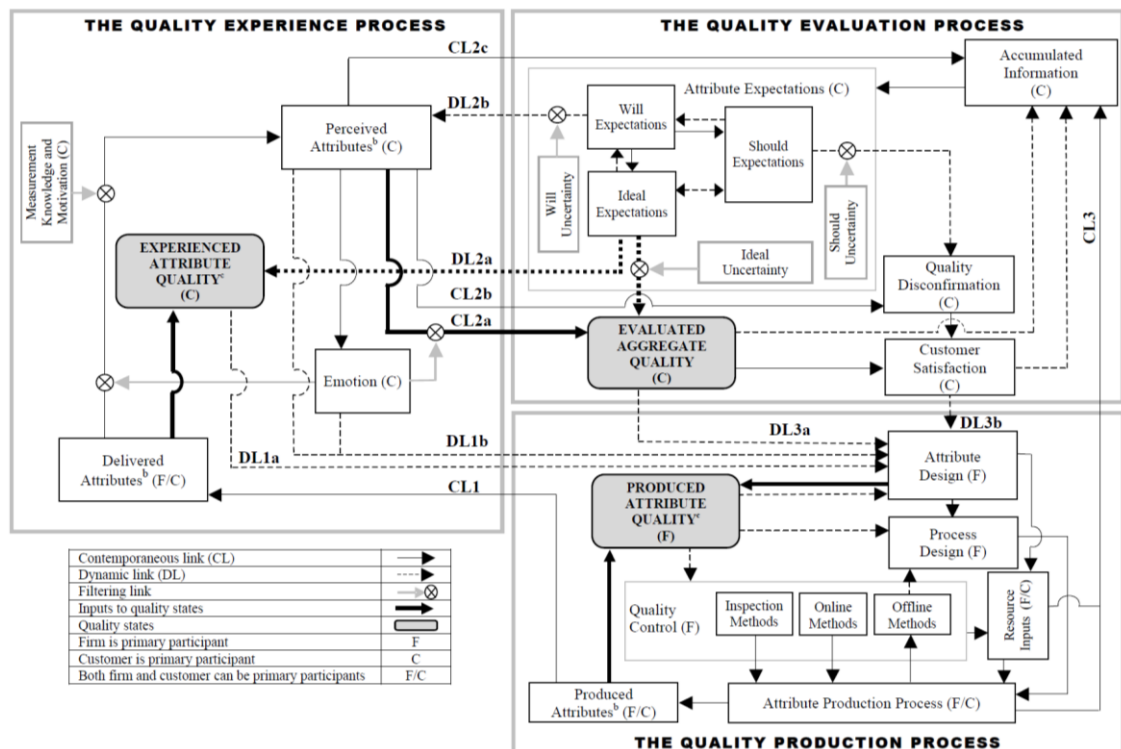


Figure 8 The Integrated Quality Framework (Golder *et al.*, 2012)

3.3.1 Foundational Premises

In the IQF the quality perception and evaluation of a business process outcome is not considered in isolation, but as the result of interactions between different actors and subprocesses. Each component of the framework influences the perceived quality and the related value-in-use, so a holistic approach is required to understand and optimise the interdependencies and synergies of processes within and between systems (Golder *et al.*, 2012, p. 5). The systematic starting point is a three-part, interdependent process perspective on quality, consisting of a 'Quality Production Process', a 'Quality Experience Process' and a 'Quality Evaluation Process' (Golder *et al.*, 2012, p. 3). Each of the three quality processes delivers a specific state, which results from the comparison between predefined requirements (a standard) and the respective realised process outcome. Here they explicitly refer to the gap model of service quality (Parasuramam *et al.*, 1985, p. 44), according to which 'quality' is not the performance of an attribute, but rather an evaluation of performance in relation to a reference standard. All three (sub-)processes are interdependent, so that the state of one process is in a causal-linear as well as in a dynamic, temporal upstream or downstream interaction with the states of the other processes. The interaction between the three quality processes, as well as the in-process coordination takes place through the exchange of information and/or resources (Golder *et al.*, 2012, p. 5). This systemic view is important because it is the basis for the following aspects of co-production and dynamic adaptation.

From a systemic perspective, creating quality is a dynamic process that is constantly evolving. Organisations need to be flexible and able to adapt to changing market conditions and customer requirements (Golder *et al.*, 2012, p. 10; Erdem and Keane, 1996, p. 3). This requires continuous monitoring and improvement of production processes to ensure that the quality produced meets current standards and expectations (Golder *et al.*, 2012, p. 5). This dynamic is closely related to the co-production of value-in-use, as it requires continuous interaction with customers to respond to their needs and fulfil their expectations (Golder *et al.*, 2012, p. 13). Customers can thus play an important role in the production process by providing feedback and inputting their requirements and contributing their resources. This can ensure that the final products are better

tailored to customers' needs and might promote higher customer satisfaction (Bettencourt, 1997, p. 399).

The IQF assumes that the perceived quality of a product or service is shaped by individual experiences and expectations (Golder *et al.*, 2012, p. 8). The experience of quality itself is therefore highly subjective and varies from customer to customer. This means that two customers may evaluate the same service differently based on their personal preferences and experiences (Grönroos, 1997, p. 409). Furthermore, the quality experience is contextual and influenced by the specific circumstances in which a product or service is used. These circumstances include the physical environment, the social interaction and the individual situation of the customer (Golder *et al.*, 2012, p. 12; Grönroos, 1997, p. 411). For example, the same service may be perceived as higher quality in a luxurious environment than in a simple one.

The quality experience is shaped by the interactions between the customer and the service provider (Brady and Cronin, 2001, p. 38). These interactions can have a direct impact on perceptions of quality and therefore value-in-use (Grönroos and Voima, 2013, p. 134). Positive interactions, such as friendly service and quick responses to customer requests, can improve perceived quality, while negative interactions, such as unfriendly staff or long waiting times, can worsen perceptions (Golder *et al.*, 2012, p. 15).

Quality evaluation is also a dynamic process whose outcome can change over time (Golder *et al.*, 2012, p. 9). It captures the formation of both the transactional judgements and the global judgements (Golder *et al.*, 2012, p. 9). The experience of disconfirmation, whether positive or negative, influences customer satisfaction and thus the perception of quality. Positive disconfirmation occurs when the experienced quality exceeds expectations, while negative disconfirmation occurs when the experienced quality falls short of expectations (Golder *et al.*, 2012, p. 11). Persistent or repeated experiences and interactions with an offering can lead to a continuous re-evaluation of quality by the customer (Cronin and Taylor, 1994, p. 127). This means that companies must constantly strive to measure and improve the perceived quality of their offerings and adapt to changing customer expectations (Golder *et al.*, 2012, p. 5).

3.3.2 The Quality Production Process

The objective of the Quality Production Process, which is managed by the company, is to convert resource inputs into produced attributes according to the specifications outlined in the attribute design and process design (Golder *et al.*, 2012, p. 5). The attribute design defines the resource inputs, the performance to be achieved, and the reliability of an offer or its subcomponents (Golder *et al.*, 2012, p. 5). Feedback from customers can be incorporated into the attribute design, provided that the company structures its processes in an open manner to accommodate customer satisfaction feedback (Golder *et al.*, 2012, p. 13).

The attribute design is realised through the process design, which determines how resource inputs are converted into produced attributes. In co-productive process designs, customer requirements and feedback are incorporated into the quality production process in a more direct and real-time manner, depending on the process type (Golder *et al.*, 2012, p. 13). The quality of the produced attribute is a consequence of the attribute's performance in relation to the specifications of the attribute design (Golder *et al.*, 2012, p. 7).

In summary, the production of an offer is a function of attribute design, process design, resource input, and quality assurance methods used (Golder *et al.*, 2012, p. 12). The success of the Quality Production Process is judged by the achieved quality state of the produced attributes. It is important to consider that the attributes produced can change between production and consumption (e.g., food losing freshness or metal rusting). Consequently, the term 'delivered attributes' is employed to differentiate between the attributes that the customer experiences and those produced by the company (Golder *et al.*, 2012, p. 5).

3.3.2.1 Quality Attributes

Golder *et al.* (2012, p. 7) developed a matrix that categorises quality attributes based on two main dimensions. The matrix helps in understanding and analysing the different aspects of quality attributes as well as their influence on customer perception and satisfaction. The typology is based on two primary dimensions: customer preference and measurement ambiguity. These dimensions combine to form a four-cell matrix that categorises attributes as universal, preferred, idiosyncratic, and a theoretically empty category due to a lack of real-world examples (Golder *et al.*, 2012, p. 8).

The first dimension, customer preference, distinguishes between attributes for which all customers have homogeneous preferences and heterogeneous preferences, which vary significantly across customers (Golder *et al.*, 2012, p. 8). Kamrad *et al.* (2017, p. 99) define customer heterogeneity as “the extent to which consumers differ in their needs and wants”. An example of homogeneous preferences is a longer lasting battery, which is universally preferred. Conversely, the taste of wine represents heterogeneous preferences, where individual tastes can vary widely. The importance of understanding customer preference heterogeneity is e.g. echoed by Jiang *et al.* (2022, p. 326) who critically discuss the effect of customer heterogeneity on product development and innovation. Another example of the influence of customer preference heterogeneity is the simulation study conducted by Sudharshan and Mild (2017). By using a two-dimensional attribute space of customer preferences, they simulate the impact of social interaction on changes in preferences as well as the heterogeneity in preferences (Sudharshan and Mild, 2017, p. 305).

The second dimension, measurement ambiguity, distinguishes between attributes that can be measured objectively with instruments (unambiguous measurement) and those that are assessed subjectively, often through human senses (ambiguous measurement). Attributes such as seat width in a train or waiting time in a fast-food restaurant can be measured unambiguously, whereas the aesthetics of a hotel lounge are judged ambiguously. Parasuraman *et al.* (1988, p. 13) discuss the challenge by highlighting that especially service quality attributes often involve subjective judgments, which can make them difficult to measure. Nevertheless, e.g. Qiu and Zhang (2024) underpin the importance for companies to track the subjective perception of quality attributes by conducting an extensive meta-analysis about how online reviews affect purchase intention (Qiu and Zhang, 2024, p. 8).

Combining these dimensions results in a four-cell typology of quality attributes (Golder *et al.*, 2012, p. 8):

- **Universal Attributes:** These attributes have homogeneous customer preferences and unambiguous measurement. Universal attributes are straightforward to measure and uniformly preferred across the customer base.

- **Preference Attributes:** These attributes have heterogeneous customer preferences and unambiguous measurement. Although these attributes are easily measurable, they have varied preferences across different customers.
- **Idiosyncratic Attributes:** These attributes have heterogeneous customer preferences and ambiguous measurement. Idiosyncratic attributes are challenging to measure objectively and have diverse preferences among customers.
- **Empty Cell:** Theoretically, this category would include attributes with homogeneous customer preferences and ambiguous measurement. According to (Golder *et al.*, 2012, p. 8), this cell remains empty because no attribute fits this description in practice. Attributes that might seem to fit, such as helpfulness, are typically composite constructs involving multiple attribute types (Golder *et al.*, 2012, p. 8).

		Measurement Ambiguity	
		Unambiguous	Ambiguous
Customer Preferences	Homogeneous	Universal Attributes <i>Examples:</i> • Download Time of a Streaming Video • Noise emission of a Vacuum Cleaner	Empty Cell <i>Examples:</i> • ?
	Heterogeneous	Preference Attributes <i>Examples:</i> • Colour of a car • Firmness of a mattress	Idiosyncratic Attributes <i>Examples:</i> • Interior of a café • Design of an urban park

Table 5 Four-cell Typology of Quality Attributes

Understanding this typology should help companies to improve attribute design and customer satisfaction strategies (Golder *et al.*, 2012, p. 16). For universal attributes, improvements are quickly noticed by customers due to their clear measurement and universal appeal, but they are also easier for competitors to imitate (Mitra and Golder, 2006, p. 243). Preference attributes require market segmentation to cater for different customer preferences, where accurate measurement and customisation are critical. Idiosyncratic attributes offer a unique opportunity to differentiate services or products as they are harder to measure and cater to individual tastes, making competitive imitation more difficult (Golder *et al.*, 2012, p. 18). This concept is consistent with the work of

Garvin (1984), who identified different dimensions of product quality and emphasised the need for different strategies to manage these dimensions effectively.

The typology of attributes overlaps with different quality processes. In the quality production process, attributes are designed and produced to meet specified standards (Golder *et al.*, 2012, p. 12). The quality experience process involves the delivery and perception of these attributes by customers, whose perceptions are influenced by their measurement knowledge, motivation, emotions and expectations (Golder *et al.*, 2012, p. 5). The quality evaluation process involves customers comparing perceived attributes with their expectations to form an overall judgement of quality and satisfaction (Golder *et al.*, 2012, p. 10). Each quality process involves different roles and feedback mechanisms that help companies to refine and improve attribute design and performance (Golder *et al.*, 2012, p. 6). However, there are three key trade-offs in optimising attributes (Golder *et al.*, 2012, p. 16).

First, improvements in universal attributes are more readily recognised by customers because these improvements are easier to measure and communicate. In addition, customers in the same segment value these attributes similarly due to homogeneous preferences (Zeithaml *et al.*, 2001, p. 120). However, these same characteristics also make it easier for competitors to replicate strategies based on universal attribute improvement, leading to a deterioration of competitive advantage (Shahin and Zairi, 2009, p. 1006). In contrast, changes in idiosyncratic attributes are less immediately apparent to customers because their measurement is more ambiguous and preferences vary widely among customers (Rust and Oliver, 2000, p. 89). This allows firms to establish relationships with their customers by focusing on the affective factors of idiosyncratic attributes because they are harder for competitors to imitate (Homburg *et al.*, 2006, p. 29).

Second, firms that primarily offer products with universal attributes tend to have shorter product lines and serve fewer customer segments because homogeneous preferences reduce the need for extensive segmentation (Sudharshan and Mild, 2017, p. 315). As preference attributes become more important, it becomes necessary for firms to divide markets into narrower segments in order to better meet the diverse needs and preferences of different

customer groups (Sudharshan and Mild, 2017, p. 316; Golder *et al.*, 2012, p. 16).

Third, when firms produce superior attributes, it is beneficial for them to assist customers in improving their knowledge and motivation regarding attribute measurement (Golder *et al.*, 2012, p. 16). These efforts help customers to recognise and appreciate the benefits of the firm's attributes (Alba and Hutchinson, 1987, p. 412). If increasing customers' measurement knowledge and motivation is too costly, firms can alternatively promote expert evaluations to highlight the superiority of their attributes (Ketelaar *et al.*, 2015, p. 661). By carefully managing these trade-offs, firms can strategically select attributes that enhance customer perceptions and maintain competitive advantage.

3.3.2.2 Quality control

In the context of the Quality Production Process, organisations employ a variety of quality assurance methods to monitor, control, and improve internal production processes. These methods are essential to ensure that the quality of the produced attributes meets the design specifications outlined during the attribute design phase (Onwubolu, 2012, p. 63). The three main categories of quality control methods employed in the IQF are offline methods, online methods, and inspection methods (Golder *et al.*, 2012, p. 12).

The utilisation of offline methods involves the implementation of experiments and simulations as part of the process design. These methods are employed with the objective of ensuring and, if necessary, improving the quality of the produced attributes by making changes to the process design prior to the commencement of actual production. Offline methods are particularly pertinent to universal attributes of the process output, as attribute performance does not require adjustment to accommodate individual customer preferences (Golder *et al.*, 2012, p. 13). These methods assist in the identification of potential issues and the optimisation of processes within a controlled environment prior to full-scale production (Kackar, 1989, p. 52).

Online methods refer to the continuous or random monitoring of the quality of produced attributes during the production process. These methods enable real-time adjustments to the production process, ensuring that the attributes meet the desired specifications while production is ongoing (Gong *et al.*, 1997, p.

1018). Online methods become increasingly important when dealing with preferential and idiosyncratic attributes, as companies – for example during co-production of hybrid offerings – must align attribute performance with heterogeneous customer preferences (Golder *et al.*, 2012, p. 13). The real-time feedback mechanism facilitates the maintenance of consistent quality and the prompt addressing of any deviations.

Inspection methods entail measuring resource inputs or produced attributes and rejecting those that fail to meet the specified quality standards (Mayer *et al.*, 2004, p. 1066). Inspection methods can be applied to all types of attributes. However, they are generally not suitable for services that are produced and consumed simultaneously. Instead, they are more applicable in scenarios where there is a delay between production and consumption or use (Golder *et al.*, 2012, p. 12). For example, in hybrid offerings, inspection can be performed either by the company or by customers who participate through co-production. This method ensures that only offers that meet the quality criteria are used by customers, thereby guaranteeing no negative quality disconfirmation, higher value-in-use, and customer satisfaction.

Offline and online quality control methods enable companies to gather feedback and insights from customers, which can be used to make immediate adjustments to products, thereby enhancing the co-creation process (Bitner *et al.*, 1997, p. 194). Inspection methods, in particular when involving customers, provide an additional opportunity for interaction and value creation, as customers actively participate in ensuring the quality of the final product (Bettencourt, 1997, p. 386). With the advent of new technologies, particularly the integration of AI, these methods have become even more effective in maintaining high-quality production standards (Johanesa *et al.*, 2024, p. 978).

3.3.2.3 Co-production of Attributes

The concept of co-production is fundamental to the IQF framework as well as the understanding of the dynamics of hybrid offerings (Golder *et al.*, 2012, p. 13). Hybrid offerings inherently require a collaborative approach, with both the provider and the customer playing crucial roles in the production process (Payne *et al.*, 2008, p. 85). Collaboration can occur in various subprocesses, including design, development, and even production, making the customer a co-

producer of the final product or service (Payne *et al.*, 2008, p. 92). The co-production of hybrid offerings is of vital importance for the customisation of these offerings to meet specific customer needs and preferences, thereby influences the perceived value-in-use and customer satisfaction (Vargo and Lusch, 2008, p. 8). From a quality management perspective, the integration of customer feedback and participation into the production process can significantly enhance the quality and relevance of the final product (Golder *et al.*, 2012, p. 14).

During the design phase, customers contribute by providing their preferences and specifications. This participation ensures that the attributes of the final product align closely with customer expectations (Prahalad and Ramaswamy, 2004, p. 5). For example, collaborative design platforms facilitate interaction, allowing customers to visualise and modify product features in real-time. In the development phase, customers may be involved in iterative testing and feedback cycles. This collaboration helps refine the product, ensuring it meets the desired standards of functionality and quality (Hippel, 2010, p. 121). The continuous feedback loop between the customer and the provider is critical for addressing any issues that arise during development (Gustafsson *et al.*, 2012, p. 315).

Customers can also be involved directly in the production process. This can range from assembling parts to finalising the product. Such participation not only enhances the customer's sense of ownership but also ensures that the final product is customised to their specific needs (Etgar, 2008, p. 98). Once the product has been delivered, customer feedback is crucial to identify areas for process improvement. This ensures that the outcomes of business processes align with changing customer needs and market conditions (Golder *et al.*, 2012, p. 15). Nevertheless, the coordination between the customer and the provider remains a challenging task (Payne *et al.*, 2008, p. 88; Golder *et al.*, 2012, p. 10), as the involvement of customers in the production process can require significant resources, including time, effort, and technology. It is imperative that companies ensure they have the requisite resources to support customer participation without compromising the efficiency of the production process (Etgar, 2008, p. 100).

Also, guaranteeing uniform output quality across all co-produced offerings is often demanding, particularly when customisation levels are high (Etgar, 2008, p. 101). The reason for this is that the integration of customers into the production process is always a source of uncertainty (Sichtmann *et al.*, 2011, p. 3). Therefore, providers must implement robust quality control mechanisms to maintain the desired standards of quality (Sichtmann *et al.*, 2011, p. 5).

3.3.3 The Quality Experience Process

3.3.3.1 Experienced Attribute Quality

The Quality Experience Process is realised when companies deliver attributes through their offerings that can be experienced by the customer (Golder *et al.*, 2012, p. 3; Waqas *et al.*, 2021, p. 136). In the context of the IQF, 'Experienced Attribute Quality' is understood as the relative performance of a delivered attribute in comparison to the customer's ideal expectation of that attribute (Golder *et al.*, 2012, p. 5). The difference between delivered and perceived attribute quality is essential for understanding customer satisfaction in the context of service and product quality. Delivered attribute quality refers to the objective attributes and performance provided by a company through its products or services (Mitra and Golder, 2006, p. 242). This encompasses the quantifiable and objective characteristics of a product or service provided. Consequently, the delivered performance of an attribute is defined as the extent or level of its functionality, which may vary across offerings (Zeithaml, 1988, p. 14). From the perspective of the company, the performance of attributes is often evaluated against predefined standards or specifications set by the industry or the company itself. However, absolute performance alone does not constitute the quality state of Experienced Attribute Quality (Golder *et al.*, 2012, p. 5), as the delivered quality attributes must be aligned with the customer's ideal expectations. It is crucial to recognise that the quality state of Experienced Attribute Quality does not necessitate a conscious or unconscious evaluation process on the part of the customer. Evaluation only occurs during the Quality Evaluation Process, which, as an outcome, delivers the quality state of Evaluated Aggregate Quality (Golder *et al.*, 2012, p. 10). The outcome of the second quality process can better be understood as a kind of 'benchmarking', in which the delivered attribute quality is compared with a construct of ideal value-in-use expected by the customer. This is a more technical quality status, which

at least theoretically allows the delivered service to be categorised within the total quality range expected by the customer. Due to its constructional nature, the actual experienced quality of attributes is difficult to measure. Nevertheless, firms should at least try to measure both the performance of the quality attributes and the 'ideal' expectation of customers (Golder *et al.*, 2012, p. 8; Karpen *et al.*, 2012, p. 29), for example through market research (Becker and Jaakkola, 2020, p. 641). However, the complexity of the task increases in line with the variability of the quality attribute experience, which is dependent on the extent to which the customer expectations evolve (McColl-Kennedy *et al.*, 2015, p. 260).

3.3.3.2 Perceived Quality Attributes

The experience provides customers with the opportunity to perceive an attribute, although it does not guarantee that they will perceive each attribute accurately or that they will perceive it at all (Golder *et al.*, 2012, p. 5). In practice, not all of the delivered attributes are perceived by the customer (Becker and Jaakkola, 2020, p. 639). Furthermore, individual quality perception is highly selective due to filters and preexisting information. These filters include emotions as well as the customer's ability and motivation to engage with the delivered attributes (Bitner, 2003, p. 63; Golder *et al.*, 2012, p. 9).

The quality of an offering's attribute as perceived by the customer represents the central input for the Quality Evaluation Process. Overall, there is a transition from what customers experience to what they perceive, whereas past experiences can influence actual perception (Lemon and Verhoef, 2016, p. 78). It is not possible for customers to perceive all the attributes they experience, and they will typically fail to identify some attributes (N. Bolton *et al.*, 2014, p. 259). In conclusion, the degree of correspondence between delivered and perceived attributes is influenced by a number of factors, including the specific nature of an attribute, measurement knowledge, measurement motivation, existing emotional states and customer expectations (Golder *et al.*, 2012, p. 14).

3.3.3.3 Measurement Motivation

Measurement motivation refers to the customer's desire to evaluate the performance of an attribute with minimal bias and variance compared to more objective measures (Golder *et al.*, 2012, p. 9; MacInnis *et al.*, 1991, p. 34). In

general, higher motivation indicates that customers will devote resources to evaluating attribute performance, especially if they are involved in a co-production process (Bettencourt, 1997, p. 386; Golder *et al.*, 2012, p. 13). As with measurement knowledge, motivation may be less important when attribute information is easy to evaluate and more important when it is difficult to evaluate (Dodds *et al.*, 1991, p. 317). Measurement motivation influences whether and to what extent the delivered attributes become perceived attributes for a customer (Verleye, 2015, p. 336).

3.3.3.4 Customer Emotion

The emotional states of customers act as another influencing factor or filter between delivered and perceived attributes (Golder *et al.*, 2012, p. 9; Bitner, 2003, p. 63). In the IQF, they refer to the feelings evoked in customers during the Quality Experience Process (Tyng *et al.*, 2017, p. 3). These emotions are not attributes in and of themselves; rather, they result from the perception of attributes and influence both the perception and evaluation of these attributes (Golder *et al.*, 2012, p. 9; Pansari and Kumar, 2017, p. 298). Emotions can influence the Quality Experience Process in three ways (Golder *et al.*, 2012, p. 9).

1. Emotions can lead to a confirmatory bias, which causes customers to perceive and evaluate attributes that confirm their emotional state while neglecting non-confirming attributes (Pansari and Kumar, 2017, p. 304).
2. Negative emotions can make customers' observations myopic, resulting in a failure to perceive the attributes provided by the firm (Hui and Bateson, 1991, p. 176). Customers in a negative mood might become overly critical, leading to a lack of perception or negatively distorted perception of attributes offered by the firm (Mattila and Enz, 2002, p. 274).
3. Positive emotions can lead to holistic judgements where customers underweight all or individual attributes when evaluating quality (Isen, 2001, p. 77; Bagozzi *et al.*, 1999, p. 197).

3.3.4 The Quality Evaluation Process

The Quality Evaluation Process is fundamental for understanding how customers perceive and evaluate the quality of a product or service. This process involves the comparison of perceived attributes of an offering with customer expectations to form a comprehensive judgement about quality, which subsequently influences customer satisfaction (Cronin and Taylor, 1992, p. 59; Brady and Cronin, 2001, p. 37). Quality evaluation is not linear process but a complex interplay of various factors, including prior customer experiences, the nature of the offering, and the contextual environment in which the offering is consumed (Rust and Huang, 2014, p. 211). According to the IQF, quality evaluation is primarily the domain of customers, focusing on how they compare an offering's perceived attributes with their expectations to form summary judgements of quality and satisfaction (Golder *et al.*, 2012, p. 2). The perception is influenced by a range of factors, including the customer's prior knowledge, emotions, measurement motivation and situational context (Lemon and Verhoef, 2016, p. 76). The aggregation of these perceived attributes into an overall quality judgement is contingent on the customer's expertise and the specific characteristics of the attributes (Parasuraman *et al.*, 1988, p. 16).

In general, customer expectations are shaped by a multitude of sources, including personal experiences, feedback from other customers, marketing communications, media reports and other inputs (Zeithaml *et al.*, 1993, p. 5; Lemon and Verhoef, 2016, p. 70). According to the IQF, expectations can be categorised into three distinct types: 'will' expectations, 'should' expectations, and 'ideal' expectations (Golder *et al.*, 2012, p. 10). The interaction of these expectation types forms a complex framework for evaluating quality, although the opaque nature of human cognitive processes makes it challenging to assess these interactions both for researchers as well as for companies (Lemon and Verhoef, 2016, p. 85; Golder *et al.*, 2012, p. 18).

Quality disconfirmation is another crucial parameter in the Quality Evaluation Process, whereby perceived performance is compared with customer expectations (Golder *et al.*, 2012, p. 11). This comparison results in either positive or negative disconfirmation (Homburg *et al.*, 2006, p. 21). Positive disconfirmation occurs when the perceived quality exceeds customer expectations, which leads to higher levels of satisfaction (Oliver, 1980, p. 466).

Conversely, negative disconfirmation arises when the perceived quality falls short of expectations, leading to dissatisfaction and potential negative repercussions for customer retention (Parasuraman *et al.*, 1988, p. 30).

3.3.4.1 Customer expectations

Customer expectations significantly influence the perceived quality of an offering, a crucial determinant of customer satisfaction (Minnema *et al.*, 2016, p. 255; Golder *et al.*, 2012, p. 12; Zeithaml *et al.*, 1993, p. 10). According to Golder *et al.* (2012, p. 7), expectations serve as a reference point against which actual performance is measured. These expectations are shaped by interactions with a product or service, marketing communications, word of mouth, and personal needs or preferences. Furthermore, they adapt to customer learning and can change over time (Golder *et al.*, 2012, p. 10; Mitra and Golder, 2006, p. 243).

Golder *et al.* (2012, p. 10) claim that their model is the first to integrate 'will', 'should' and 'ideal' expectations. In their IQF, uncertainty filters play a pivotal role in moderating the impact of disparate customer expectations on quality perception and evaluation, as these filters are indispensable for comprehending the variability in customer expectations and their influence on the perception and assessment of attributes (Golder *et al.*, 2012, p. 10).

'Will' expectations

'Will' expectations are the attributes and performance levels that customers anticipate based on their prior experiences with a product or service and other accumulated information available to them (Parasuraman *et al.*, 1988, p. 17). They influence perceived attributes in several ways (Golder *et al.*, 2012, pp. 10–11). For example, they induce a confirmatory bias where customers' observations align with their expectations (Boulding *et al.*, 1993, p. 24). Furthermore, in situations where customers have limited measurement knowledge or motivation, they rely on their 'will' expectations instead of directly assessing the delivered attributes (Golder *et al.*, 2012, p. 11). 'Will' uncertainty pertains to the variability in customers' expectations regarding the performance of a specific attribute. High uncertainty indicates that customers are unsure about the performance level they should expect from an attribute. This can arise from inconsistent experiences or unreliable information. In such cases, customers tend to rely more heavily on their actual perceptions than on their

expectations to reduce uncertainty and make informed decisions (Golder *et al.*, 2012, p. 11). For instance, if a customer lacks a clear understanding of the speed with which an internet service should operate, they will place greater importance on their actual experience in evaluating satisfaction. This concept is supported by Boulding *et al.* (1999, p. 469), who found that expectation-disconfirmation processes significantly influence customer satisfaction, highlighting the role of measurement uncertainty in shaping perceptions.

'Should' expectations

'Should' expectations are normative and reflect what customers believe should be delivered in a distinct product or service category based on societal norms, standards, the price paid, and general fairness (Bicchieri and Xiao, 2009, p. 192; Zeithaml *et al.*, 1993, p. 6). These expectations are shaped by cultural norms, legal standards, industry benchmarks, and personal values. 'Should' expectations serve to establish the benchmark for acceptable performance (Golder *et al.*, 2012, p. 11). If a service fails to meet these expectations, customers may perceive it as unacceptable, leading to dissatisfaction. Therefore, the concept of 'should' expectations serves as a reference point against which perceived attributes are compared to determine quality disconfirmation (Golder *et al.*, 2012, p. 11). 'Should' uncertainty refers to the variability in customers' normative expectations, which are based on notions of equity and fairness. This uncertainty arises when customers have differing opinions on what performance level an attribute should provide, based on market standards and competitive offerings. High 'Should' uncertainty indicates that customers have less consistent normative expectations, which influences the role of these expectations in quality disconfirmation. When uncertainty is high, customers tend to reduce the weighting of these normative expectations in their evaluations. For example, an infrequent online shopper has high 'should' uncertainty regarding delivery time and product quality. When his jacket arrives within a week and matches the description, his satisfaction might be high. Due to his inconsistent normative expectations, he places less weight on these 'should' expectations, focusing instead on the fulfilment of basic predictive expectations. Among others, Boulding *et al.* (1999, p. 480) highlight the importance of 'should'-expectations in shaping consumer satisfaction and

emphasise the need for service providers to understand and manage these expectations to improve

'Ideal' expectations

'Ideal' expectations represent the optimal level of performance that customers would like to achieve in a category of products or services, reflecting their desires and aspirations (Zeithaml *et al.*, 1993, p. 2), serving as benchmarks for evaluating all offerings within a category. It is possible that 'ideal' expectations may evolve as customers learn about new products and adjust their preferences accordingly (Golder *et al.*, 2012, p. 12). 'Ideal' expectations are important for the Quality Evaluation Process as they are a measurement input for Evaluated Aggregate Quality.

'Ideal' uncertainty pertains to the variability in customers' ideal expectations for an attribute. This uncertainty arises when customers hold disparate notions of the optimal performance of an attribute, which is particularly pertinent for attributes that are highly contingent on personal preferences (Golder *et al.*, 2012, p. 11). When 'Ideal' uncertainty is high, the significance of ideal expectations in shaping aggregated quality evaluations is diminished. Customers exhibit reduced certainty about what they should ideally expect, thereby attenuating the influence of these expectations on their overall quality assessment. For example, a customer is unsure about ideal smartphone specifications, including features and performance. When she buys a new phone that performs adequately and meets basic needs, her satisfaction is high. Due to her high 'ideal' uncertainty, the influence of her ideal expectations on her overall quality evaluation is diminished, and she focuses more on the fulfilment of basic functional expectations.

Golder *et al.* (2012, p. 11) posit that in the IQF the three types of expectations can be considered distinct yet interrelated. 'Should' expectations diverge from 'ideal' expectations due to the incorporation of normative beliefs regarding the performance levels that competing offerings should deliver. These expectations are shaped by customers' experiences and perceptions of fairness within a competitive set. Consequently, 'should' expectations serve as a normative benchmark that encompasses the competitive landscape, whereas 'will' expectations are specific to a particular offering. Furthermore, 'should'

expectations differ from the 'will' expectations of a particular offering. The former encompasses the entire competitive set within a category, whereas the latter is specific to a single offering.

3.3.4.2 Evaluated Aggregate Quality

The Evaluated Aggregate Quality represents the central process outcome or 'State of Quality' of the Quality Evaluation Process within the IQF (Golder *et al.*, 2012, p. 6). Methodologically, it synthesises individual attribute ratings of customers to produce a comprehensive evaluation of the overall quality of an offering (Golder *et al.*, 2012, p. 5). The Evaluated Aggregate Quality is derived from the aggregation of perceived attributes that are influenced by customer experiences, measurement knowledge, motivation and emotions (Golder *et al.*, 2012, p. 10). Recent studies have emphasised the significance of comprehending Evaluated Aggregate Quality in order to enhance customer satisfaction and facilitate effective quality management. For instance, Morano *et al.* (2018) investigate the various quality attributes which form the total evaluation of street food quality.

The process of forming Evaluated Aggregate Quality is comprised of several distinct elements. Customers evaluate perceived quality attributes (Golder *et al.*, 2012, p. 4) against expected 'ideal' standards. These expectations represent the highest standards that customers hold for an offering in a particular category and are inherently customer-specific, reflecting diverse preferences (Golder *et al.*, 2012, p. 9).

The perceived attributes are filtered through prior experience, measurement knowledge/motivation and emotion (Golder *et al.*, 2012, p. 9). Therefore, the accuracy of these perceptions can vary considerably between customers, which in turn affects the overall quality judgement (Bolton and Drew, 1991, p. 381).

The aggregation of individual attribute ratings into an overall quality judgement is influenced by the expertise of the customer and the nature of the attributes. Universal attributes, which are readily quantifiable and exhibit homogeneous preferences, are typically evaluated independently (Golder *et al.*, 2012, p. 10). In contrast, attributes with subjective and varied preferences are frequently aggregated into more encompassing judgments (Parasuraman *et al.*, 2005, p. 226). Emotions act as a filter that can bias customer perceptions and

evaluation. The influence of positive or negative emotions experienced during interactions with the offer is a significant factor (Golder *et al.*, 2012, p. 9). Furthermore, customers with greater knowledge and motivation to assess attribute performance tend to provide more accurate evaluations, thereby enhancing the reliability of Evaluated Aggregate Quality (Golder *et al.*, 2012, p. 9).

The uncertainty associated with the concept of 'ideal' expectations also moderates their influence on Evaluated Aggregate Quality (Golder *et al.*, 2012, p. 11). A reduction in the uncertainty associated with these expectations will result in a greater influence on the ratings provided, leading to more consistent evaluations. In summary, Evaluated Aggregate Quality provides a comprehensive measure of the overall quality of an offering as perceived by customers. It integrates individual attribute evaluations relative to 'ideal' expectations. Furthermore, it is not just a state but also an important determinant of customer satisfaction. This distinguishes it from the other two quality states.

3.3.4.3 Quality Disconfirmation

Quality Disconfirmation is the summary of the perceived attribute performance of an offering relative to the customer's 'should' expectation across all attributes (Golder *et al.*, 2012, p. 11). It occurs when there is a discrepancy between what customers believe a product or service should provide and the actual performance they experience.

Golder *et al.* (2012, p. 11) emphasise that 'should' expectations serve as a reference level for determining quality disconfirmation because they capture additional norms such as perceived fairness and equity, which are crucial for customer satisfaction. These norms extend beyond the product-based norms found in 'will' and 'ideal' expectations. Consequently, expectations of 'what should be' amplify the impact of quality disconfirmations on customer satisfaction, as the performance of an attribute is more likely to deviate from the expectations of competing offerings within a category than from an offering-specific 'will' expectation (Golder *et al.*, 2012, p. 11).

A number of seminal papers have contributed to the understanding of quality disconfirmation. Oliver (1980) introduced the Expectation-Disconfirmation

Paradigm, which suggests that customer satisfaction is influenced by the discrepancy between expected and perceived performance. Furthermore, Parasuraman *et al.* (1988) developed the SERVQUAL model, which assesses service quality based on the discrepancy between customer expectations and perceptions. Research by Bitner *et al.* (1990, pp. 77–78) also supports the concept of quality disconfirmation by demonstrating how service encounters affect overall customer satisfaction through perceived performance and disconfirmation of expectations. Similarly, Anderson and Sullivan (1993, pp. 127–128) found that satisfaction and repurchase intentions are significantly affected by the disconfirmation of product performance expectations.

3.3.4.4 Customer satisfaction

In the IQF framework, customer satisfaction is the result of the comparison between the Evaluated Aggregate Quality and Quality Disconfirmation (Golder *et al.*, 2012, p. 12). This is consistent with the notion that perceived quality is a key determinant of satisfaction, as highlighted by Parasuraman *et al.* (1988, p. 16). A customer's aggregation level for quality disconfirmation matches the aggregation level for Evaluated Aggregate Quality, facilitating a straightforward comparison when forming customer satisfaction (Golder *et al.*, 2012, p. 12). This process of comparison is supported by the expectancy-disconfirmation theory, which suggests that satisfaction arises when perceived performance meets or exceeds expectations (Oliver, 1980, p. 460).

It can be observed that positive Quality Disconfirmation, which occurs when actual performance exceeds expectations, increases satisfaction, whereas negative Quality Disconfirmation, which happens when performance falls below expectations, decreases satisfaction (Golder *et al.*, 2012, p. 12). This finding is consistent with Churchill and Surprenant (1982, p. 493), who explained the impact of disconfirmation on satisfaction levels. When perceived attributes are consistent with the 'should' expectations, there is no change in customer satisfaction beyond the effect of the evaluated aggregate quality level that already exists (Golder *et al.*, 2012, p. 12). This emphasises the importance of accurately setting and meeting expectations in order to maintain a baseline level of customer satisfaction, as discussed by Cadotte *et al.* (1987, pp. 306–307). This is further supported by Anderson *et al.* (1994, p. 54), who also emphasised the relationship between perceived value and customer

satisfaction. However, different evaluations of overall quality can result in the same level of satisfaction when expectations differ, supporting the argument that customer satisfaction depends on the ratio of benefits received relative to the costs incurred (Golder *et al.*, 2012, p. 12).

3.4 Consolidation of Frameworks and Proposed Conceptual Model

As a substantial outcome of the discussion of the different theories, an effort should be made to propose a 'Consolidated Quality Framework (CQF)' that integrates the SDL, the Sphere Model and the IQF. In terms of its structural composition, the framework is based on an aggregated version of the IQF. The discussion chapter considers whether the proposed reduction in the complexity of the IQF is beneficial for the further study of hybrid offerings, arguing that the original version is based on numerous assumptions, the veracity of which would need to be independently established. This is particularly relevant in the context of the applied 'will/should/ideal' expectation model and its associated implications, e.g. regarding the influence of uncertainty.

The individual elements of the CQF are linked by connectors in a similar way to the IQF. The thin black line follows the central process flow, which leads from co-production via the quality attributes to customer satisfaction. The thin dashed line indicates linkages between individual elements. The thicker grey arrows indicate the sources that influence the three quality states of the framework, analogous to the IQF. Notwithstanding its aggregated structure, the proposed framework remains consistent with the fundamental assumptions of the IQF while simultaneously establishing a connection to the Sphere Model and the SDL. As a significant addition to the IQF, the CQF incorporates a linkage between customer satisfaction and the Attribute Co|Production Process. The rationale is that hybrid offerings during the co-production phase allow for direct customer feedback, thereby enabling providers to adapt the delivered quality attributes in real time when the perceived quality does not meet customer expectations.

It is also important to consider that tangible resources are often utilised exclusively by the provider, either within the Joint sphere or solely within the Provider sphere. In contrast, intangible resources are always provided by the customer within the Joint Sphere. Nevertheless, there are occasions when the

customer may also furnish their own tangible resources for use in the process. Such resources may be employed exclusively within the Joint Sphere, as exemplified by the provision of hair by the customer for a haircut. Alternatively, they may be employed as resources for a production process that occurs exclusively within the Provider Sphere. For instance, an optician may replace a broken glass in a customer's eyeglasses without the customer's involvement. Consequently, several interrelated production sub-processes may be initiated, contingent upon the specific hybrid offering in question.

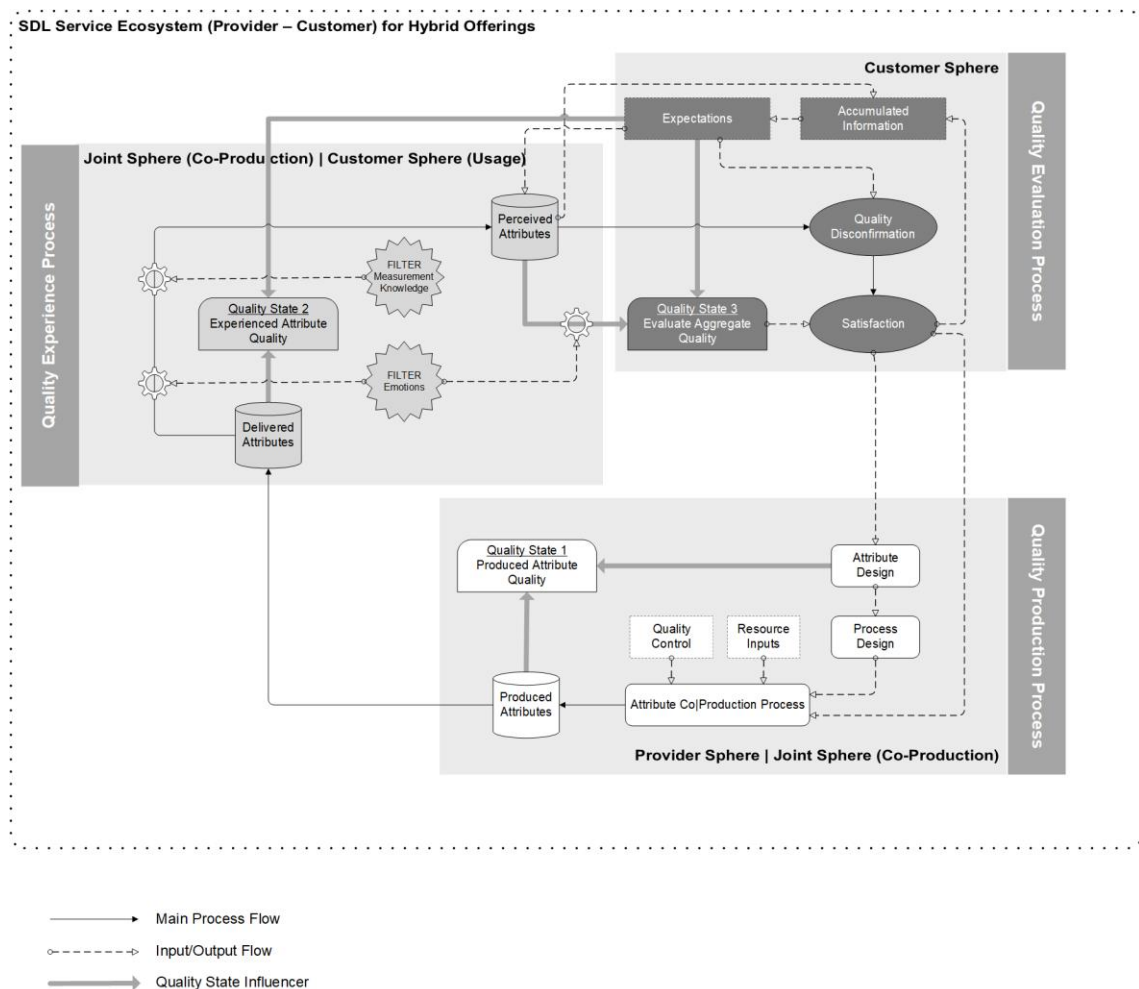


Figure 9 Consolidated Quality Framework

In the context of the Quality Experience Process of Hybrid Offerings, it is appropriate to distinguish between two sub-processes: one occurring during usage and the other occurring during the co-production process. It can thus be seen that the experience of quality attributes occurs in both the Joint Sphere and during usage in the Customer Sphere. In the Joint Sphere, a synchronous feedback loop between the customer and the provider is feasible; in contrast, feedback from the Customer Sphere to the Provider Sphere will be

asynchronous. The two iterations of the quality experience process provide the foundation for an Aggregated Quality Evaluation and contribute to the co-creation of value-in-use. If these assumptions are accepted, it follows that two successive states of Evaluated Aggregate Quality exist during the provision of hybrid offerings.

The proposed CQF offers an illustrative response to the question of how the processes of co-creation of value-in-use of hybrid offerings can be embedded and interpreted within the existing theoretical frameworks from marketing and quality management. The interplay between the Provider, Joint and Customer Spheres and the three quality processes of the IQF facilitates comprehension of the dynamic value-in-use co-creation process, which is responsive to customer needs and adaptable to changing market conditions. This approach not only enhances the customer experience but also has the potential to drive innovation and competitiveness.

Nevertheless, although customers are the ultimate beneficiaries of the value-in-use of an offering, the concept of 'co-production' in the CQF should not be understood as implying that the attribute-perceiving customer is the sole authority on quality evaluation: the produced, delivered, and perceived quality of an offering is not static; rather, it is a 'dynamic state', evolving over time due to technological advances, market shifts, and shifting customer needs and expectations (Goetsch and Davis, 2013, p. 4). The customer, as a resources-integrating actor, engages in a complex feedback loop of perception and re-perception, thereby continuously co-creating value-in-use derived from the perceived quality attributes. Conversely, providers contribute to the co-creation of value-in-use by defining quality attributes and process setups based on their perception and interpretation of customer behaviour and other actors in the given market. Bruhn (2013, pp. 32–33) also critically posits that the customer perspective should not be the sole authority for quality definition and measurement. In his analysis of service quality assurance, Bruhn (2000, p. 29) suggests that the delivered attribute quality of an offering can be better understood as determined by a 'field of force', which is formed by the needs and requirements of customers, competitors, and the capabilities and strategies of the provider itself. It can be reasonably deduced that those tasked with the

provision of services have the potential to exert influence over this field of force, provided that they are able to comprehend the underlying processes.

From a more macro-level perspective, hybrid offerings exemplify the cooperative value-in-use creation principles outlined in the service-dominant logic. In light of the above, it can be seen that SDL, with its axioms and premises, serves as a foundational framework for the CQF. This is based on the understanding that the interactions between service providers and customers form part of a wider service ecosystem.

The subsequent sections of this work do not aim to provide comprehensive validation of the presented draft. The empirical research will focus on insights gained from analysing perceived attribute quality, as documented in online customer reviews. Figure 10 illustrates the relevant section of the CQF, which is highlighted in red.

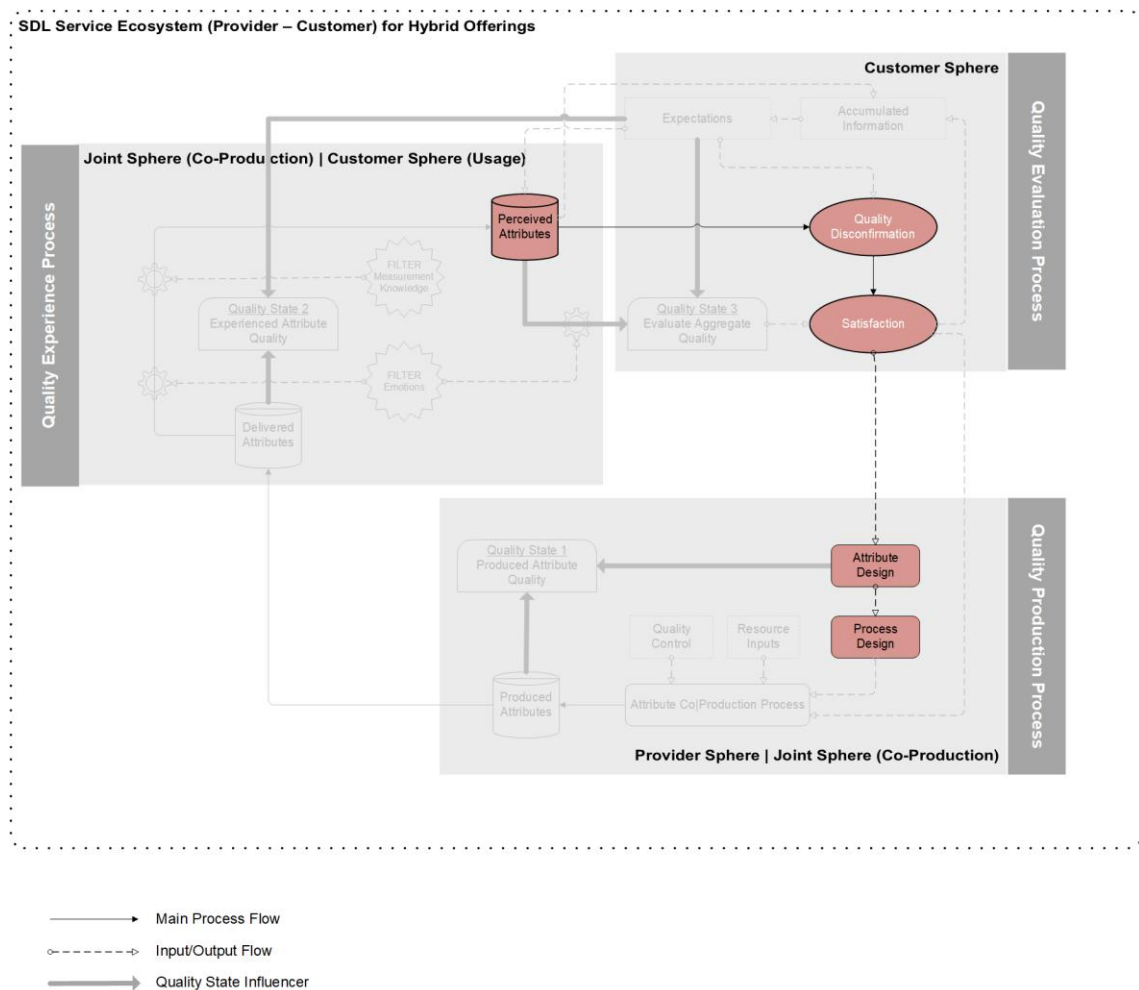


Figure 10 CQF Elements of Empiric Research

The associated business-oriented research aim is to gain insights into the perception and relevance of quality attribute from the customer perspective. From the perspective of theoretical research, the presented CQF draft should contribute to the further scientific discourse regarding the peculiarities of hybrid offerings.

3.5 Conclusion

The objective of this chapter was to provide a comprehensive response to RQ1 by incorporating the refined definitions of value-in-use and hybrid offerings into well-established theoretical models from marketing and quality management. This approach involved integrating these concepts with the principles of co-productive business process design. This integration has resulted in a comprehensive conceptual framework for understanding the co-creation of value-in-use in hybrid offerings.

Service-Dominant Logic was examined in depth, with its axioms and premises elucidated, and its relevance to hybrid offerings established. Consistent with the definition proposed in Chapter 2, SDL emphasises the importance of operant resources and dynamic interactions between actors in creating value-in-use. The Integrated Quality Framework was introduced as a complementary mid-range theory that addresses quality management in production and service contexts. Its application to hybrid offerings highlights the importance of aligning the provider's resources and capabilities with those of the customer – in both tangible and intangible forms – as well as with customer expectations.

A critical analysis of SDL and IQF confirmed that value-in-use co-creation is an inherently dynamic and interactive process involving the integration of resources from multiple actors. Discussion of value co-creation and co-destruction further emphasised the importance of collaborative processes, as well as the combined impact of operant and operand resources on customer perceptions of value. The Sphere Model was incorporated to provide a more detailed, process-oriented understanding of how value-in-use emerges through interactions in the provider, joint and customer spheres.

In summary, the chapter provides a comprehensive overview of how hybrid offerings facilitate the co-creation of value-in-use. It combines the Sphere

Model, SDL and IQF to create a Consolidated Quality Framework. This framework emphasises the significance of continuous interaction and adjustment between providers and customers, and the critical role of customer experiences in shaping value-in-use. The development of this integrated conceptual model fully addresses RQ1, with Chapters 2 and 3 providing the theoretical foundation for the empirical research and enabling a systematic examination of how value-in-use is co-created in the context of the German optician industry. Chapter 7 revisits the potential advantages and limitations of applying the CQF to the conceptualisation of hybrid offerings.

4. Research Methodology

4.1 Methodological Epistemological Presumptions

4.2 Research Philosophy

4.3 Research Strategy

4.4 Data Processing: Collecting the Data

4.5 Data Processing: Coding the Data

4.6 Justification of the Methodology

4.7 Ethical Considerations concerning Data Privacy

4.8 Conclusion

4.9 Researcher Reflections

In its broadest sense, research can be defined as a systematic process of acquiring new information with the objective of contributing to the accumulation of scientific knowledge (Saunders *et al.*, 2012, p. 5). In the context of business research, this typically involves solution-oriented investigations that assist practitioners in addressing business challenges (van Aken, 2005, p. 19). As observed by Bell *et al.* (2022, p. 21), the combination of deductive and inductive methods is a common approach to business research. A dual approach entails the testing of hypotheses through empirical means, followed by the utilisation of the resulting data to inform and refine the theoretical framework that underlies the research project. Saunders *et al.* (2012, p. 12) characterise this duality as 'applied research', which aims to generate practically relevant knowledge for managers, presented in an accessible and actionable format.

A systematic approach to research is essential for both deductive and inductive perspectives. It ensures that the premises and methodologies employed are transparent, reproducible, and open to scrutiny by other researchers. This quality distinguishes scientific knowledge from that which is derived from common sense, which is often based on personal beliefs rather than objective evidence (Ghauri and Grønhaug, 2005, pp. 10–13).

This chapter presents the research methodology that forms the foundation of this study. It outlines the methodological choices and processes that were implemented to investigate the co-creation of value-in-use through hybrid offerings in the context of the German optician industry. The chapter is structured in a way that guides the reader through the epistemological

assumptions, research strategy, data collection, processing, and analysis techniques, ultimately linking these to the broader research objectives of the thesis.

The chapter commences with an investigation of the research philosophy, which is founded upon pragmatism and symbolic interactionism. This is in accordance with the study's emphasis on comprehending dynamic and interactive processes. Pragmatism emphasises practical enquiry, whereby research aims to identify actionable insights. Symbolic interactionism, meanwhile, provides a framework for examining the ways in which value co-creation emerges through interactions and shared meanings. These philosophical stances provide the foundation for the implementation of Constructivist Grounded Theory (CGT) as a research strategy, which is particularly well-suited to the investigation of intricate, process-oriented phenomena within an empirical context.

The research strategy is based on the analysis of online customer reviews (OCRs) as primary data, which enables the study to capture authentic customer experiences and perceptions. This chapter outlines the sampling procedures employed to guarantee the diversity and representativeness of the dataset. It demonstrates that the selected sampling approach strikes a balance between the necessity for comprehensive coverage and methodological rigour.

The processing of data necessitates a multi-stage approach. The initial stages of the process entail the extraction and anonymisation of data in accordance with the standards set forth by the General Data Protection Regulation (GDPR), followed by a series of pre-processing steps designed to prepare the dataset for analysis. A combined approach to quality assurance, comprising automated and manual processes, is employed to guarantee the accuracy, contextual relevance, and alignment of the data with the study objectives.

The subsequent coding process is conducted in three iterative stages: initial coding, focused coding, and theoretical coding. These stages are fundamental to the CGT approach, as they facilitate the development of categories and theoretical insights directly from the data. The chapter underscores the significance of employing memoing throughout the research process, which enables both reflexivity and the advancement of theoretical frameworks.

Finally, the chapter offers a critical analysis of the selected methodology, contrasting it with alternative approaches and evaluating its strengths and limitations. The combination of automated tools with human expertise is identified as a crucial factor in ensuring both efficiency and analytical depth. The chapter concludes with an emphasis on the alignment between the methodological choices and the overarching research objectives, thus establishing the foundation for the empirical analysis.

4.1 Methodological-Epistemological Presumptions

As illustrated by the precedent chapters, hybrid offerings are distinguished by the incorporation of at least partial customer integration, along with their quality-relevant resources, into a co-productive business process. In accordance with the definition of hybrid offerings presented in chapter 2.2.4, co-productive customer integration is characterised by a certain degree of interaction. Such interaction may occur directly or indirectly, thereby facilitating communication between the customer and the provider. The analysis of interactions and communication between participants, their experiences and perceptions, contextual conditions, as well as the consequences and structural effects, constitutes a central field of research in the social sciences, particularly within sociological-anthropological research (Bell *et al.*, 2022, p. 4). Engagement in social research entails the utilisation of an extensive array of methodological instruments, encompassing a multitude of disparate approaches and tools. These can be employed to examine and evaluate a research hypothesis.

Bell *et al.* (2022, pp. 5–6) identify eight key considerations that business researchers must address when selecting their methodological approach and research design. These eight key considerations serve as guidelines for the methodological approach, the research strategy, and the empirical case study.

No.	Consideration	Chapters
1	The adopted theoretical position and its formation through existing theory	2, 3, 4.2, 4.3
2	Researcher's knowledge concerning the field of research as well as concerning related theories and methodologic approaches	5.3.1
3	The nature of relationship between theory and practice	4.2, 4.3
4	Assumptions and views how business research should be conducted, including epistemological considerations	4.3, 4.4, 4.5, 4.6
5	Assumptions about the nature of social phenomena	4.2
6	Quality validation of research	4.5.5, 5.6
7	Ethical considerations	4.7
8	Implications for business practice	5.1, 5.2, 6, 7.1, 7.4, 8.2

Table 6 Guidelines for Business Research (Bell *et al.*, 2022)

4.2 Research Philosophy

Given their co-productive nature, the co-creation of value-in-use in hybrid offerings is a procedural outcome that arises from the interaction and communication between at least two social actors that are part of a service ecosystem. This characteristic renders the study of hybrid offerings particularly compatible with established pragmatic theories of social interaction. As previously discussed, the tenets of Service-Dominant Logic place emphasis on the co-creation of value-in-use through interactions between customers and service providers. In order to gain insight into how customers' interactive experiences shape their perceptions and evaluations of quality, it is essential to adopt a theoretical and methodological approach that is centred on the study of social interaction and its effects on perception, interpretation and behaviour. A well-established field within the social sciences that addresses these aspects is Symbolic Interactionism (SI). This field offers valuable insights into the interpretation of social interactions and their impact on customer perceptions (Charmaz *et al.*, 2019, p. 6).

4.2.1 Theories of Pragmatism and Interactionism

Within the social sciences, Interactionism can today be thought of as a family of perspectives and methods applied to a wide range of topics (vom Lehn *et al.*, 2023, p. 7). Historically, the foundations of Interactionism were laid in the first half of the 20th century by authors such as Mead (2015 [1934]), Cooley (2018

[1902]) and Thomas and Thomas (2018 [1928]). Building on the work of his predecessors, Blumer (1969, p. 1) in particular developed their more socio-philosophical conception into a methodological approach he called 'Symbolic Interactionism'. Blumer's work has remained relevant and is applied in various forms in qualitative social science research. Many of his premises have been the subject of extension and integration into interactionist models, some of which have been based on quite different systematics (Sandstrom *et al.*, 2023, p. 435). Nevertheless, according to vom Lehn *et al.* (2023, p. 7) current interactionist methodologies still share basic core assumptions, which can be traced back to the ground-breaking work of Blumer. It is beyond the scope and objectives of this research project to conduct an in-depth discussion of the classical pragmatist theories. But as they build the foundation for the premises of modern Interactionism research, some of the most relevant core concepts will be described. Furthermore, Blumer's approach, which builds on the work of Mead in particular, is discussed with the aim of demonstrating the methodological relevance of SI for the study of hybrid offerings. In this context it must be acknowledged that in the academic discourse, several approaches or 'schools' of SI exist. Carter and Fuller (2016, pp. 932–933) discuss the historic development of three approaches, namely the 'Chicago School' based on the works of Blumer, the 'Iowa school' represented by Manford Kuhn, e.g. Kuhn (1964), and the 'Indiana School' of Sheldon Stryker, e.g. Stryker (2008). Belgrave *et al.* (2023, p. 405) as well discuss the differences between the Chicago school and the Iowa School, whereby they draw the dividing line primarily with regard to the methodological approach. The Chicago School focuses more on analysing the experiential perspective of social actors, while the Iowa School takes a more structured, experiment-oriented approach to sociological research (Belgrave *et al.*, 2023, p. 406). vom Lehn *et al.* (2023, p. 6) describe an ongoing trend of diversity as well in theoretical concepts of SI as in the field of its empirical research. For the purpose of this work, the perspective on SI will be from the approach of Blumer (1969). This is a purely practical research decision and is not intended to say anything about the suitability of other symbolic interactionist research approaches (or other approaches altogether) to the field of hybrid offerings research.

4.2.1.1 Pragmatistic Foundations

SI emerged in the early 20th century from the pragmatist tradition which was primarily developed at the University of Chicago (Charmaz, 2014, p. 263). The origins of Social Interactionism can be traced back to a group of American sociologists who were interested in how individuals interact with others in society (Carter and Fuller, 2016, p. 933), including George Herbert Mead (Mead, 2015 [1934]) Charles Horton Cooley (Cooley, 2018 [1902]) and W. I. Thomas (Thomas and Thomas, 2018 [1928]). Their work has had a significant impact on the development of sociological theory, and the ideas of SI continue to influence research in sociology and related fields today.

Charles Horton Cooley, an early proponent of social interactionism, developed the concept of the "looking-glass self." According to Cooley, individuals develop a sense of self by imagining how others perceive them (Cooley, 2018 [1902]). He argued that individuals use the reactions of others as a mirror to reflect their own self-image.

W. I. Thomas also contributed to the early development of Social Interactionism. He is best known for the 'Thomas Theorem'. which states that if men define situations as real, they are real in their consequences (Thomas and Thomas, 2018 [1928], p. 572). Thomas believed that individuals' perceptions of reality are shaped by their social interactions and that these perceptions have real consequences.

Mead, a philosopher and social psychologist who taught at the University of Chicago in the early 20th century, was interested in how individuals develop a sense of self and how they interact with others in society. Mead's central idea was that individuals develop a sense of self through social interaction with others (Charmaz *et al.*, 2019, p. 29). He believed that the self is not something that is innate or fixed, but rather something that is constructed through social interaction (Mead, 2015 [1934], p. 135). Mead argued that individuals learn to take on the perspectives of others through this social interaction, which allows them to develop a sense of self.

Blumer (1969, p. 62) identified five central matters in the Work of Mead (2015 [1934]) which he considered of high relevance for the theoretical scheme underlying SI: (1) the self, (2) the act, (3) social interaction, (4) objects and (5)

joint action. All five are briefly described below; afterwards, their methodological implications are considered in relation to the premises and methods of SI.

4.2.1.1.1 The Self

Mead (2015 [1934], p. 135) sees the human as an organism which has a self, something which distinguishes him from other living organisms. Having a 'self' means for Mead that a human being can be an object to himself, allowing self-addressing and self-interaction (Mead, 2015 [1934], p. 136; Blumer, 1969, p. 62). Having a self means that we can act towards ourselves as we act toward others (Charmaz *et al.*, 2019, p. 29). The 'self' is not a given structure but is an outcome of a social process, it arises from social experience (Mead, 2015 [1934], p. 140; Blumer, 1969, p. 69). Furthermore, the self consists of two components, the 'I' and the 'me' (Mead, 2015 [1934], p. 175). The 'I' is the initial part of the 'self', whereas the 'me' builds the reflective and evaluative part (Charmaz *et al.*, 2019, p. 30). The 'me' and the 'I' stand in a dynamic relationship, whereas the 'me' takes into account the social context of behaviour (Mead, 2015 [1934], p. 176; Charmaz *et al.*, 2019, p. 30). The process of internal interaction between the 'I' and the 'me' together with external social interaction constitutes the 'self' (Mead, 2015 [1934], p. 179). Apart from direct social interaction, people have internalised but socially mediated norms and values of a group or society that influence their behaviour when there is no direct social interaction. This internal representation calls Mead the 'generalized other' (Mead, 2015 [1934], p. 154). The interplay of the 'I', the 'me' and the 'generalized other' lead to the development of the 'self' through continuous and dynamic social interaction (Charmaz *et al.*, 2019, p. 31). In consequence, by seeing himself self-reflective as an object, a human being does not merely respond to his environment but becomes an active agent (Blumer, 1969, p. 64).

4.2.1.1.2 The Act

The 'self' in the definition of Mead (2015 [1934], p. 135) arises from a process of social experience and activity. As Blumer (1969, p. 64) explains, human action is grounded in coping with the world instead of just being released by a stimulus which has an impact of a pre-existing psychological structure. To act in a given social situation, human beings act and react with reference to themselves as well as to other individuals, meaning that they become and must be self-

conscious (Mead, 2015 [1934], 138;172). It is important to understand that self-conscious acting does not mean that it is optimal in each situation. It might even be completely wrong. But nevertheless, an individual must interpret a social interaction and has to decide how to act or re-act – not merely to respond (Blumer, 1969, pp. 64–65). Being re-active and self-conscious leads to the consequence that experiences derived from the perception of the social act are imported and embedded in the organisational structure of the human organism, allowing him to become more effective in future social interactions (Mead, 2015 [1934], pp. 178–179): Self-consciousness allows interpretation and therefore social learning and (potentially) improvement, what is especially important when problem-solving activities are necessary (Corbin and Strauss, 2015, p. 39).

4.2.1.1.3 Social Interaction

To develop a 'self', it is necessary for an individual to become part of a social process, which logically implies the pre-existence of a group as well as some kind of co-operation within the group and its members (Mead, 2015 [1934], p. 164). Co-operating activities are coordinated by communication, whereas this communication can be directed not only to others but to the individual himself (Mead, 2015 [1934], p. 139). When communicating with others in a social situation, Mead (2015 [1934], pp. 144–145) distinguishes between two generic types. The first one rests on the logic of a more-or-less direct stimulus-response reaction. Blumer (1969, pp. 65–66) points out that these direct, non-symbolic interactions were not in the centre of Mead's interest. Instead, Mead's concern was predominantly with symbolic interaction, which involves an interpretational or ascertaining act (Blumer, 1969, p. 66; Mead, 2015 [1934], p. 75) to understand the meaning of the social act and its related communication, e.g. conveyed by the use of language (Mead, 2015 [1934], p. 145; Charmaz *et al.*, 2019, p. 53). To allow successful communication, the applied symbols must be social symbols in this way that their meaning can be understood by the actors involved, they must be socially shared and therefore to some degree 'universal' (Mead, 2015 [1934], p. 145; Blumer, 1969, p. 67). This does not necessarily require that a given society in whole or one of its parts cannot be subject to change. The interpretation of meaning always contains an element of creativity (or error) which might lead to changes as interpretations lead to (re-)actions and initiate subsequent (re-)actions in an ongoing social process with in increasing

degree of complexity (Mead, 2015 [1934], p. 226). In other words, the design of social interactions between human beings is not determined (Charmaz *et al.*, 2019, p. 29), but – through the process of interpretation – open to transformation (Blumer, 1969, p. 67).

4.2.1.1.4 Objects

All Organisms live in an environment which contain objects (Mead, 2015 [1934], p. 129). But these objects are not pre-existing, waiting to be recognised and used – they have no intrinsic ‘idea’ (Mead, 2015 [1934], p. 76). Entities of the empiric world become objects through their relationship to an organism, meaning that organism and environment determine each other (Mead, 2015 [1934], p. 130). Mead (2015 [1934], p. 77) distinguishes between two broad classes of objects: Objects which are constituted by organic processes, e.g. grass as food for an ox; and social objects, which are a result of social interaction within groups (Blumer, 1969, p. 69). Both classes of objects are part of the environment. Social objects, in sense of gestures, can be used by a variety of organism – including non-human. The content of a social object, the meaning of the gesture, depends on the relation of an organism or a group of organisms to it, e.g. the warning bark of wolf to its puppies when a potential danger is witnessed (Mead, 2015 [1934], p. 81). But only human beings can use significant gestures, symbols, whose meaning only emerges in a social process through communication (Mead, 2015 [1934], p. 78). The social process consolidates the meaning of already existing symbols and at the same time is the transformational source of any number of potential new ones through interactions within social groups (Mead, 2015 [1934], p. 130; Blumer, 1969, p. 70; Charmaz *et al.*, 2019, p. 24).

4.2.1.1.5 Joint Action

The preceding brief explications of select fundamental tenets of Mead's theory ultimately culminate in the assertion that an individual's social milieu cannot be conceived of as a fixed, pre-established entity, but rather as a dynamic phenomenon contingent upon social interaction. The dynamic results from the process of social participation, whereby existing social structures exert an influence on the inner structures of the individual. However, due to the individual perception of the situation and the objective self, the effect varies from person

to person: People perceive their social environment as well as their objectified self from their individual standpoint (Mead, 2015 [1934], p. 202). But although each person participates in a social act with his or her individual point of view, the interaction must be coordinated in order to achieve the respective goals of the actors involved. Cooperation becomes necessary (Mead, 2015 [1934], p. 164). Blumer (1969, p. 70) proposes to call social acts, which fit together the line of action between the participants, as 'joint actions' (Charmaz *et al.*, 2019, p. 31). Consequently, the ability to behave in an appropriate and purposeful manner within a given social context hinges upon an understanding of the nature of the interaction at hand. Moreover, it is essential for participants to comprehend the present behaviour of their counterpart and to interpret it in accordance with its significance. Only then can they adapt and align their own behaviour in a goal-directed manner (Mead, 2015 [1934], p. 78; Blumer, 1969, pp. 70–71). Blumer (1969, p. 71) summarises some of the central consequences resulting from the actors' jointly coordinated interactions as follows:

1. The essence of society lies in an ongoing process of interaction, not in a fixed structure of relationships. Without action, structure is meaningless.
2. Action must be recognised and treated as inter-action between participants – as joint action.
3. Interaction is continuous and is realised in time through a social process, it has a history.
4. This history is typically structured, stabilised and reproducible because the involved parties have established a shared understanding or definition of the joint action.
5. Nevertheless, the further development of the interactions must also be regarded as uncertain and thus open, since there is always the possibility of misunderstandings, divergent interpretations or different definitions/assumptions on the part of the actors.

4.2.1.2 Premises and Basic Ideas of Symbolic Interactionism

Although the pragmatic social theory of Mead and other pragmatists of his time has been part of the scientific canon for almost 100 years (Chamberlain-Salaun *et al.*, 2013, 2), it still provides the epistemological and methodological guidelines for many social science research approaches today (Charmaz *et al.*,

2019, p. 52). This is particularly true of qualitative research within the framework of SI in the tradition of Blumer (Blumer, 1969) or Grounded Theory as developed by Strauss (Glaser and Strauss, [1967] 2017; Corbin and Strauss, 2015). Their relevance and thus attractiveness for modern research is based above all on their universalistic approach and their pragmatic-dynamic reference to the social world shaped by interactions (Charmaz, 2014, p. 5; Frithjof Nungesser, 2023, p. 25; Charmaz *et al.*, 2019, p. 28). This allows it to be integrated as a research premise even in studies of topics that were not yet on the horizon in Mead's time (vom Lehn *et al.*, 2023, p. 7), e.g. the discussion of a 'cyberbased generalized other' (Altheide, 2000, p. 9). Blumer (1969), in particular, has done important integration work in this respect, as he has translated Mead's approaches, some of which are more social-philosophical, into a concrete research methodology, which in turn has been further elaborated by his successors (Morrione, 2023, p. 37). For example, in a more recent textbook of Grounded Theory methodology (Corbin and Strauss, 2015, pp. 23–24; Chamberlain-Salaun *et al.*, 2013, 1), thirteen foundational assumptions are listed, two of which refer directly to Blumer (1969), five to Mead (2015 [1934]) and four to Dewey (1929), another important foundational researcher of pragmatism.

For this reason, before developing the methodological approach of this thesis, an overview of Blumer's basic approach of SI will be given. Additionally, Blumer's work is noteworthy for its role in developing a mid-range theory in the Mertonian tradition, effectively translating fundamental social theory into empirical research (Merton, 1968, p. 51). To further elucidate the relationship between this thesis and the research topic, it is necessary to demonstrate the extent to which SI is compatible with the concepts and models of Service-dominant Logic that have already been presented, as well as with the premises of the Integrated Quality Framework of Golder *et al.* (2012).

While Mead and his fellow researchers laid the foundation, Blumer systemised central thoughts and concepts of his predecessor and developed the theoretical framework of SI. He was a student of George Herbert Mead and was leading at his time in popularizing Mead's ideas and bringing them to a wider audience (Charmaz *et al.*, 2019, p. 31). Blumer methodised SI as a way of describing how

individuals use symbols (such as language, gestures, and objects) to interact with each other and to create meaning in their lives (Morrione, 2023, p. 40).

In his work, Blumer acknowledges in particular the great influence of the so-called Chicago School, which includes George Herbert Mead, John Dewey and W. I. Thomas, among others (Blumer, 1969, p. 1; Morrione, 2023, p. 38).

Blumer's aim was to develop a unified conceptual framework and methodological approach for empirical social research based on the foundational work of these and other authors (Blumer, 1969, p. 2). Right at the beginning of his basic text, 'The Methodological Position of Symbolic Interactionism', Blumer introduces three premises that are still regarded as overarching, central assumptions of SI today (Blumer, 1969, p. 2):

1. Human beings act toward things on the basis of the meanings that the things have for them.
2. The meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows.
3. These meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he encounters.

This approach, which defined 'interpretation' as the mediating variable of social interaction, was at the time in direct opposition to the classic stimulus-response model of the behaviourists (Morrione, 2023, p. 40). Blumer acknowledges the importance of social experience, but emphasises its individual interpretation (Blumer, 1969, p. 5; Charmaz *et al.*, 2019, p. 29). Like Mead, Blumer (1969, p. 5) sees the emergence of the meaning of objects as a product of social interaction, which at the time he saw as the unique selling point of social interactionism.

In the further course of his explanations, Blumer (1969, pp. 6–17) derives six basic ideas of SI which complement the three premises:

1. **Nature of human society or human group life:** Human societies must be understood as an ongoing process that manifests itself in the activities of its actors (Blumer, 1969, pp. 6–7).
2. **Nature of social interaction:** Human societies are made up of individuals who react to each other through symbolic interactions and thus coordinate their behaviour. In doing so, they interpret each other's

roles and incorporate them into their interpretation and behaviour (Blumer, 1969, pp. 7–10).

3. **Nature of objects:** A person's environment is made up of objects that take on meaning in the context of symbolic interaction. An object can be anything an individual can refer to. But it is in social interaction that meaning is formed, learned and transmitted. The meaning of objects is therefore not fixed in the Platonic sense, but is subject to change as the social environment changes (Blumer, 1969, pp. 10–12).
4. **The human being as an acting organism:** Human social interaction is characterised by the fact that people can also see themselves as objects, as 'selves' in Mead's sense. They can thus refer to themselves and become the object of their own interpretation and action. In this process, the perspective of another role can also be taken, be it a direct interaction partner or a socially defined role, e.g. 'mother'. People can thus enter into social interaction with themselves and derive behavioural options from this (Blumer, 1969, pp. 12–15).
5. **Nature of human action:** People are confronted with a world that requires interpretation. They have to adapt their actions to constantly changing situations as well as internal and external conditions. At the same time, they have to interpret the meaning of the actions of other actors. Actions are thus internally constructed and are not simply a response to an external stimulus. This also applies to processes in which joint actions are coordinated by collectives (Blumer, 1969, pp. 15–16).
6. **Interlinkage of action:** Social interaction can go beyond the situational individual case, from which a new class of social objects emerges. These can no longer be reduced to the sum of their individual actions, but have an independent, collective character. Especially in developed societies, there is a multitude of repetitive patterns that have an established meaning in a society. Nevertheless, these social patterns also have to be realised in a common action of the actors - they too are subject to interpretation and thus to change, so in this sense they are historical and not absolute (Blumer, 1969, pp. 16–20).

4.2.1.3 Methodologic Approach of Symbolic Interactionism

On the basis of the three premises and the six ideas, Blumer (1969) developed a methodological approach in the course of his work in which he laid down central requirements for empirical research projects in SI. As comments by Chamberlain-Salaun *et al.* (2013, 2), Charmaz (2014, p. 9), Charmaz *et al.* (2019, pp. 24–25) and Morrione (2023, p. 42) among others, show, these are still among the methodological-ontological premises of social research today. For this reason, they are presented below in a condensed format, with reference to Blumer's original explanations.

Blumer begins his remarks on the methodology of SI by stating that the object of research is always the empirical world, which must be assumed to exist independently from the observer and thus to be recognisable in principle (Blumer, 1969, p. 21). With this statement, on the one hand, he distances himself from an idealistic-solipsistic position according to which reality is only accessible in the images and ideas of the observer (Blumer, 1969, p. 22). The empirical world has a resistant (or 'obdurate') character and is therefore opposed to the scientific observer (Blumer, 1969, p. 22). However, its character is dynamic and therefore subject to constant change and adaptation, which leads Blumer to deny the existence of a truly 'real' world that is stable at all times (Blumer, 1969, p. 23). He also distances himself from the (exclusive) application of a scientific approach grounded in physical sciences to all objects of the empirical world (Blumer, 1969, p. 23). The obdurate character of the empirical world cannot be revealed by applying a standardised scheme. The empirical world is not to be squeezed into ready-made theories and methodological schemes. Rather, theory should be developed from empirical reality through a systematic approach (Blumer, 1969, p. 32).

Building on the premises and basic ideas, SI's empiric and thus methodically relevant world-view of human group behaviour and social interaction is summarised by Blumer (1969, p. 50) in four central conceptions (labelling by TAH):

Central Conceptions of Symbolic Interactionism

1. **Meaningful Objects:** People act individually and collectively on the basis of the meaning objects in their environment have for them (Blumer, 1969, pp. 50–52).
2. **Interactional Interpretation:** Interaction between people necessarily takes place in processes in which meanings of objects are indicated and shared and these meanings are in turn interpreted (Blumer, 1969, pp. 52–54).
3. **Meaning-processing Processes:** Social action is constructed both individually and collectively through processes of recognising, interpreting and evaluating social situations (Blumer, 1969, pp. 54–57).
4. **Dynamic Complexity:** The complex linkages and references of actions leading to higher level social structures such as organisations, institutions or networks are dynamic rather than static, they have a historic nature (Blumer, 1969, pp. 57–60).

In order to understand the empirical reality of social situations, interactions and even more complex social structures, researchers should be work exploratory (Blumer, 1969, p. 40). This means that they develop a sufficiently deep understanding of the social situation, its actors, objects and interactions (Blumer, 1969, p. 42). This enables them to identify what the central problems and questions of their research might be and what data and techniques they need to deepen their knowledge (Blumer, 1969, p. 46). It is important that researchers do not start their research with a preconceived notion of the social situation, but that they continually sharpen, deepen and, if necessary, challenge their ideas and insights in the course of further exploration on the basis of new findings (Blumer, 1969, p. 41). If the understanding of the part of the empirical world to be explored is comprehensive enough, the second step is to examine the facts that have been established by 'inspection' (Blumer, 1969, p. 42). Blumer refers to this as the step of 'analysis', which should lead to theory-building in the sense of recognising generic, cross-situational connections (Blumer, 1969, p. 43). Analytical elements refer to overarching categories that allow the findings to be generalised (Blumer, 1969, p. 44). Each analytical category needs to be critically interrogated and compared with existing and, if necessary, new data (Blumer, 1969, p. 45). This requires a flexible and creative

approach in which the researcher follows the traces of the data to identify the generic nature of the social facts under study and the underlying relationships between individual elements (Blumer, 1969, p. 44). The aim must be not only to describe existing facts, but to identify their meaning and the significance of their interrelationships for social actors (Blumer, 1969, p. 46). In Blumer's view, a direct examination of the empirical world is better suited to discover these meanings than a simulation of the social world, e.g. in the context of laboratory studies (Blumer, 1969, p. 48). The ultimate test of the validity of the findings and their premises is always the comparison of the findings with the objects of the empirical social world and their meaning for the acting actors at a given point in time (Blumer, 1969, p. 49). This requires of the researcher, on the one hand, the ability to put oneself in the position of the individual or the collective and, on the other hand, the construction of a comprehensive set of observational data (Blumer, 1969, p. 51). Furthermore, the researcher must be critical of the fact that his or her observations are always subjective, i.e. shaped by his or her own presuppositions and experiences (Blumer, 1969, p. 52).

Blumer's methodological approach, as outlined here, has been subjected to rigorous scrutiny by other researchers, who have explored avenues for further specification and extension. The objective was and remains to establish a connection between the fundamental assumptions, which may be regarded as timeless insofar as they are aligned with the general ontological and methodological premises, and contemporary research approaches. Charmaz *et al.* (2019, p. 27), for example, proposes to add three further premises to Blumer's premises presented above:

1. Meanings are interpreted through shared language and communication.
2. Handling and negotiating meanings is a continual process.
3. The interpretive process becomes explicit when people's meanings and/or actions become problematic or their situation changes.

Snow (2001, p. 368) sees the need to extend Blumer's approach in terms of four principles which, in his view, are inherent in Blumer's work but do not emerge explicitly:

1. The Principle of Interactive Determination
2. The Principle of Symbolization

3. The Principle of Emergence
4. The Principle of Human Agency

Corbin and Strauss (2015, pp. 23–24) merge the premises of SI with their own ontological considerations in their grounded theory approach.

From a more recent thematic perspective, Carter and Fuller (2016, pp. 950–951) identify three areas of research that they believe should receive increased attention in SI research in the future:

1. Relationships among the individual, technology, and society
2. Neurosociology
3. Understand the link between micro and macro structures

These few excerpts reveal that Interactionism ‘has a long and complex history’ as Hammersley (2023, p. 416) puts it. In addition, SI is under constant critical scrutiny and expansion to make it adaptable to current research questions (Belgrave *et al.*, 2023, p. 403). The broad field of symbolic interactionist research is acknowledged in the context of this paper. For the purposes of this research, however, it is sufficient to focus on the central concepts outlined above, leaving the further methodological development of ‘grounded theory’ to specialists in this field of sociology (Hammersley, 2023, p. 417). The objective of this discussion is to examine the implications of the four central conceptions for the analysis of hybrid offerings, the theoretical model of service-dominant logic, and the process model of the IQF/CQF. The aim is to establish a link between the foundational theoretical concepts of this work and an empirical-oriented methodological approach.

4.2.2 Methodological Implications for the Research Project

4.2.2.1 Symbolic Interactionism and Hybrid Offerings

The four methodological conceptions of Symbolic Interactionism (SI) will serve as the foundational premises throughout this thesis. They offer a perspective on how hybrid offerings emerge through process-based joint interactions between customers and providers. In these interactions, meanings are ascribed to objects and experiences perceived by both parties. Such objects frequently become the focal point of communication between actors, thereby facilitating iterative input for mutual interpretation. This communication process renders

these objects susceptible to qualitative evaluation based on the value-in-use ascribed to them by the participants.

In light of the hybrid nature of the services under examination, evaluations may concentrate on both the co-productive situational interaction process and the resulting tangible and intangible business process outcomes (Solomon, 1983, p. 319). Both aspects can be regarded as meaningful objects. The temporal sequence of business processes within an organisation that underlies co-productive interactions introduces historical and dynamic complexity. Although customers may not have direct access to all of the delivered quality attributes of these processes, the CQF postulates that experienced but not consciously perceived quality attributes contribute to the final quality of the offering and therefore indirectly influence customer expectations.

Social reality is thus understood not as an objective fact, but rather as a meaningful interpretation constructed through the processes of experience, perception, and communicative negotiation. Consequently, the value-in-use of any hybrid offering is inherently subjective and not fully accessible from an objective standpoint.

4.2.2.2 Symbolic Interactionism and Service-dominant Logic

The interactional perspective on hybrid offerings also establishes a connection between Symbolic Interactionism and the Service-Dominant Logic framework. This connection is evidenced by the numerous parallels between the two approaches (Flint, 2006, p. 351). Both approaches underscore the significance of experiential social interaction in influencing individual behaviour and the generation of value-in-use. In the context of the SDL, SI can be employed to elucidate the manner in which customers and service providers interact to create value-in-use (Flint, 2006, p. 357).

In accordance with the SDL, the customer is regarded as a co-creator of value-in-use, as opposed to a mere passive recipient. This implies that the customer's role in the service interaction is of equal importance to that of the service provider. The service provider furnishes resources, but it is the customer who integrates and utilises those resources to create value-in-use. The co-creation of value-in-use is made possible by the symbolic interactions between the customer and the provider. Flint (2006, p. 355) describes three temporal stages

where the co-creation of value-in-use through symbolic social interaction can take place:

1. Pre-purchase processes, as customers point out to themselves specific social objects and use them in symbolic communication with themselves and others as they decide what to buy
2. Actual purchasing processes in interaction with product and service providers
3. Post-purchase use processes.

From a SDL perspective, value-in-use perception and co-creation can be a part of all three process stages, but they do not necessarily require direct social interaction between the customer and the service provider (Flint, 2006, pp. 356–357; Grönroos and Voima, 2013, p. 141).

In conclusion, the concepts of SDL and SI are closely related, as both emphasise the significance of procedural social interactions in the creation of value-in-use. SDL acknowledges the customer's role as a co-creator of value-in-use, whereas SI offers a theoretical framework for understanding this phenomenon for understanding how social interactions take place and how language shapes value-in-use (Charmaz, 2014, p. 265). The conjunction of these two perspectives provides a framework for understanding the manner in which value-in-use is created through interactions between customers and providers. In essence, the tenets of SI and SDL are intertwined by their mutual recognition of the pivotal role social interaction plays in the generation of value-in-use. SI offers a theoretical framework for understanding the processes by which individuals interact and create meaning through the interpretation of symbols. SDL, in contrast, provides a conceptual lens through which the co-creation of value by customers and service providers can be better understood (Flint, 2006, p. 360). Moreover, SI can be integrated with qualitative research methodologies that concentrate on the examination of interactions and the contextual formation of meaning (Charmaz, 2014, p. 277).

4.2.2.3 Symbolic Interactionism and the IQF/CQF

Like SDL, the IQF/CQF emphasises the importance of experience and dynamic interaction between providers and their customers. Symbolic interaction occurs in all three quality processes, with a particular emphasis on the Quality

Experience Process and its perception filters (Golder *et al.*, 2012, p. 14). It can be argued that the IQF/CQF represents a dynamic quality management perspective on the processual realisation of SI. SI influences the Quality Production Process in at least two ways. First, customer feedback is an input resource that can shape the attribute design of offerings. Secondly, direct social interaction becomes necessary when the Quality Production Process is co-productive by design, as is the case with hybrid offerings. SI is also a crucial part of the Quality Experience Process, which shapes the perception of delivered attributes through its filters and influences the customer's perception, interpretation and thus quality evaluation. During the Quality Evaluation Process the customer interprets the perceived quality attributes and measures them against his expectations based on accumulated information, a mental storage based on learning processes from precedent symbolically codified social interactions (Golder *et al.*, 2012, p. 10).

4.2.2.4 Conclusion

The preceding discussion has demonstrated that SI offers an appropriate methodological framework for examining hybrid offerings, their associated business processes, and subsequent customer evaluations of value-in-use. Nevertheless, the investigation of empirical social phenomena necessitates the selection of an appropriate research strategy to generate and analyse the requisite data. This study aims to transcend the limitations of a purely descriptive approach by deriving patterns and actionable insights for process optimisation based on individual experiences with hybrid offerings. It is therefore essential to address the strategy for data-driven theory building.

The objective is to discern patterns in customer perceptions, as evidenced by empirical data, in order to inform the design of hybrid offerings and the business processes that underpin them. In this regard, the grounded theory approach, originally developed by Glaser and Strauss ([1967] 2017) is well established in sociological research, particularly in the context of symbolic interactionism (Belgrave *et al.*, 2023, p. 407). This methodology, which has been further refined by scholars such as Corbin and Strauss (2015) and Charmaz (2014), provides a systematic framework for developing theoretical insights directly from empirical data.

4.3 Research Strategy

Chapter 4.1 established the methodological and epistemological foundations for this study, focusing on Symbolic Interactionism as a critical framework for understanding the interactions and co-production processes inherent in hybrid offerings. This was further explored in chapter 4.2, which elaborated on the methodological implications of integrating SI with the SDL and the IQF/CQF, providing a comprehensive view of how these theoretical frameworks inform the study of co-productive value-in-use co-creation.

This chapter delineates the qualitative research strategy that is employed in this thesis. Specifically, it provides a detailed account of the methods and processes employed to collect and analyse data, thereby ensuring a robust and systematic exploration of customer perceptions within the empirical case study. This chapter serves to translate the theoretical frameworks into a practical research methodology, thereby enabling the identification and analysis of empirical patterns that contribute to the understanding of hybrid offerings. The objective is to apply grounded theory and supplementary research techniques in order to provide a comprehensive and detailed account of the customer-provider interactions that shape value-in-use co-creation.

4.3.1 Preliminary considerations

The assessment of perceived service quality and its underlying attributes represents a complex and subjective challenge for researchers. These difficulties are further compounded when attempting to comprehend how customers evaluate these attributes on an individual basis. Notwithstanding the considerable advances that have been made in the development of service quality models, 'traditional' frameworks such as SERVQUAL (Parasuraman *et al.*, 1988) continue to be frequently applied in recent research, e.g. Midor and Kučera (2018) for pharmaceutical services, Ramanathan *et al.* (2018) for leasing services or Teshnizi *et al.* (2018) for healthcare services, Rezaei *et al.* (2018) for airline baggage handling systems, Gregory (2019) for higher education or Gopal Vasanthi *et al.* (2023) for cleanliness in Indian Railways. But although these approaches have been further developed (Andreassen *et al.*, 2016, p. 23), they are not without limitations. For example, a significant challenge is that they obtain their data by explicitly soliciting customer feedback

on their perceptions of quality through structured surveys, which are a fundamental component of customer satisfaction research (Kenett and Salini, 2011, p. 465). Nevertheless, the use of highly structured questionnaires carries the potential for customers' self-reported perceptions to diverge from their intrinsic opinions. This is due to the possibility that the manner in which the question is phrased may influence the customer's response (Gorrell *et al.*, 2011, p. 508).

A further disadvantage of such structured survey methodologies is the imposition of inflexible frameworks, which may prove inadequate for capturing the dynamic and context-dependent nature of customer evaluations, particularly in industries characterised by co-productional business processes. Scholars such as McCollin *et al.* (2011) critically discuss the SERVQUAL approach as a stand-alone tool for quality measurement. They propose to integrate SERVQUAL into the Six Sigma framework, which should allow a mapping between SERVQUAL customer concerns and business processes (McCollin *et al.*, 2011, pp. 709–713). Nevertheless, their methodology still necessitates the proactive collection of customer feedback. Tate and Evermann (2010) also criticise the idea of researchers reconfiguring the SERVQUAL model to make it suitable for newer areas of research, such as online-delivered services.

Moreover, although structured surveys are advantageous in providing insights into perceived quality attributes and customer needs, they are subject to practical constraints. The sample sizes are often constrained due to the substantial investment of time and resources necessary to engage participants, which can limit the generalisability of the findings. This limitation is sometimes mentioned by the researchers themselves, e.g. Rezaei *et al.* (2018, p. 92), Ramanathan *et al.* (2018, p. 1951) or Teshnizi *et al.* (2018, p. 87). Nevertheless, the acknowledgment and the frequently accompanying suggestion for further research does not address the issue of a restricted database, even if the sample size is sufficient for statistical analysis.

This study, therefore, seeks to address these limitations by adopting a research approach that allows for a more nuanced exploration of value-in-use. In particular, the study employs the theoretical frameworks of constructivist grounded theory (CGT), which emphasises the contextualised interpretation of social interactions (Charmaz, 2014, p. 243). As it will be explained, CGT offers

an effective analytical framework for examining the co-creation of value-in-use, where interactions between customers and service providers are central to the service experience. The application of CGT enables the researcher to identify the manner in which these interactions influence customer perceptions and experiences. This approach facilitates the emergence of themes directly from the data, rather than imposing pre-determined categories. This is particularly relevant in the context of hybrid offerings, where the quality perception of the service is inextricably linked to a range of tangible and intangible components. By focusing on the contextual and emergent nature of customer evaluations, this research transcends the constraints of survey-based methodologies to elucidate the more nuanced and intricate facets of service quality.

The research strategy also seeks to capitalise on the continued evolution of information technology and the associated customer assessment and documentation environment for service processes and hybrid offerings. Today, customers engage with hybrid offering providers across a range of digital platforms, both before and after their interactions with these entities. This digital engagement generates a substantial corpus of data pertaining to the experiences of these customers (Ostrom *et al.*, 2015, p. 129; Rust and Huang, 2014, pp. 207–210). People leave online traces (Kozinets, 2020, p. 16) as a form of public social information, whereby this applies above all to B2C customers (Iankova *et al.*, 2019, p. 175). A substantial proportion of this data is retrievable over an extended timeframe via open social media platforms, including online customer reviews (OCR) on platforms such as Google or Amazon. This creates new opportunities for both researchers and quality managers to better understand customer requirements (Lamberton and Stephen, 2016, p. 159). Some recent examples of studies using Google reviews are Shah *et al.* (2020) to monitor student experiences, Skrypczak *et al.* (2020) conducting a content analysis of complaints posted by dissatisfied patients or Lee and Yu (2018) to assess airport service quality. By focusing on the contextual and emergent nature of customer evaluations through OCRs, this research tries to uncover the richer and more complex dimensions of quality perception, particularly in hybrid offerings. Nevertheless, the collection and analysis of online textual data generated by customers remains a challenging endeavour, as the corresponding methods are relatively nascent in comparison to longer-established research approaches. (Bichler *et al.*, 2008; Baron and

Russell-Bennett, 2016, p. 674). The following sections examines the application of grounded theory to the analysis of OCRs for hybrid offerings. This will establish the empirical basis for understanding how value-in-use is co-created and assessed. Furthermore, the subsequent chapters will present a systematic outline of the methods employed in data collection, coding, and analysis, thereby ensuring that the research findings are grounded in a robust and comprehensive methodological framework.

4.3.2 The Methods of Grounded Theory

Grounded theory is a qualitative research methodology that was originally developed by sociologists Barney Glaser and Anselm Strauss in the 1960s (Glaser and Strauss, [1967] 2017; Locke, 2001, p. 1). The approach is designed to allow researchers to generate theory inductively from empirical data, rather than starting with preconceived theories or hypotheses (Glaser and Strauss, [1967] 2017, p. 6; Locke, 2001, p. 37). One key aspect of Grounded Theory is its emphasis on constant comparison (Bell *et al.*, 2022, p. 533). This involves continually comparing new data to existing data and theoretical concepts in order to refine and develop the theory (Glaser and Strauss, [1967] 2017, p. 102; Charmaz, 2014, p. 245). This iterative process can be particularly useful for researchers studying social interaction because it allows them to continually refine their understanding of how individuals use symbols to create meaning and how these meanings shape social interaction (Charmaz, 2014, p. 278). Hence, grounded theory is well-suited to researching procedural symbolic interactions because it allows researchers to generate theories that are grounded in the data and that capture the meanings and interpretations that individuals attach to their experiences (Locke, 2001, p. 34; Bell *et al.*, 2022, p. 539).

In the context of business research, Locke (2001, pp. 95–98) argues that Grounded Theory methods are particularly appropriate because they

- capture the complexity of the context in which social interaction unfolds;
- are of pragmatic usefulness by bridging theory and practice;
- facilitate theory-building work in substantial areas which have been researched in-depth yet;
- put new life in mature theoretical areas.

Critically, Locke (2001, pp. 111–112) sees access to business processes and their actors as a particular challenge for the researcher. Although companies can certainly benefit from the research results, the operational phase of data generation, especially in case of observations or the sourcing of other primary data can prove very challenging in practice, if not unfeasible (Bulmer, [1988] 2013, p. 152). This is particularly true when the business processes of several companies are to be the subject of research, as the coordination of access and the continuity of the research reach their practical limits due to the researcher's limited resources (Locke, 2001, p. 111). Perhaps this is also one of the reasons that the methodological approach of Grounded Theory is still used to a limited extent in business research (Locke, 2015, p. 613).

But apart from its restrained use in business research, Grounded Theory has grown in and beyond the field of the social sciences (Denzin, 1994, p. 508; Belgrave *et al.*, 2023, p. 407). Its increasing popularity has led to the emergence of different methodological approaches (Charmaz, 2014, p. 12; Corbin and Strauss, 2015, p. 25; Bell *et al.*, 2022, p. 532). This development makes it necessary to decide which approach to be followed and applied during a research project. It is beyond the scope of this work to discuss and compare the intricacies of the different approaches to Grounded Theory. In order to ensure methodological consistency in the empirical part of this research project, it was decided to select and apply a well-established but frequently updated approach based on clearly defined guidelines for the research methodology. Among others (Corbin and Strauss, 2015), the approach of Constructivist Grounded Theory (CGT) in its most recent version presented by Charmaz (2014) meets these requirements. The approach adopts earlier grounded theory strategies but differs from its predecessors (Charmaz, 2017a, p. 299) by adopting a relativistic epistemology, acknowledging the multiple viewpoints and roles of research participants, taking a reflexive stance on their backgrounds and values, and situating research in the historical, social and situational conditions of its production.

Kathy Charmaz was a prominent scholar in the field of grounded theory who has made significant contributions to the development and refinement of the methodology (Corbin and Strauss, 2015, p. 25). Charmaz's work has highlighted the importance of a Constructivist approach to Grounded Theory, as

it emphasises the role of the researcher in constructing and interpreting meaning in the research process (Charmaz, 2014, p. 13). Charmaz's approach to grounded theory stresses the importance of reflexivity, the researcher's awareness of his own role in shaping the research process and the meanings that emerge from it (Belgrave *et al.*, 2023, p. 408). It is important to remember that the researcher's own experiences and perspectives shape the research process and the interpretation of the data, especially as he or she becomes part of the social world of the people being studied (Locke, 2001, p. 24). Charmaz also emphasises the importance of the relationship between the researcher and the participants in the research process. She argues that researchers should approach participants as partners in the research process, rather than simply as sources of data, to build trust and rapport with participants in order to generate rich and meaningful data (Charmaz, 2014, p. 91). Another key contribution of Charmaz to Grounded Theory is her focus on the use of multiple methods of data collection, such as interviews, observation, and document analysis (Charmaz, 2014, p. 45). This approach allows researchers to a substantial dataset that can be used to develop a deep understanding of the phenomenon under study.

Although sometimes criticised to being focused too much on processing data than invoking an iterative interaction between ideas and observation (Whitaker and Atkinson, 2023, p. 431), Charmaz's approach to Grounded Theory has contributed to reflexivity, cooperation with participants, and the use of multiple methods of data collection. Her perspective on Grounded Theory has helped to refine and expand the methodology, making it a valuable tool for qualitative research in a wide range of fields (Bell *et al.*, 2022, p. 537).

4.3.3 CGT Research Process

The methodological approach used in this work is described in detail in the next section. Therefore, only a compact overview of the central guiding principles as well as the generic CGT research process proposed by Charmaz (2014, p. 18) will be given here.

Charmaz (2014, p. 15) presents several researcher actions which in her experience constitute any Grounded Theory approach. In order to make the chosen research approach accessible and comprehensible to other

researchers, these actions were used as a basis for the conception of the research design. They serve as a guide to explain and critically assess the methodology applied in this work (Charmaz and Thornberg, 2021, pp. 321–322). Similarly, necessary deviations are identified and justified against the background of the chosen research design.

Constructivist Grounded Theory Research Actions (Charmaz, 2014, p. 15, 2017b, 2–3)

1. Conduct data collection and analysis in an iterative process.
2. Analyse action and processes rather than themes and structure.
3. Use comparative methods.
4. Draw on data in service of developing new conceptual categories.
5. Develop inductive abstract categories through systematic data analysis.
6. Emphasise theory construction rather than description or application of current theories.
7. Engage in theoretical sampling.
8. Search for variation in the studied categories or process.
9. Pursue developing a category rather than covering a specific empirical topic.

In the case of the CGT approach of grounded theory, it seems to be reasonable to add a tenth action according to Charmaz's contributions concerning the role of the researcher with regard to the outcomes of the research process:

10. Verify the role of the researcher and his level of immersion in social interaction during the research process (Charmaz, 2017b, 4)

These actions are integrated in a research process which is designed to facilitate a collaborative and iterative process of knowledge construction between the researcher and the participants. Charmaz (2014, p. 18) suggests a research process that consists of seven stages.

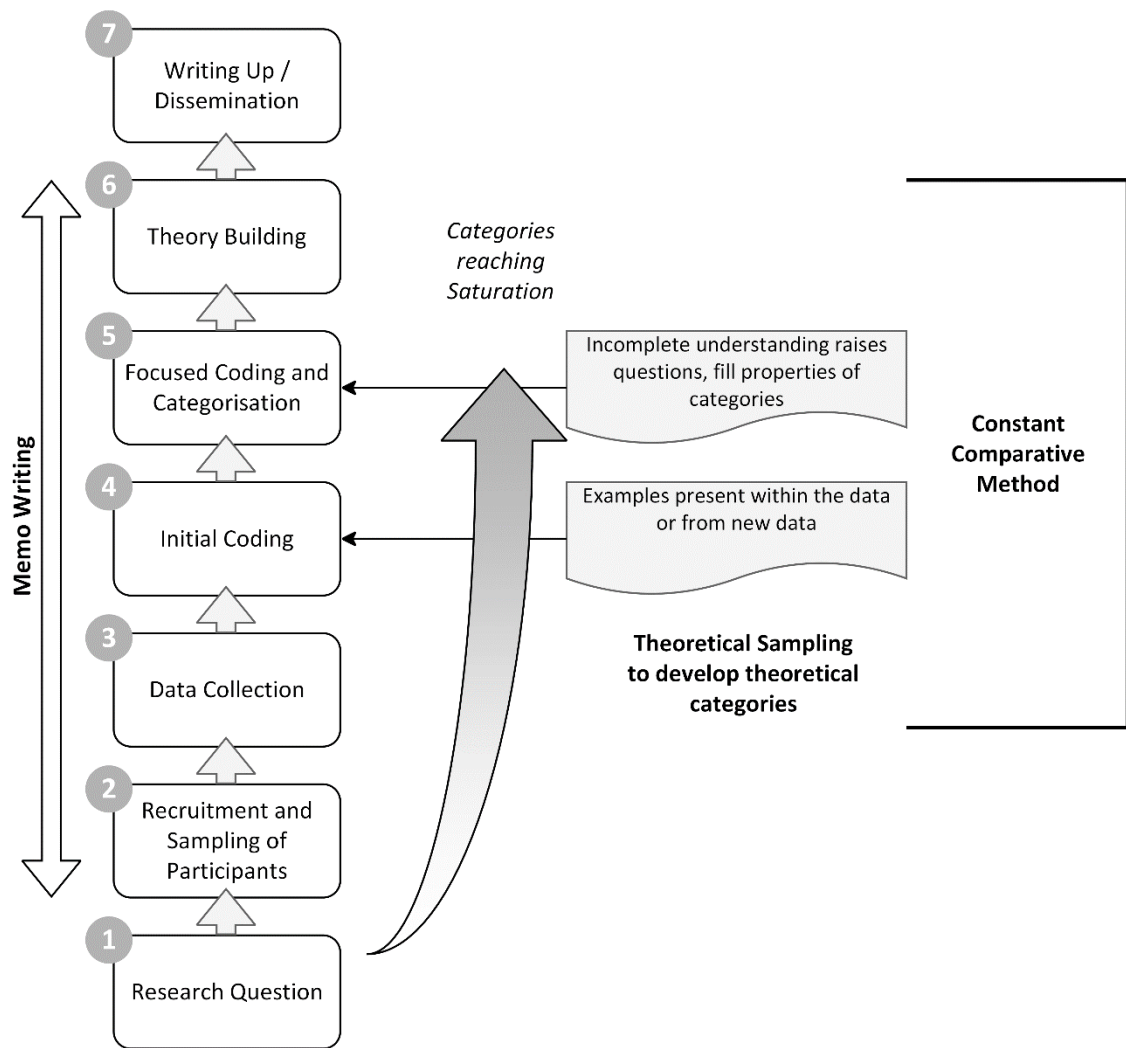


Figure 11 Visual representation of Grounded Theory (Charmaz, 2014)

The researcher begins by formulating a research question or problem (Charmaz, 2017b, 5; Bell *et al.*, 2022, p. 535; Belgrave *et al.*, 2023) and selecting a sample of participants by considering historical, social and situational conditions (Charmaz, 2017c, p. 34). Data is collected using methods such as interviews, observation and document analysis (Charmaz and Belgrave, 2019, p. 743). Charmaz (2014, p. 32) underpins the importance to gather rich data which delivers a full picture of the topic under research, as the depth and scope make a difference concerning research quality. Although there is a certain emphasis on first-hand data like interviews or observations in Grounded Theory Research (Charmaz, 2014, p. 55), Charmaz (2014, p. 45) points out that documents are valuable data sources as well.

Once the data has been collected, the researcher engages in an iterative process of coding to identify patterns and themes in the data (Charmaz and Belgrave, 2019, p. 744). This is done through initial coding, where the

researcher uses a process of open coding. This involves breaking down the data into discrete units and assigning codes to these units based on their content. This process helps to identify initial patterns and themes in the data, as the researcher assigns labels or codes to segments of the data that capture the meaning conveyed in that segment (Charmaz, 2014, pp. 116–117; Saldaña, 2021, pp. 148–149).

The researcher then engages in a sub-process of focused coding, which involves refining and consolidating the initial codes into a smaller set of core categories (Charmaz, 2014, p. 138; Saldaña, 2021, p. 134). These activities help to identify the central themes and patterns in the data and lead to categorisation as the researcher looks for similarities and differences between the codes and groups them into categories based on their relationships to each other (Bell *et al.*, 2022, p. 534). During the two coding stages, all the data is analysed and key concepts and patterns that emerge from the data are identified. As data analysis progresses, the researcher may engage in theoretical sampling to select new participants and data sources based on emerging theoretical insights (Glaser and Strauss, [1967] 2017, p. 45; Charmaz, 2014, p. 197). This involves selecting participants or data sources that are likely to provide new information or perspectives that can help refine the emerging theory (Bell *et al.*, 2022, p. 393). The researcher continues to collect and analyse data until the categories identified reach a point of theoretical saturation, where new data no longer provide significant new insights (Glaser and Strauss, [1967] 2017, p. 111; Charmaz, 2014, p. 206).

Unlike traditional grounded theory, which emphasises a more objective and empirical approach to data analysis, constructivist grounded theory emphasises the co-construction of knowledge between the researcher and participants (Charmaz, 2017c, p. 39). This means that the researcher actively engages with the data and participants to develop an understanding of how they construct meaning in their social worlds (Charmaz, 2017b, 7).

Memo writing is another important part of the data analysis process in CGT. Memos are written by the researcher to reflect on the data, identify patterns and themes, and develop theoretical insights. They are continually revised and refined as data analysis progresses (Charmaz, 2014, p. 162).

The final stage of analysis before writing up the findings is theory development. Unlike traditional grounded theory, which emphasises the development of a single, overarching theory, constructivist grounded theory emphasises the development of multiple, situated theories that reflect the diverse perspectives and experiences of participants (Charmaz, 2014, p. 239). The researcher engages in an iterative process of theory building, continually revising and refining his or her understanding of the data in collaboration with the participants (Charmaz, 2014, p. 240, 2017c, p. 39). Throughout the process of constructing grounded theory, it is necessary to maintain an open and flexible perspective and to continually refine the understanding of the data and the emerging theory. As a result, the researcher develops a theoretical framework that explains the relationships between the categories and subcategories and how they relate to the research question or theme (Glaser and Strauss, [1967] 2017, p. 98; Charmaz, 2014, p. 233).

The aim of CGT is not to uncover universal truths or objective facts, but rather to understand how people make sense of their experiences and construct meaning in their social worlds (Charmaz, 2017b, 7). By privileging the voices and perspectives of participants, CGT seeks to produce rich, nuanced and contextually situated understandings of social phenomena and their underlying processes (Charmaz, 2017a, p. 299).

4.3.4 Applying CGT

The preceding section demonstrated the general suitability of CGT for qualitative research, notably due to its iterative approach in deriving theories directly from data. This chapter builds on the fundamental principles of CGT to present a research strategy that uses unstructured qualitative data derived from OCRs to improve the understanding of the interplay between process design and process outcomes as well as perceived quality and Evaluate Aggregate Quality in terms of the CQF. This methodology is particularly appropriate in light of the still developing importance of customer reviews as a form of electronic word-of-mouth (Hennig-Thurau *et al.*, 2004, p. 39; Qiu and Zhang, 2024, p. 3) for the enhancement of business processes, as these reviews provide a substantial data source for the analysis of customer perceptions and satisfaction levels (Liu *et al.*, 2023, p. 403). One benefit (and challenge) of OCRs that has made them become a vital data source in business research is

their often unstructured, authentic and spontaneous nature (Haan *et al.*, 2024, p. 1). Therefore, they are instrumental in understanding shifts in consumer sentiment and market conditions, aiding strategic decision-making and fostering innovation (Liu *et al.*, 2023, p. 417).

The flexibility and iterative nature of CGT renders it particularly well-suited to the management of the variability and depth of OCRs (Xie *et al.*, 2024, p. 105). The methodology allows researchers to develop grounded theories that are closely aligned with empirical data, thereby facilitating a nuanced analysis of complex phenomena (Golder *et al.*, 2023, p. 320). The following sections will provide a detailed account of the practical application of CGT in the analysis of OCRs. This will encompass the research design, data collection and analysis processes. Furthermore, the discussion will examine the implications of the findings for understanding the co-creation of value-in-use within the context of hybrid offerings. This approach not only aligns with the previously discussed research methodologies but also extends them into a specific empirical context, providing a comprehensive framework for analysing and interpreting customer perceptions. This methodological continuity ensures a coherent integration of theory and practice, as initially outlined in the conceptual framework of this thesis.

But before, the benefits of developing a Generic Business Process (GBP) should be discussed in terms of contextualising the empirical data derived from OCRs. The importance of an industry-specific GBP model lies in its ability to provide a structured yet flexible framework for analysing how different aspects of a co-production process contribute to the overall customer experience, particularly in hybrid offerings where both tangible and intangible resources are integrated.

4.3.4.1 Generic Business Process Modelling

The business processes involved in delivering a service are often complex and vary significantly across different contexts. As a result, it is necessary to capture the intricacies of these processes in order to accurately interpret customer feedback (Chandler and Vargo, 2011, p. 41). The significance of this comprehension is amplified in hybrid offerings, where value-in-use is jointly generated through the direct interaction between the service provider and the

customer. Therefore, this chapter examines the necessity for developing a Generic Business Process (GBP) model to gain deeper insight into the nuances of customer perceptions and satisfaction, particularly in the context of hybrid offerings where the co-production process assumes a pivotal role. The GBP is not merely a theoretical construct; it is also a practical tool for the analysis and improvement of business processes that are integral to the delivery of value-in-use. From a more broadened perspective, it can be noted that GBPs of Hybrid Offerings are based on even more fundamental generic social processes in the sense of Prus (1987, p. 251). These include, for example, 'being involved', 'doing activity', and 'experiencing relationships' (Puddephatt and McLuhan, 2019, p. 144).

In alignment with the CGT, real-life context is not just background, but a critical component that shapes both the data and the subsequent theory (Charmaz, 2017c, p. 41, 2014, p. 53). This context sensitivity is particularly important when exploring the interplay between perceived quality and customer satisfaction, as the specifics of the business process directly influence these outcomes.

"The quality production process occurs when firms use attribute design and process design specifications to convert their resource inputs and those from customers into produced attributes." (Golder et al., 2012, p. 5)

Understanding the GBP is therefore essential, as it provides the framework within which customer perceptions of quality are formed and evaluated. Moreover, it provides the potential for enhanced customer satisfaction based on perceived service quality through the implementation of service design improvements (Andreassen et al., 2016, p. 23).

The CQF places significant emphasis on the alignment of business processes with customer expectations and perceptions, with the objective of achieving consistently high levels of customer satisfaction (Golder et al., 2012, p. 12). From the perspective of the CQF, a GBP represents the concrete application of the CQF Quality Processes to a specific industry. Of course, the CQF could also be applied to the business processes of an individual company. In both instances, the theoretical framework is situated within a contextual framework that draws upon processes observed in the real world. This establishes the interface through which customer perceptions can be interpreted in a particular

social (business) context in terms of CGT. Consequently, the development of a GBP model enables researchers to methodically identify and connect the quality attributes that are most significant to customers with the business process design, thereby facilitating the identification of avenues for optimising co-production elements with a view to enhancing satisfaction.

The iterative and flexible nature of CGT is particularly beneficial here. As data is collected and analysed in its context, new insights emerge that allow for continuous refinement of the GBP (Charmaz, 2014, p. 53). This iterative process is of great importance, as it enables researchers to refine the model until it most accurately reflects the actual business processes of a specific industry. It is important to acknowledge that the organisational structure of companies can be highly intricate. It is thus crucial to underscore that the primary focus of this research is on the co-productive processes in which interactions between customers and service providers occur.

A further advantage of defining a GBP is that it enables companies in the same industry to evaluate their own process structure against a standard model and contextualise the research findings in their own business environment. This allows them to gauge and assess their performance in relation to evolving customer expectations, thereby identifying areas where process improvements are required. In a dynamic market environment where customer needs and preferences are in a state of constant flux, the capacity to adapt business process design – particularly in the context of co-produced hybrid offerings – is crucial for maintaining relevance and effectiveness. For example, recent studies have highlighted the need to scan the environment in which a business operates and to learn from research in order to adapt to accelerating changes in consumer behaviour (Heinonen and Medberg, 2018, p. 670).

Moreover, the co-construction of meaning between the researcher and participants in CGT is significantly shaped by the specific research context. The manner in which participants express their experiences and the manner in which researchers interpret these findings are both shaped by the distinctive characteristics of the field of study (Charmaz, 2017b, 5). This collaborative approach guarantees that the resulting theory is not only based on empirical evidence but also accurately reflects real-world practices and issues (Charmaz and Belgrave, 2019, p. 747). It is therefore necessary to consider the effect that

the experienced instance of the GBP has on both the customer's perceptions and the researcher's observations. In order to gain a deeper understanding of the relationship between business processes and customer satisfaction, the researcher must code and interpret the data provided by the customer in order to identify the nuances of how these processes affect the customer's perception of quality.

In recent years, a substantial corpus of OCRs has emerged as a valuable source of data. The reviews offer a direct and unfiltered insight into customers' perceptions of quality as experienced through specific business processes, including the interactional co-production aspects that are integral to hybrid offerings (Birch-Jensen *et al.*, 2020, p. 816). By employing a GBP to interpret these reviews, researchers can discern how customers engage with the various stages of the co-productive business process and how these interactions influence their overall satisfaction. This approach identifies the key elements of both tangible and intangible service process outcomes that have the greatest impact on customer satisfaction or dissatisfaction. It provides actionable feedback that can be used to refine and improve the underlying business process design and its execution (Bigne *et al.*, 2023, p. 283). In light of the forthcoming empirical analysis of OCRs, the GBP will serve as a framework for interpreting customer feedback.

4.3.4.2 Value-in-use of OCRs

OCRs can constitute a pivotal data source for elucidating both the quality evaluation process within the CQF and the co-production processes involved in hybrid offerings. They provide a direct and unmediated view of customer experiences and perceptions, offering detailed feedback on various aspects, including perceived quality attributes, quality disconfirmation, customer satisfaction and evaluated aggregate quality (Linderman *et al.*, 2004, pp. 595–600; Birch-Jensen *et al.*, 2020, p. 816; Yang and Fang, 2004, p. 310). Moreover, the unstructured nature of OCRs permits the expression of a diverse array of sentiments and experiences, rendering them indispensable for capturing the nuances of co-produced quality attributes (Schoenmueller *et al.*, 2020, p. 873). It can be assumed that the quality attributes that are remembered and addressed during the evaluation writing process are of significant relevance

to customer satisfaction (Yang and Peterson, 2002, p. 31; Cadotte and Turgeon, 1988, p. 75).

CGT is particularly well-suited to the analysis of qualitative data found in OCRs, as the inductive approach of CGT permits the emergence of theories from the data itself, without the imposition of preconceived frameworks (Zeithaml *et al.*, 2020a, p. 34). This is of particular importance when considering the diverse and intricate nature of OCRs, which can encompass a vast array of experiences and positive as well as negative sentiments (Sun *et al.*, 2019, p. 69). The CGT methodology's emphasis on the co-construction of meaning is particularly pertinent when attempting to comprehend the subjective and context-dependent nature of OCRs (Martin *et al.*, 2008, p. 225). This approach guarantees that the analysis remains firmly anchored in the data, thereby facilitating a nuanced and context-sensitive interpretation of customer feedback. Furthermore, it encourages researchers to explore the emotional and experiential dimensions of customer satisfaction in depth, which is essential for a comprehensive interpretation in accordance with the CQF (Martin *et al.*, 2008, p. 232). OCRs frequently evince a spectrum of emotional responses, encompassing trust and satisfaction, as well as frustration and disappointment (Tan and Chen, 2023, p. 1007). It is therefore imperative to gain an understanding of these emotional responses in order to assess the affective dimensions of customer experience and satisfaction, which have a significant impact on customer loyalty and future purchasing decisions (Tan and Chen, 2023, p. 1020; Gentile *et al.*, 2007, p. 404). CGT's capacity to explore and interpret these emotional nuances provides a deeper understanding of the customer experience, which is essential for comprehensive quality evaluation (Gentile *et al.*, 2007, p. 397).

Furthermore, OCRs encompass a wide range of topics, including both tangible and intangible qualities of a hybrid offering. This diversity is essential for a thorough evaluation of quality, which aligns well with the CQF's comprehensive approach (Bigne *et al.*, 2023, p. 301). To illustrate, OCRs may encompass not only the durability of a hybrid offering but also the perceived professionalism of the staff or the quality of customer service during co-production. The capacity to extract these disparate dimensions and incorporate them into a unified theoretical framework enhances the utility of OCRs as a data source.

Concerning the topic of this research project, OCRs frequently provide contextual information regarding the specific circumstances under which hybrid offerings were used. Such situational details, including environmental factors and customer expectations, are crucial for a more granular understanding of quality perception and evaluation (Bigne *et al.*, 2023, p. 308). CGT's focus on context is particularly effective in uncovering these situational variables and understanding their impact on customer perceptions. From a business management perspective, contextual information is invaluable for tailoring quality management strategies to better meet specific customer needs and expectations (Coles *et al.*, 2020, p. 2).

4.3.4.3 Understanding Co-Production with OCRs

Online Customer Reviews (OCRs) are key to understanding the impact of active customer participation in co-production processes on customer satisfaction. By providing detailed insights into these interactions, OCRs reveal how customers engage in the co-production process. For example, in the context of optician services, OCRs might discuss the consultation process, the professionalism and expertise of the staff and the quality of the advice provided. Consequently, OCRs provide valuable evidence on the importance of the interaction between service providers and customers in determining perceived service quality (Lv *et al.*, 2023, p. 2799).

The unstructured nature of OCRs permits the expression of detailed and nuanced insights into these co-production processes. It is not uncommon for customers to narrate their experiences in a storytelling format, thereby providing context and elaboration that might otherwise be overlooked by more structured data collection methods (Black and Kelley, 2009, p. 170). These narratives may encompass multidimensional descriptions of the way customers were guided through the available options, the means by which their feedback was sought and incorporated and their perception of their involvement in the process (Wang *et al.*, 2023, p. 5).

Furthermore, OCRs may serve to illustrate the diversity in co-production processes observed across different service providers. This variability is of crucial importance for the comprehension of the factors that contribute to successful co-production. The analysis of OCRs may suggest that certain

service providers are more effective in engaging customers or more responsive to feedback (Sim *et al.*, 2022, p. 1947). The analysis of these differences can assist businesses in identifying optimal practices and areas for improvement in their co-production processes.

An improved understanding of the co-production process through OCRs has significant implications for quality management and innovation. The feedback provided can inform service providers of the necessary refinements to be made to their processes (Susanto *et al.*, 2022, p. 6; Lee and Yu, 2018, p. 41) and the potential training required of their staff (Shen and Tang, 2018, p. 709). For instance, if reviews persistently emphasise the significance of transparent communication and empathetic engagement during consultations, businesses may prioritise these elements in their training programmes to increase customer satisfaction (Lajante *et al.*, 2023, 21). Moreover, OCRs can offer insights into potential improvements of services, driven by customer suggestions and preferences (Qi *et al.*, 2016, p. 952; Rubio *et al.*, 2021, p. 1082). Furthermore, the analysis of OCRs can even facilitate the development of innovative business models (Zhang *et al.*, 2021, p. 2). By gaining insight into how customers perceive their role in the co-production process and the value they place on different aspects, businesses can develop new offerings that better align with customer expectations (Wang, 2022, p. 9).

4.3.4.4 Conclusion

The chapter puts forth CGT as a methodological approach to the analysis of value-in-use co-creation within hybrid offerings. Its iterative coding process, when combined with a GBP model, can provide a structured framework for examining co-creation and co-production activities, as well as the components of hybrid offerings. The analysis of OCRs represents the principal data source, offering detailed empirical insights into customer perceptions and the critical value-in-use drivers and co-production dynamics that are essential to achieving the research objectives. The application of CGT to the analysis of OCRs enhances the depth and validity of the insights obtained, facilitating a nuanced understanding of the manner in which customers contribute to and perceive their role in the process of co-production.

In conclusion, this chapter presents a robust methodological approach that serves as the foundation for the empirical analysis presented in chapter 6. Subsequently, the identified coding categories and themes will be systematically applied to a broader dataset, thereby enabling a comprehensive exploration of customer feedback patterns. This empirical focus will permit the validation and refinement of theoretical constructs, offering both quantitative and qualitative insights into value-in-use co-creation processes. Furthermore, the findings directly inform practical recommendations, providing actionable guidance for service providers aiming to optimise hybrid offerings in the optician industry. Prior to embarking upon the empirical analysis, however, it is necessary to provide a detailed explanation of the application of the research approach on an OCR dataset.

4.4 Data Processing: Collecting the Data

This section describes the methodology to be used in the collection of OCRs. A systematic sampling approach will be used to ensure the inclusion of a diverse and representative dataset. During the data extraction process, measures will be taken to anonymise any personally identifiable information in accordance with GDPR standards. This chapter also addresses the technical procedures used for data extraction, including automated tools for scraping the reviews and subsequent pre-processing steps. The process ensures that the data collected is both comprehensive and suitable for the subsequent iterative coding and analysis phases. Figure 12 outlines the systematic process used to collect and process the data.

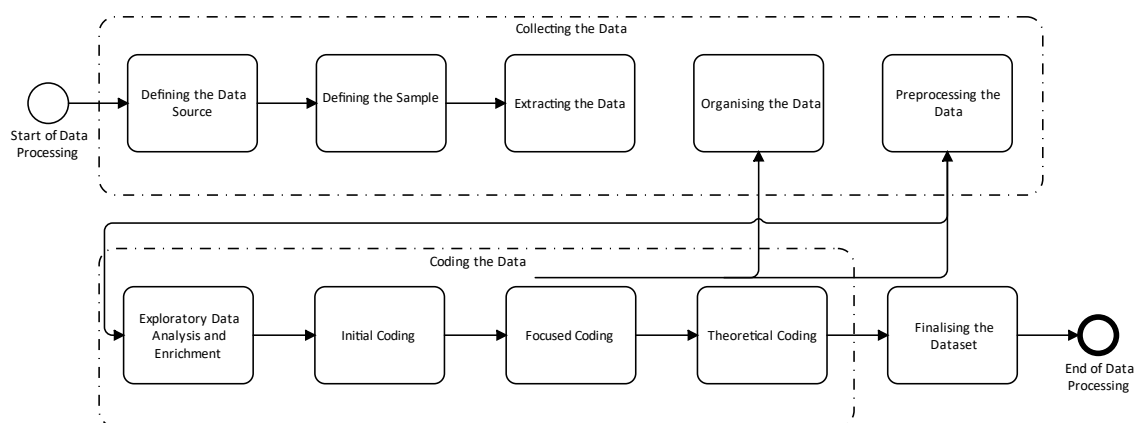


Figure 12 Data Collection and Coding Approach

4.4.1 Defining the Data Source

OCRs can be sourced from a variety of platforms, each offering unique advantages depending on the industry and research focus (Alzate *et al.*, 2022, p. 2). Popular sources include Yelp, which is well-regarded for restaurant and hospitality reviews (Yelp Inc., 2024), TripAdvisor, a dominant platform for travel and tourism feedback (Tripadvisor Inc., 2024) and Trustpilot, often used for e-commerce and service businesses (Trustpilot, 2024). Each of these platforms captures detailed customer experiences and opinions, making them valuable for different types of business analysis. However, for studying small and medium-sized enterprises (SMEs) across diverse sectors, Google Reviews stand out as a source of OC Rs.

Google Reviews offer significant advantages as a data source. Their widespread reach and robust moderation systems make them a suitable platform for studying customer feedback (Lee and Yu, 2018, p. 31). Google Reviews facilitate deeper analysis due to their accessibility and ability to provide large datasets that are both representative and dynamic through the ongoing contribution of millions of users (Reece, 2020). Furthermore, the quantitative star ratings, coupled with qualitative textual feedback, enable a detailed examination of customer value-in-use perceptions and aggregated service quality evaluation (Google Ireland Ltd., 2024).

For some years now, Google Reviews are of significant consequence in the formation of the digital landscape for small and medium-sized enterprises (Reid, 2020). As a fundamental component of electronic word-of-mouth (eWOM), Google Reviews are distinguished by their extensive reach, sophisticated algorithms, and integration with Google's broader ecosystem. Google Reviews are driven by a combination of user-generated content, algorithmic processing and comprehensive moderation systems (Leader, 2022). Users are invited to provide star ratings (on a scale of one to five) and textual feedback via online platforms such as Google Maps and Google My Business. Subsequently, the reviews are processed by Google's algorithms, which prioritise content based on factors such as recency, relevance, and user engagement. Incorporation of multimedia content, such as images, into reviews is associated with greater weighting, which in turn enhances their prominence in local search results and Google Maps rankings (Bolling, 2022).

In order to maintain customer trust and ensure quality assurance, it is of importance that Google upholds the integrity of the reviews it publishes. A combination of automated systems and human oversight is utilised to identify and remove fake reviews, spam and content that contravenes its policies (Wichiencharoen, 2023). Automated systems employ machine learning models to assess review patterns and identify suspicious activity, which is then subjected to further manual review (Pritchett, 2024). This multi-layered moderation approach guarantees that the platform remains a dependable source of feedback for businesses while preventing abusive content from influencing consumer decisions. Google's algorithms are designed to adapt continuously in response to changes in user behaviour and emerging challenges, such as the emergence of coordinated fake reviews. The algorithms are trained using data based on Google's content policies, thereby enabling them to more effectively identify fraudulent activities while still prioritising genuine, helpful reviews (Leader, 2022). These mechanics contribute to the reliability of Google Reviews, as they strike a balance between scalability through automation and the nuanced understanding provided by human moderators.

For small and medium-sized enterprises (SMEs), Google Reviews provide a comprehensive and reliable source of customer feedback, primarily due to the platform's extensive reach and user-friendliness. The platform's large user base increases the likelihood of SMEs accumulating reviews, which are relevant for establishing trust and enhancing visibility (Borchers, 2023). The user-friendly interface of Google My Business enables business owners to manage reviews, respond to feedback, and monitor insights from a single platform, which is another key advantage. This makes Google Reviews not only accessible but also practical for small businesses that require an effective online reputation management strategy without additional costs (Reid, 2020).

From the perspective of the researcher, Google Reviews are particularly well-suited to academic research on SMEs. They offer a vast and diverse dataset that spans multiple industries and geographic regions, ensuring a representative sample for analysis. Furthermore, the platform's reliability is enhanced by automated filtering, algorithmic analysis, and manual reviews, which serve to reduce the occurrence of fake reviews and ensure data integrity.

In light of the aforementioned considerations, the Google Reviews are employed as the OCR data sources in the subsequent stages of this research project.

4.4.2 Defining the Sample

The sampling approach that will be employed in this study is designed to yield a representative and diverse sample from the population of small and medium-sized enterprises (SMEs) operating within the skilled crafts sector in Germany. The primary objective of the sampling strategy is to ensure broad geographical and operational coverage, while securing sufficient data quality to support a rigorous empirical analysis of value-in-use co-creation in hybrid offering contexts.

To this end, a stratified random sampling strategy will be implemented (Nanjundeswaraswamy and Divakar, 2021, p. 26). This approach is intended to provide comprehensive regional representation across Germany, capturing the structural and contextual diversity of SMEs. It also enables the incorporation of practical constraints such as data availability and review quality (Bell *et al.*, 2022, p. 194), which are critical when working with publicly accessible digital feedback data.

The target population for the study will consist of SMEs that are publicly listed on open digital platforms – specifically those that provide customer-facing services and maintain a presence on review-based platforms such as Google Maps. Larger enterprises, including national or multinational chains, will be explicitly excluded to maintain the analytical focus on smaller and more autonomous business models. These firms are considered more appropriate for investigating the relational, localised and often tacit dynamics of value-in-use co-creation that are characteristic of the skilled crafts sector.

To achieve the intended regional diversity, a list of cities and towns across Germany will be compiled based on official demographic sources. The list will include locations of varying population sizes and will be randomly ordered using standard spreadsheet functions. Importantly, the list will not be weighted by population, thereby giving equal probability to cities and towns irrespective of their size. This decision is aimed at avoiding over-representation of major urban

centres and instead capturing a wider range of business environments and customer interactions.

Before implementing the full sampling procedure, a pilot phase will be conducted to determine the appropriate inclusion threshold for online customer reviews (OCRs). The primary objective of this pilot will be to establish a minimum review count that ensures sufficient data quality for analysis while maintaining broad geographic and organisational representation within the sample. Several threshold levels will be tested using a preliminary subset of the sampling frame. The evaluation will focus on balancing two competing priorities: (1) minimising the number of entities excluded due to insufficient review data, and (2) maximising the total volume and richness of the dataset. Lower thresholds may lead to higher inclusion rates but potentially limit the analytical depth of the collected data. Higher thresholds, by contrast, may enhance data density but risk excluding a disproportionate number of smaller or less digitally active entities, thereby narrowing the diversity of the sample. The results of the pilot will inform the final selection of the OCR threshold. The threshold adopted for the main study will be the one that achieves the best compromise between data quality and representativeness, ensuring that the empirical dataset is both methodologically robust and suitable for in-depth analysis. This step will contribute to the overall transparency and replicability of the sampling process and confirm the practical viability of the chosen data source.

The sampling procedure will be executed systematically. For each city in the randomised list, businesses will be assessed according to the inclusion criteria. If a suitable business cannot be identified in a given location, the next city on the list will be considered. This process will continue iteratively until the required sample size is achieved. A detailed record of excluded cities and the reasons for exclusion will be maintained to support methodological transparency and reproducibility.

It is recognised that this sampling strategy may introduce certain biases, particularly in relation to the exclusion of businesses with limited or no digital presence. Smaller or more traditional enterprises that are less reliant on online platforms for customer engagement may be under-represented. This limitation is a known challenge in online-based research (Bell *et al.*, 2022, p. 205). However, it is important to emphasise that the aim of this study is not to assess

individual companies, but rather to explore patterns of perceived service quality and value-in-use from the customer's perspective. The anticipated breadth and heterogeneity of the resulting sample are expected to mitigate the effects of such bias.

In summary, the sampling strategy outlined here will combine methodological rigour with contextual sensitivity. It will generate a comprehensive and diverse sample that is well suited to support the empirical investigation of value-in-use co-creation processes in hybrid offerings. Despite inherent limitations, the design ensures that findings can be generalised to the broader SME population within the targeted sector and will facilitate insights with relevance across comparable industry contexts.

4.4.3 Extracting the Data

In order to develop a practical method for extracting OCR from Google Maps queries, a number of approaches were tested in an experimental phase. It was found that there are inherent limitations to the automated export of Google Maps data. A standardised and accessible application programming interface (API) in Google Maps is only available to business account holders, and then only for the purpose of verifying their own business. Alternatively, a number of professional providers offer the ability to export data using specialist software. It is also possible to develop bespoke software applications, for example based on the Python programming language, to automatically extract data from Google Maps. An alternative approach would be to use a copy and paste method, but this would be extremely time-consuming, especially for large datasets, and in some cases prone to error. In any case, the extracted data would have to be extensively cleaned to meet ethical privacy standards by anonymising all records (Bell *et al.*, 2022, p. 130). As the researcher's aim from the outset was to use a method that would capture only the minimum data necessary for the research, a scraping method had to be developed that would allow privacy by design.

It took several weeks of research and experimentation to find a way to extract data from Google Maps in an automated way that would comply with privacy requirements. The final solution was to use the 'Google Maps Scraper' application on the 'Apify' platform (Apify Technologies s.r.o., 2023). Apify is a

flexible web scraping and automation platform that allows users to extract and manage data from websites. It provides a set of pre-built actors and custom scripts, making it accessible to users with limited programming skills. The platform is scalable, capable of supporting large-scale data extraction and integrates effectively with third-party systems via a robust API. Data can be exported in multiple formats and users benefit from an intuitive interface, comprehensive documentation, and community support. In line with the ethics of this research project, the integrated Apify Google Maps Scraper app can be configured to exclude personal data, such as the reviewer's name, from the generated dataset. Furthermore, the app allows the automatic translation of the original German review text into English using Google Translate. Although the quality of the translation is mediocre, it does allow English researchers to follow, at least in part, the content analysis of the raw data carried out in the subsequent stages of the research project.

The Apify application also offers several export formats. After some testing, it was decided to export in JavaScript Object Notation (JSON) format. JSON (JavaScript Object Notation) is a lightweight, text-based data format that is widely used for data exchange and storage. It is an ISO standard 'ISO/IEC 21778:2017', recognised for its readability and compatibility across programming languages. JSON represents data in key-value pairs, arrays, and nested objects, making it ideal for structured data transfer (ISO/IEC, 2024). It integrates well with Excel, particularly through Power Query, where it can be imported, parsed, and transformed into tabular data for analysis. Power Query can handle complex JSON structures, automate data updates, and extend Excel's data analysis capabilities (Klopfenstein and Howell, 2024). The complete procedure for the extraction of data is described in Appendix A.

4.4.4 Organising the Data

To effectively manage and analyse data, it is essential to consolidate the many JSON data files into a single, structured data set. The process involves a number of steps designed to ensure effective data management and analysis. The first stage of the process is to consolidate all relevant files into a single folder to facilitate loading and integration of the data. Centralising the files allows for a more streamlined and efficient process. Power Query is then linked to the folder, allowing all files to be loaded simultaneously. The functionality of

Power Query makes it easy to automatically combine data from different sources into a single import process.

Once connected, Power Query analyses a sample file to determine the structure, ensuring that all files are parsed in the same way. This standardisation is critical to creating a consistent data set across all sources. The data can then be subjected to any necessary transformations. Such transformations may include expanding nested information, renaming fields, filtering out irrelevant content, and organising the data in a way that facilitates further analysis. As the focus of further analysis is on the textual content of the reviews, all reviews without textual content are excluded from the dataset.

The data set is then refined and consolidated into a single table by applying the necessary transformations, making it easier to manage and prepare for interpretation. Once the data has been structured appropriately, it is loaded into Excel, where it is presented as a single table containing all the relevant information from the different files. This process effectively addresses the challenges of managing large datasets by consolidating data from multiple sources into a consistent and organised format, enabling efficient analysis and minimising potential errors. By automating the integration process through Power Query, the risk of error is reduced, and the dataset remains organised and reliable, providing a robust basis for further research.

4.4.5 Preprocessing the Data

Effective pre-processing of the data set is essential to ensure the accuracy and reliability of the subsequent analysis. The following methodology outlines a structured approach, in line with qualitative social research standards, specifically designed to prepare data for computer-assisted qualitative data analysis (CAQDAS). The procedure integrates both automated and manual steps to eliminate errors and improve data quality, resulting in a dataset ready for in-depth qualitative and quantitative evaluation. (Gibert *et al.*, 2016, p. 630).

The first stage of the process is data cleansing and standardisation. The process begins by assigning a unique identifier to each data entry, combining a sequential number with a reference to the original JSON file. This identifier enables traceability, allowing researchers to link the cleaned data back to its original source, ensuring transparency and accountability in the research

process (Mora-Cantalops *et al.*, 2021, p. 2). This approach is in line with the general call for transparency and reproducible science (Munafò *et al.*, 2017, p. 5) as well as the tenets of constructivist grounded theory, which emphasises the importance of retaining the ability to revisit the original data source for iterative analysis and the refinement of emerging themes (Charmaz, 2014, p. 136).

Data cleaning also includes the removal of unprintable characters and extraneous line breaks from the review texts. In line with best practice in qualitative research, textual data must be free of formatting inconsistencies that may hinder automated analysis (Aleqabie *et al.*, 2023, p. 129). In this process, the Excel function 'Clean' is used to systematically remove all non-visible characters to ensure that the text is standardised across all entries. Line breaks are also removed to ensure a consistent text structure, which is particularly important for subsequent auto-coding processes.

To provide an overview of the characteristics of the dataset, the length of the text of each review is calculated using the Excel function 'LEN'. The number of characters is a standard measure in qualitative research, as it allows a preliminary assessment of the richness and depth of the data (Dumas *et al.*, 2021, p. 520). Generating this metric for each entry allows the dataset to be categorised based on text length, facilitating the identification of outliers or unusually short entries that may require additional review or exclusion.

One of the key strengths of this pre-processing approach is the combination of automated and manual quality assurance methods. While automation ensures efficiency and consistency across large datasets, manual review provides an essential additional layer of contextual understanding and error correction. This combined approach significantly improves data quality over purely automated processes, which may fail to identify nuances or anomalies that require human interpretation (Chen *et al.*, 2014, p. 5185). To illustrate, if an automated process encounters an unusual formatting error, such as a misplaced character or an abbreviation, it may either ignore it or misinterpret it. This could result in skewed results in subsequent analysis. The manual review phase serves to mitigate such risks by allowing the researcher to apply his expertise in detecting and correcting subtle inconsistencies, thereby ensuring a cleaner and more accurate dataset. This combined approach is also consistent with the principles of CGT, which emphasises the importance of the researcher's ongoing engagement with

the data for the co-construction of meaning and the refinement of emerging categories (Charmaz, 2014, p. 54). Furthermore, CGT underscores the significance of reflexivity, contextual comprehension and progressive analysis (Charmaz, 2014, p. 52). The researcher is actively engaged with the data, co-constructing meaning, rather than relying solely on mechanical processes. The combination of automated cleaning and manual review directly supports this methodological stance, allowing both efficiency and depth in data preparation. Furthermore, the iterative testing and refinement of the dataset during exploratory data analysis is consistent with the constructivist emphasis on flexible and emergent research design, where data analysis responds to insights that emerge during the research process (Bell *et al.*, 2022, p. 535). Table 7 shows an example of a scraped and pre-processed OCR record.

Data Field	Example Record
Record Identifier	2::2021-06-07_15-57-56-220
Cleared Text	Habe Ausdrücklich gesagt ich möchte einen Sehtest wo alle Werte für eine Brille drauf stehen Naja Die Pupillen Distanz wird mir <u>Wohl</u> nur übermittelt sofern ich eine Brille dort Kaufe Nun habe ich einen Test für 19 in dem mir sowas einfaches wie der Pupillen abstand fehlt Für was kaufe ich diesen wenn nicht alles drauf steht wo ich benötige Dame war nett Allerdings somit trotz allem schlechte Beratung und denke die Dame hat mich wohl nicht richtig Verstanden Am Telefon auf Nachfrage war eine andere Dame nicht wirklich Freundlich <i>English Translation: I explicitly said I want an eye test where all the values for glasses are on it Well, the pupil distance is probably only transmitted to me if I buy glasses there Now I have a test for 19 in which something as simple as the pupil distance is missing For what do I buy this if it doesn't say everything I need Lady was nice However, despite everything, bad advice and think the lady probably didn't understand me properly On the phone on request another lady was not really friendly</i>
Date	29.10.2020
Stars	2
Characters	532
PBI Key Phrase Extraction	Dame, Brille, Pupillen abstand, trotz allem schlechte Beratung, Werte, einfaches, stehen, Telefon, Nachfrage, Sehtest, Distanz
PBI Sentiment	0,546556652

Table 7 Example OCR Record with Data Enrichment

4.5 Data Processing: Coding the Data

This section outlines the data processing procedures that will be used to code the collected OCRs. In line with the principles of CGT, coding will serve as the primary method for transforming raw data into meaningful theoretical insights.

Initial coding involves an examination of the data to identify significant categories. The next stage, focused coding, will involve refining these initial codes to focus on the most significant and frequently occurring themes. Finally, theoretical coding will integrate the focused codes into a coherent framework that will form the basis of the emerging grounded theory.

Memoing will be used throughout the coding process to document reflections, analytical decisions and evolving theoretical ideas. This iterative approach to coding, characterised by constant comparison and progressive refinement of categories, will ensure that the theory remains closely grounded in the data. The process will aim to uncover how value is co-created in hybrid offerings within the skilled craft sector.

4.5.1 Exploratory Data Analysis and Enrichment

A preliminary phase of the analysis involved preparing the dataset for coding through exploratory data analysis and AI-driven enrichment. The raw reviews were pre-processed to calculate character counts, providing an early measure of content richness and, by extension, information load – the amount and variety of detail, contextual explanation, and evaluative commentary contained within a review (Borchers, 2023). Longer reviews typically carry a higher information load, offering richer descriptive depth and more opportunities to identify complex themes and subtle patterns (Kim, 2021, p. 166). Short reviews, while not without merit, often focus on a single aspect of the service encounter and thus offer more limited analytical scope (Wang *et al.*, 2023, p. 6).

Consequently, review length was retained as a diagnostic variable to ensure that the coding process captured the breadth and depth of perspectives within the dataset.

The dataset is then imported into Power BI, where AI algorithms are used to extract keywords and perform sentiment analysis (Liu and Downing, 2024, p. 49). These algorithms produce two additional attributes for each OCR: (1) extracted keywords and (2) sentiment scores. The 'ExtractKeyPhrase' and 'Sentiment' analysis capabilities in Power BI, powered by Azure Cognitive Services, are valuable tools for academic research, particularly in the study of online customer reviews. These tools enable researchers to automate the

analysis of large volumes of textual data, extract key insights, and quantify emotional content (Microsoft Power Platform, 2024b).

The ExtractKeyPhrase function helps to identify significant categories and themes within OCRs by highlighting recurring phrases. For example, when examining customer feedback, this feature can quickly identify key product-related terms such as 'durability', 'pricing' or 'customer service', providing a concentrated view of the factors influencing customer satisfaction or dissatisfaction. The extracted keywords can facilitate the identification of patterns that might otherwise be missed in a manual analysis. Automating this process not only saves time, but also ensures consistency and reduces bias in qualitative research.

Sentiment analysis complements keyword extraction by classifying customer feedback into one of three categories: positive, neutral, or negative sentiment. It processes text data and assigns a sentiment score to each entry, allowing researchers to quantify the overall emotional tone of customer reviews (Microsoft Power Platform, 2024a). In the context of OCR studies, sentiment analysis is a useful tool for identifying patterns in customer satisfaction, tracking sentiment trends over time, or comparing emotional responses across product categories. By correlating sentiment with key phrases, researchers can gain a deeper understanding of the factors that influence customer opinion and behaviour. The AI-enriched dataset is exported as a CSV file and integrated with the original dataset, thereby enhancing the analysis by incorporating these key insights.

4.5.2 First Cycle: Initial Coding

Once the exploratory analysis and data enrichment is complete, the dataset will be subjected to initial coding, which focuses on systematically assigning codes to the data. Therefore, the next step is to import the OCR dataset into NVivo for keyword frequency analysis. NVivo is a fundamental tool for constructing coding categories. Using the key phrases identified by Azure AI, a word frequency analysis is performed to examine the thousand most frequent terms in the OCR dataset. These terms provide preliminary insights into recurring categories and themes that are most important to customers. They are used in the initial coding

cycle to help the researcher formulate coding categories that are firmly anchored in the data.

As CGT emphasises, researchers need to interpret potential codings within the broader context of customers' experiences and perceptions. This ensures that the codes and categories developed are not only quantitatively frequent, but also qualitatively significant. In OCR studies, this combined approach - using word frequency to guide initial coding, followed by contextual analysis - enables researchers to systematically process large data sets while generating theory that reflects customer perspectives and experiences, providing richer insights into consumer behaviour and market dynamics. Furthermore, this approach deliberately avoids the use of stop-word dictionaries, as such automated filters can sometimes introduce inaccuracies by excluding contextually relevant terms (Chanda and Pal, 2023, pp. 1–2). Additionally, stop-word lists are often predefined and rigid, which may lead to context-specific or domain-specific words being wrongly classified as irrelevant (Sarica and Luo, 2021, 2).

The decision to manually review and refine the Nvivo output reflects the CGT approach in which the researcher plays an active role in interpreting and co-constructing meaning from the data. The next coding phase begins with the re-importation of the enriched dataset into the OCR dataset as an additional Excel spreadsheet to allow for further data coding procedures.

4.5.3 Second Cycle: Focused Coding

Following the initial coding phase, the subsequent analysis progresses to focused coding. In this phase, the most significant term codes identified in the initial phase are refined and structured into broader categories. The objective is to transition from descriptive codes to more abstract categories that encapsulate the fundamental topics that emerge from the data. In practice, this involves an extensive iterative process of moving back and forth between terms and categories until all terms are assigned to a category or dropped as 'irrelevant' for the further auto-coding or too 'ambiguous'.

The next stage of the coding process is to apply these category codes to each OCR using an automated Excel function. This function is designed to scan the review text and assign relevant codes based on their occurrence. At this point, the researcher will again engage in an iterative process of categorisation,

merging related codes and refining categories in a coding-the-code approach, with the aim of achieving a higher level of conceptual clarity. This process involves further selective coding of the most relevant data, thereby facilitating the identification of core categories that most accurately reflect relevant themes from the data set. Focused coding is a crucial stage in the process of achieving theoretical saturation and developing a theoretical framework. As the core categories become more substantial, they can be more confidently related to the research questions of the study and the broader theoretical framework.

4.5.4 Third Cycle: Theoretical Coding

The final stage, theoretical coding, involves integrating the focused codes into a meta-framework consistent with the CQF and GBP discussed in this thesis. Theoretical coding serves to relate the identified categories to each other and to place them within a broader theoretical structure that can explain the process of value creation of hybrid offerings. Theoretical coding elevates the discussion of data analysis from descriptive to conceptual by identifying relationships between categories and specifying how they interact to explain the phenomena under investigation. This stage is essential for constructing a grounded theory that remains deeply rooted in the data while providing explanatory depth.

The procedures described will follow a structured yet flexible trajectory, traversing the domains of exploratory data analysis and theoretical coding in a manner consistent with the tenets of constructivist grounded theory. The integration of AI analysis and manual review will facilitate a comprehensive understanding of the dataset, while ensuring that the emerging theory remains firmly grounded in real-world data.

Integration with the CQF

The CQF model used in this research highlights the interrelationship between quality attributes, customer perceptions and value creation. Of particular interest is the contrast between customer feedback on quality attribute perceptions during the co-production of hybrid offerings and during their subsequent usage. In line with the Sphere Model, a distinction is made between feedback relating to the Provider Sphere, the Joint Sphere, and the Customer Sphere. By linking the identified themes to the CQF, the analysis facilitates the integration of abstract SDL premises with practical quality management processes. For

example, codes related to the interaction between customer and provider during co-production could be directly related to relationship quality, whereas codes focused on satisfaction with the performance of the tangible product could be related to usability quality.

Mapping onto the Generic Business Process

The introduction of the GBP provides a systematic approach to understanding the co-creation of value in use through hybrid offerings. The theoretical coding involves positioning the identified codes and categories within the sub-processes of an industry-specific GBP. The aim is to construct a process-oriented model that not only elucidates the ways in which value-in-use is co-produced, but also identifies key points of value-in-use co-destruction.

For example, codes related to communication failures or waiting times could be linked to process inefficiencies within the GBP, providing insights into how improvements could be made to increase value. In addition, the mapping of codes to the GBP allows the identification of quality critical points in the service delivery process.

4.5.5 A Note on Memoing

Memoing represents a fundamental method within the CGT paradigm, functioning as a crucial instrument for the documentation of the ongoing analytical process and the refinement of nascent theoretical concepts (Charmaz, 2014, p. 162). It refers to the often spontaneous practice of recording thoughts, ideas and reflections that emerge during the process of data collection and analysis (Charmaz, 2014, p. 165). Also, it differs from traditional note-taking in that it captures the researcher's analytical engagement with the data, which is a central aspect of the theory-building process (Chametzky, 2023, p. 42)

In the context of this research project, memoing is an effective approach that aligns with the iterative and reflexive nature of the research process, as it is conducted in a continuous cycle of data collection, coding, analysis, and theory refinement. Memoing allows the researcher to monitor the evolution of concepts, refine categories, and document analytical decisions, thereby streamlining the process (Charmaz, 2014, p. 189). Furthermore, memoing ensures that emergent ideas are systematically recorded and revisited, thereby

facilitating the generation of deeper theoretical insights from the data (Birks *et al.*, 2008, p. 70).

Memoing also plays a role in promoting reflexivity (Birks *et al.*, 2008, p. 69). The practice of documenting one's biases, assumptions and subjective interpretations as one engages with the data is encouraged as a means of maintaining transparency and rigour throughout the study (Chametzky, 2023, p. 41). Reflexive documentation is essential not only to enhance analytical depth but also to demonstrate critical self-awareness, which is a fundamental aspect of academic work. Although the process of memoing involves a degree of privacy on the part of the researcher (Chametzky, 2023, p. 40), it is helpful for discussing thoughts and building a collaborative relationship with other researchers, as it documents the development of ideas and analytical conclusions over time (Charmaz, 2014, p. 191). As new data is collected, memos allow the researcher to revisit and refine previous findings, thereby ensuring that the emerging theory remains coherent and grounded in the data (Mills *et al.*, 2006, p. 11). This iterative process is particularly important in the structure of this research project, where concepts were continually developed and refined over an extended period of time. By adopting a systematic approach to memoing, the researcher was able to ensure a clear analytical trajectory while maintaining a firm grounding in the data.

4.6 Justification of the Methodology

Although the established approach to CGT is to generate theory directly from data (Charmaz, 2014, p. 311), combining theoretical coding with predefined frameworks in a mixed methods approach can increase the depth, rigour and relevance of the findings (Charmaz, 2014, p. 323). The integration of established models allows for the incorporation of new insights into existing knowledge, the organisation of complex datasets and the contextualisation of findings within the broader academic discourse (Charmaz, 2014, p. 325). This approach is particularly useful when the research context requires alignment with disciplinary standards or existing theories. By integrating theoretical coding with pre-developed frameworks, researchers can achieve a more nuanced understanding of complex relationships while still adhering to the principles of CGT (Walsh *et al.*, 2015, p. 587).

In the context of researching hybrid offerings, a mixed inductive and deductive approach is particularly well suited to the task at hand. The study of hybrid offerings is inherently complex due to the multifaceted nature of these products, which include both tangible and intangible elements. An inductive approach allows for the emergence of novel concepts directly from empirical data, which is essential for understanding how value-in-use is co-created in these offerings (Walsh *et al.*, 2015, p. 593). However, while inductive reasoning uncovers new insights, a deductive approach allows these insights to be contextualised within existing theoretical frameworks and business processes, ensuring that research is anchored in established knowledge and practice. This combination of inductive and deductive approaches is well suited to the complexity of hybrid offerings. It allows for an iterative process in which emerging patterns from the data are continuously compared with existing frameworks and processes, such as a GBP.

The incorporation of AI-driven methodologies in conjunction with human expertise serves to strengthen this research approach. Artificial intelligence algorithms facilitate efficiency and scalability in processing large data sets, identifying trends and extracting key phrases. However, they often struggle with context-sensitive language, ambiguous input, and complex sentence structures. Automated tools may misinterpret polysemous words or extract overly generic phrases that lack substantive meaning, leading to a mismatch between output and research objectives (Sreedharan, 2023, p. 464). In contrast, human researchers, with their ability to understand nuanced language, cultural references, and specific research contexts, can refine AI-generated output to ensure that only relevant and contextually appropriate phrases are retained. This hybrid approach allows the rapid processing and consistent output of AI to be combined with human judgement, reducing the likelihood of misinterpretation (Sarker *et al.*, 2024, p. 160). Furthermore, when working with large datasets, the sheer volume of data can offset some of the limitations of automated methods. The emergence of patterns and key themes is more likely to be consistent across the dataset, allowing AI to identify significant topics with greater accuracy. Augmenting human reasoning with AI capabilities increases the rigour and reliability of data analysis, ensuring that insights are contextually relevant and aligned with research objectives (Wang *et al.*, 2019, p. 20).

In summary, the combination of theoretical coding, predefined frameworks and a hybrid approach to data quality assurance serves to enhance the overall rigour, depth, and applicability of CGT. This approach allows the study of hybrid offerings to remain firmly grounded in empirical data, while incorporating relevant theoretical insights, ultimately resulting in a comprehensive and actionable theory.

However, while the combined inductive and deductive approach has significant strengths for studying hybrid offerings, it is important to recognise its limitations compared to other methodological approaches.

1. **Risk of theoretical overshadowing:** A major challenge in integrating pre-defined frameworks with grounded theory is the risk of established theories dominating emergent findings. The fundamental aim of grounded theory is to develop a theory that is entirely data driven. The introduction of existing frameworks can lead to overly deductive analysis, where pre-existing concepts are imposed on the data rather than allowing new concepts to emerge organically (Charmaz, 2014, p. 311). Such an approach can lead to confirmation bias, whereby findings are shaped by the researcher's expectations, thereby reducing the inductive richness that CGT typically seeks.
2. **Balancing flexibility with analytical rigour:** The chosen methodology involves a harmonious integration of inductive flexibility and deductive rigour. However, achieving this balance in practice is challenging. While the inductive component allows for the discovery of novel insights, the integration of predefined frameworks could result in a more rigid analytical structure. Alternative approaches, such as purely inductive methods (e.g. classical grounded theory) or purely deductive methods (e.g. hypothesis testing based on quantitative research), may offer greater methodological clarity, although they may lack the flexibility of the combined approach (Walsh *et al.*, 2015, p. 589).
3. **Complexity in data integration:** The use of AI-driven methods, such as Power BI's Extract Key Phrases feature, combined with manual review, adds another layer of complexity to data pre-processing. While this hybrid approach is beneficial for refining AI-generated output, it is

resource-intensive and time-consuming. In contrast, fully automated text analysis techniques, such as natural language processing (NLP) algorithms, offer improved scalability and efficiency (Guetterman *et al.*, 2018, 10). However, such methods sometimes lack the contextual or emotional sensitivity required for nuanced qualitative research, which can lead to overly simplistic interpretations (Guetterman *et al.*, 2018, 11). Conversely, while offering greater contextual insight, purely manual methods are too resource intensive when faced with large qualitative datasets (Guetterman *et al.*, 2018, 2).

4. **Challenges in generalisability:** The hybrid inductive-deductive approach is context-specific, which may limit the extent to which the findings can be generalised (Bell *et al.*, 2022, p. 287). This approach is particularly well suited to exploratory studies, including those in under-researched areas such as hybrid provision in craft trades. However, alternative methods that prioritise hypothesis testing and statistical validation may produce findings with greater generalisability across different contexts (Bell *et al.*, 2022, p. 179).
5. **Methodological complexity:** The combined approach requires a high level of methodological expertise, making it challenging to implement without extensive knowledge of both grounded theory principles and the chosen analytical tools. This contrasts with more straightforward methodologies, such as thematic or content analysis, which are more readily applicable and accessible to researchers who may lack specialised training and literacy in advanced qualitative methods (Walsh *et al.*, 2015, p. 587) or AI-enhanced analysis (Chiu and Sanusi, 2024, p. 2).

In summary, the chosen methodology offers notable advantages in terms of flexibility, depth, and contextual relevance. However, these advantages are accompanied by certain trade-offs in terms of methodological complexity, potential bias, and resource requirements. Compared to alternative approaches, such as purely inductive or deductive methods, fully automated analysis or more traditional qualitative methods, the combined approach requires careful management to achieve an appropriate balance between flexibility and

analytical rigour, while ensuring that the emerging insights remain firmly grounded in the data.

4.7 Ethical Considerations concerning Data Privacy

The use of OCRs as a data source in academic research presents a number of unique challenges, particularly in relation to data protection, ethical considerations and compliance with regulations such as the General Data Protection Regulation (GDPR.eu, 2024).

The main concern is the potential exposure of personally identifiable information (PII). Even when OCRs are publicly available, clients often submit reviews using their real names or identifiable pseudonyms. The General Data Protection Regulation (GDPR) permits the collection and use of publicly available data for research purposes, provided that researchers adhere to recognised standards and ensure compliance with data protection rules (Article 89 GDPR). However, this permission does not exempt the researcher from the obligation to protect any personally identifiable information (PII) that may be contained in the data.

In this study, the anonymisation of the data is of paramount importance in order to ensure compliance with the GDPR, while at the same time allowing the research to be conducted with the necessary rigour. In particular, the exclusion of client names, pseudonyms and business identifiers during data extraction renders the dataset anonymous in accordance with the guidelines set out in Recital 26 of the GDPR. This process is consistent with prevailing best practice in OCR research, which emphasises the removal or obfuscation of any direct or indirect identifiers that could be traced back to an individual (Perez Vallejos *et al.*, 2019, p. 90).

Ethical considerations go beyond mere compliance with the legal framework and include a balance between transparency, respect for privacy and the societal value of the research in question. According to the British Psychological Society (BPS) guidelines, the use of publicly available data, including OCRs, requires ethical oversight. This is because even publicly available data may contain personal experiences that participants did not intend to be used for research purposes (BPS, 2024). It is recommended that researchers anonymise

data as much as possible and consider the potential impact on participants when using their reviews as part of a study.

To ensure that this research adhered to established ethical standards, all data collected was subjected to rigorous anonymisation procedures and the methodology was meticulously documented in accordance with relevant guidelines. In addition, the ethical implications of analysing OCRs were considered, with particular care taken to ensure that interpretations did not inadvertently harm subjects or misrepresent their views (Sugiura et al., 2017).

Given the sensitive nature of some OCR data, it is important to ensure that such data is securely stored and transmitted. The encryption methods selected, including military-grade AES-256 and RSA-2048 encryption technologies, are in line with industry best practice and are consistent with the data protection principles of confidentiality and integrity (GDPR Article 32). In addition, the storage of data on an encrypted network attached storage (NAS) system with two-factor authentication and the use of end-to-end encryption for cloud backups serve to minimise the risk of unauthorised access. These measures are particularly important in the context of OCR research, where breaches of confidentiality could result in the exposure of the identities or opinions of individuals who may not have foreseen such use of their publicly shared information.

4.8 Conclusion

The objective of this chapter was to address Research Question 2 (RQ2) by developing a customised, context-sensitive qualitative research approach that integrates the principles of Constructivist Grounded Theory with systematic procedures for data collection, enrichment and analysis. The approach was conceived with the objective of facilitating a systematic investigation of value-in-use co-creation in hybrid offerings through the utilisation of large-scale online customer review data.

The chapter commenced with the establishment of the research philosophy, which was founded on the principles of Pragmatism and Symbolic Interactionism. These frameworks supported the study's emphasis on understanding value-in-use co-creation through interaction and dynamic

processes, in alignment with the methodological focus of the research. Constructivist Grounded Theory was selected as the core research methodology due to its capacity to generate theory directly from qualitative data. The iterative and flexible nature of CGT was emphasised, particularly in how the research design enabled data collection, coding and analysis to function as a continuous feedback loop. This methodological approach ensured that theoretical development remained closely connected to the data and reflective of real-world phenomena.

The data collection process was based on OCRs due to their ability to provide valuable insights into customer perceptions and experiences. The sampling strategy was designed to produce a diverse and representative dataset, paying particular attention to methodological transparency. A comprehensive set of methodologies for data extraction and preliminary processing was presented, with a focus on ensuring compliance with the General Data Protection Regulation (GDPR) and on anonymisation techniques to safeguard the confidentiality of both customers and businesses.

A combination of automated and manual quality assurance measures was employed to strike a balance between efficiency and contextual accuracy, thus ensuring the integrity and reliability of the dataset. The coding process was designed in accordance with the CGT structure and comprised initial, focused and theoretical coding. This approach facilitates the identification of categories and the generation of theoretical insights. The ability to interpret these codes within the Consolidated Quality Framework and map them onto a Generic Business Process model was emphasised as a means of connecting the methodological outcomes with the study's broader conceptual framework.

Ethical considerations were addressed comprehensively to ensure compliance with GDPR requirements and protect the privacy of individuals whose reviews were analysed. Reflexivity was incorporated to acknowledge potential researcher biases and outline the steps taken to mitigate them.

4.9 Researcher Reflections

The development of the methodology was a challenging yet rewarding process, particularly given the lack of academic literature exploring the co-creation of value-in-use through hybrid offerings. This led to a number of significant challenges that influenced the direction of the methodological design.

One of the first challenges I faced was establishing the epistemological and methodological foundations on which to base my study. As my research aimed to explore value co-creation, I needed to choose an approach that would allow me to account for the complexity and subjectivity inherent in this phenomenon. The theory of Symbolic Interactionism proved to be an effective lens through which to understand value co-creation through interactions between actors. However, incorporating this into an effective research methodology required navigating philosophical debates about Pragmatism and Interactionism to ensure that the research was grounded in a sound theoretical framework that could support the empirical investigation. This task was both intellectually stimulating and challenging as it required me to balance competing theoretical perspectives.

As there had been little previous research on hybrid offerings in the craft sector, there was limited guidance on how to structure the research methodologically. Previous studies of hybrid offerings have often focused on either B2B contexts or larger, product-centric industries. Applying these frameworks to the particular context of hybrid offerings in my research required a different approach. I had to critically engage with grounded theory and adapt it to the research objectives, reflecting on how best to modify existing methodologies without compromising the integrity of the research. While CGT is an effective method for developing theory from primary data, it posed certain challenges when applied to a predominantly text-based dataset derived from online reviews. The open-ended, inductive nature of CGT proved difficult to reconcile with the theoretical framework I had established and required constant reflection. The iterative process of CGT required frequent adjustments to align with frameworks such as SDL and quality management models such as IQF/CQF. This involved several rounds of revisions and methodological adjustments, occasionally leading to periods of uncertainty about the direction of the study.

Another challenge was the process of collecting and sampling data for a relatively unexplored area. The subjective nature of OCRs, with their varying levels of depth, clarity, and usefulness, presented a sampling challenge. It was essential to ensure that the sample is representative across a range of geographical locations. This required considerable effort to refine the sampling approach, a process that required patience and constant evaluation. At times it felt like a never-ending task as I tried to ensure that the sample will be both comprehensive and representative.

The fact that OCRs are abundant but often unstructured and may contain irrelevant or unreliable information was another issue that needed to be addressed. It took several iterations to find the right balance between the quantity and quality of the data to ensure that the final dataset meets the research objectives. This process was at times tedious and overwhelming, but the sense of progress after each iteration provided motivation to persevere.

Furthermore, the methodology had to provide a balance between qualitative and quantitative elements in the analysis. While grounded theory is primarily qualitative, I also needed quantitative insights, such as the frequency of certain quality attributes mentioned in the OCRs, to increase the robustness of the analysis. This hybrid approach required the development of technical expertise in managing large datasets. Acquiring these skills represented a significant learning curve, but it has significantly enhanced my research capabilities.

On a personal level, there have also been significant challenges that have critically impacted my research project. The process of completing this thesis has been significantly affected by external crises, most notably the COVID-19 pandemic and the devastating flood disaster in my home region, the German Ahr valley, in 2021. The pandemic caused severe disruptions in my professional and personal life. As a self-employed person, the economic downturn that followed the outbreak of COVID-19 had a significant impact on my business and therefore my ability to devote consistent time to my empirical research. The optician industry was similarly affected, with many companies forced to either close temporarily or reduce their operations. This limited my access to the necessary networks and industry contacts.

To make matters worse, in July 2021, the Ahr valley in the Eifel region was hit by one of the worst floods in recent German history. The flood, which caused significant human and material losses, added another layer of disruption to both my personal and professional life. When I reflect on this period, I remember how quickly the event disappeared from the national headlines, but for the individuals and businesses affected, recovery remains a long-term process. These twin crises meant that while the OCR data was collected in 2021, the practical and emotional strain of these events meant that comprehensive analysis could not begin until 2023. The delay was largely a consequence of my need to address more immediate concerns during this period, including rebuilding my business and supporting the local community in the early stages of recovery from the floods.

Overall, the pandemic and the floods highlighted the need for resilience and adaptability in both research and personal life. Although these crises significantly disrupted the original timeline, they also provided valuable insights into the importance of reflecting on research progress in the light of real-world events. Despite these challenges, the continued development of this methodology has helped me to advance the understanding of value-in-use co-creation in hybrid offerings.

5. Empirical Case Study

5.1 Field of Research

5.2 Generic Business Process

5.3 Data Collection

5.4 Data Coding

5.5 Quality Assurance

5.6 Conclusion

The skilled crafts sector in Germany, known as the 'Handwerk' is a cornerstone of the country's economic and social landscape. With its roots in the guild systems of the medieval period, this sector continues to play a pivotal role in both the economic and cultural landscape. As of 2023, the sector comprises over one million enterprises and provides employment to approximately 5.6 million people, representing around 12.2% of the national workforce (Zentralverband des deutschen Handwerks, 2024b). This makes the skilled crafts sector a vital part of the wider German economy, making a significant contribution to its GDP and maintaining its traditions of craftsmanship, innovation and quality.

The German skilled crafts sector is characterised by its diversity and scope, reflected in the wide range of trades it encompasses (Zentralverband des deutschen Handwerks, 2024c). These include industries such as construction, woodworking, metalworking, and personal services like optometry and hairdressing. The sector is primarily composed of small and medium-sized enterprises (SMEs), with over 80% of businesses classified as micro-enterprises with fewer than 10 employees (ZDH, 2023), and is governed by the Crafts and Trades Regulation Code (Bundesministerium der Justiz, 2024). While this fragmented structure demonstrates the sector's resilience and adaptability, it also presents challenges in terms of human resources, scalability and digital innovation (Beuchel *et al.*, 2024, p. 10).

German skilled crafts businesses are unique in their ability to integrate tangible and intangible service components seamlessly, creating hybrid offerings that are in high demand (Zentralverband des deutschen Handwerks, 2024a, p. 7). For example, a shoemaker combines traditional craftsmanship with modern customer needs by offering specialised sneaker repairs, sustainable upcycled

products and comprehensive customer advice. Her hybrid offering includes bespoke solutions where she advises customers individually to find the best repair and product options for their needs (Zentralverband des deutschen Handwerks, 2024a, pp. 15–17). This offers a comprehensive value-in-use proposition that goes beyond the traditional product-service dichotomy. The interaction is not merely transactional but is characterised by a high level of relationship building, with continuous feedback loops and adjustments aimed at fulfilling evolving customer needs (Zentralverband des deutschen Handwerks, 2024a, p. 17). Such a process allows innovative skilled crafts businesses to deliver highly personalised solutions, which are essential for the co-creation of value-in-use.

The hybrid nature of skilled crafts offerings provides an ideal lens through which to study value-in-use co-creation, a central theme of this research. As it will be shown, the integration of tangible and intangible components is also aligned with the premises of the SDL. Over the past few years, the strategic ability to deliver solutions-based hybrid offerings has become even more of a core competency for many skilled craft businesses (Zentralverband des deutschen Handwerks, 2024a, p. 63). Businesses differentiate themselves through tailored, high-quality solutions that combine craftsmanship with service excellence, e.g. consultation concerning energy management of buildings from chimney sweepers (Zentralverband des deutschen Handwerks, 2024a, pp. 23–25). In contrast to industrial mass production, where economies of scale are the primary competitive advantage, the competitive edge in skilled crafts lies in customisation, flexibility, and the relational aspects of service provision. However, this positioning presents certain challenges, particularly in adapting to digitalisation and the advent of AI, which requires a rethinking of traditional processes and business models (Cordes and Schliephake, 2024, p. 13). While digital transformation offers promising opportunities, such as enhanced service efficiency through digital tools, it also introduces risks, especially in terms of preserving the human-centric nature of skilled crafts (Cordes and Schliephake, 2024, p. 94).

Another important feature of the German skilled crafts sector is the dual training system, which combines practical vocational training in a company with formal vocational school education. This system is considered an example of best

practice for ensuring the high level of skills and competences required by the sector (Zentralverband des deutschen Handwerks, 2024c). Master craftsmen undergo further extensive training and certification, ensuring not only technical expertise but also business management skills (Runst and Thomä, 2024, p. 53). Despite these strengths, the system has been criticised for its focus on traditional skills at the expense of emerging solutions-oriented skills in areas such as smart services (Meiren *et al.*, 2022, p. 3).

Although the German craft sector is held up as a model of effective vocational training and high-quality service provision, it faces challenges specific to its structure and regulatory environment. Strict legal frameworks, such as the 'Meisterpflicht' (master craftsman requirement), ensure high standards but can also inhibit flexibility and innovation (Katarzyrna Haverkamp *et al.*, 2021, p. 196). Compared to other European countries, where regulatory requirements are more lenient, the German system offers both advantages in terms of quality assurance and disadvantages in terms of market adaptability (Runst and Thomä, 2024, p. 54). In addition, demographic challenges such as an ageing workforce and difficulties in attracting younger talent pose a significant risk to the long-term sustainability of the sector. The dual training system, while effective, needs to adapt to these demographic changes by integrating more flexible and digitally-focused training modules that meet the evolving needs of quality-conscious customers (Zentralverband des deutschen Handwerks, 2023).

In summary, the skilled crafts sector in Germany provides a suitable case study for examining value-in-use co-creation through hybrid offerings. The combination of tangible and intangible resources and the focus on personalised solutions make it an appropriate subject for research. Understanding the dynamics of value-in-use within this context is insightful not only for advancing academic knowledge but also for improving business practices that seek to integrate tradition with modernity, craft with technology.

5.1 Field of Research

5.1.1 The German Health Care Trades

Germany's healthcare professions are a key element of the country's healthcare system, operating at the interface between traditional craftsmanship and

cutting-edge technology. These trades cover a range of professions, including opticians, hearing aid dispensers, orthopaedic shoe technicians, orthopaedic mechanics, and dental technicians (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2023, p. 2). The professions are subject to stringent regulation under the Skilled Crafts Ordinance (Zentralverband des deutschen Handwerks, 2024d), which mandates comprehensive vocational training, culminating in a master's certification for independent practice (Keller and Baumann, 2015, p. 12).

The healthcare trades are a prototypical example of the concept of hybrid offerings. The hybrid nature is particularly evident in the co-production process, which involves the active participation of both provider and customer in the co-creation of value-in-use. To illustrate, in the field of optometry, the process of making and fitting spectacles is not simply a matter of producing and selling a physical product. It involves a series of activities designed to involve the customer in the production process. These include vision tests, consultations to understand the customer's lifestyle and preferences, and multiple adjustments to ensure a perfect fit. These activities necessitate a high degree of collaboration between the optician and the customer, thereby underscoring the co-production of value-in-use, where the customer's input is of paramount importance for the quality of the process output (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2018, p. 6).

Similarly, in the field of hearing care, specialists work closely with customers to customise hearing aids that not only fit the physical dimensions of the ear, but also the specific hearing needs and preferences of the customer. The co-production process is further enhanced by the use of digital technologies, such as 3D scanning and printing, which facilitate precise customisation. The customer's active involvement in the selection, adjustment and fine-tuning of the hearing aid is crucial to the final value-in-use, thereby exemplifying the pivotal role of co-production in hybrid offerings (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2018, p. 9).

In recent years, the demographic shift towards an ageing population has had a significant impact on the healthcare trades. The number of businesses in this sector, which totals some 35,000 companies employing around 200,000 people, illustrates its considerable economic importance (Arbeitsgemeinschaft der

Verbände der Gesundheitshandwerke im ZDH, 2023, p. 2). As the population ages, demand for medical devices and related services is expected to increase, particularly in rural areas where access to specialist healthcare may be limited (Keller and Baumann, 2015, p. 24). As a result, demographic shifts are creating new customer demands, particularly among the elderly, who require high-quality, personalised healthcare solutions. This shift is expanding the market for healthcare trades, creating growth opportunities for both traditional services and emerging digital health technologies (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2018, p. 3). On the other hand, demographic change is expected to exacerbate the shortage of health professionals, requiring targeted efforts to attract and retain skilled workers. The ageing of the workforce in these professions further complicates this challenge, as older workers retire and take valuable skills and experience with them (Keller and Baumann, 2015, p. 21). This challenge is compounded by a complex regulatory environment that imposes significant documentation and certification requirements, increasing administrative burdens without necessarily improving service quality (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2023, p. 3).

However, these challenges also present opportunities for process innovation. The ongoing digital transformation offers significant potential to improve both the efficiency and quality of services provided. For example, orthopaedic shoe technicians are now using advanced gait analysis and 3D modelling to create highly customised shoes, which not only improves patient outcomes but also positions these professions as leaders in the integration of digital technologies in healthcare (Arbeitsgemeinschaft der Verbände der Gesundheitshandwerke im ZDH, 2018, p. 10).

In summary, the healthcare trades in Germany serve to illustrate the pivotal role played by hybrid offerings and co-production processes in the delivery of value-in-use for customers. This case study focuses on the German optician industry, a sector that effectively illustrates these dynamics. By examining the manner in which opticians adapt hybrid offerings and co-create value-in-use with customers, the subsequent chapters will provide comprehensive empirical insights, enhancing our understanding of value co-creation and offering a more

profound examination of the concepts and frameworks introduced within a particular and pertinent context.

5.1.2 The German Optician Trades

The optician trade stands out as a sector where traditional craftsmanship meets modern healthcare co-production processes. In comparison to the other four health care trades, this trade operates in a distinctive economic environment. Unlike many other medical devices, eyewear, including glasses and contact lenses, is predominantly paid for by customers out-of-pocket (Keller and Baumann, 2015, p. 12). This financial structure may make customers more sensitive to the quality of the products and services they receive, making the relationship between customer and provider crucial to achieving satisfaction.

In recent years, the German optician trades became highly competitive, facing pressure from large chain stores and online retailers. On average, an optician employs around five full-time staff. This number has not changed since several years. However, from 2021 to 2022, from 10,720 euros per employee to 3,807 employees, the operating profit has decreased significantly (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 28). Since 2013, the number of enterprises in the optician industry has been decreasing continuously (Zentralverband der Augenoptiker und Optometristen, 2023a, p. 9). In 2022, the number of opticians decreased again compared to 2021 and amounted to 11100 (2021: 11280). The number of persons employed also decreased from 48100 to 47900. The concentration process in the optical industry continued in 2022. The number of stores operated by the largest opticians increased, as did the number of branches of companies that rely heavily on multi-channel distribution. The number of enterprises decreased by 180 in 2022 (Zentralverband der Augenoptiker und Optometristen, 2023a, p. 10). On the other hand, the number of outlets of the ten largest optical companies increased to 2,568 (from 2459 in 2021). In relation to the total number of approximately 11,100 enterprises, this corresponds to a share of 23 percent. The recent 'Branchenstrukturerhebung Report' (Zentralverband der Augenoptiker und Optometristen, 2023b, p. 14) still highlights a trend of market consolidation, with the number of optician stores decreasing to 11,000 in 2023. Larger chains now dominate a significant proportion of the market, forcing independent opticians to differentiate themselves through personalised service and quality processes.

In addition, although the ten chains with the highest turnover in the optical industry account for only 23.1 per cent of all optical stores, their annual turnover in 2022 accounts for 50.7 per cent of the industry's total net turnover of 5.62 billion euros (Zentralverband der Augenoptiker und Optometristen, 2023a, p. 11). Among the chains, the two market leaders 'Fielmann AG' and 'Apollo Holding' stand out in particular. While Fielmann AG, with 614 branches (2021: 610), earns sales of 1253 million euros in 2022, Apollo Holding, with 906 branches (2021: 895), generates sales of 812 million euro (Zentralverband der Augenoptiker und Optometristen, 2023a, p. 10). The third largest chain store, 'pro optik Augenoptik Fachgeschäft GmbH, is by far smaller with sales of 155 million euros and 174 stores. Due to their size and large market share (31% share of sales in 2022), the two leading chains are not considered as SMEs and are therefore not included in the sample.

Regardless of the size of the business, the co-production process is essential to ensure opticians' customer satisfaction. Customers actively participate at multiple stages, from the initial consultation and eye examination to selecting frames and lenses and the final adjustment of glasses (Zentralverband der Augenoptiker und Optometristen, 2024a, p. 34). This involvement ensures that the final product aligns with the customer's specific needs, potentially leading to higher perceived quality and satisfaction. According to the ZVA's 2023 report, 53% of opticians now actively deliver optometric services, incorporating comprehensive eye health measurements into their services. This shift reflects the trade's evolution towards offering more integrated eye care services, beyond merely dispensing glasses (Zentralverband der Augenoptiker und Optometristen, 2023b, p. 11).

The importance of co-production is further underscored by findings from the 'Brillenstudie 2019', which revealed that customer satisfaction in the optician trade is exceptionally high, with 95% of spectacle wearers reporting satisfaction with their visual acuity provided by their glasses (Zentralverband der Augenoptiker und Optometristen, 2019, p. 4). This satisfaction is closely linked to the trust customers place in their opticians, who are seen as critical partners in ensuring the correct vision correction. On a scale of 0 (no trust at all) to 10 (very high level of trust), people who wear glasses choose the very high level of 8.8 on average when it comes to determining their visual acuity (Zentralverband

der Augenoptiker und Optometristen, 2019, p. 9). The study also highlighted that customers who received comprehensive advice were more likely to purchase additional vision aids, indicating the direct impact of thorough consultation on customer satisfaction and sales (Zentralverband der Augenoptiker und Optometristen, 2019, p. 5).

Technological advancements further enhance the co-production experience. Digital tools, such as advanced refraction equipment and 3D printing for customised frames, allow for more precise fitting and better alignment with customer preferences. The increasing adoption of digital platforms for booking appointments and conducting follow-up consultations demonstrates the industry's commitment to enhancing customer engagement and convenience (ZVA, 2023, p. 18).

Despite the innovative activities, the competitive landscape in the opticianry industry is marked by significant consolidation, with the top companies accounting for over half of the market revenue. One factor contributing to this trend is the aging demographic of optician business owners. As many owners approach retirement, there is potential for mergers and acquisitions that reshape the industry landscape (Zentralverband der Augenoptiker und Optometristen, 2023b, p. 6). Market saturation is also reflected in low market growth. In 2023, the German optician market experienced minimal growth in total turnover, reaching €6.8 billion, a 1.1% increase from the previous year (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 6).

The rise of online eyeglass sales presents both opportunities and challenges for the optician trade in Germany, although the share of the total market accounted for by glasses sold online is still low at 2.2 per cent (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 8). Online retailers offer customers the convenience of purchasing eyewear from home, often at lower prices than traditional optician shops. However, the ZVA has raised concerns about the quality and safety of glasses purchased online. According to the ZVA's position paper on online eyeglass sales, the primary issue is the lack of professional fitting and adjustment, which are critical for ensuring that glasses meet the necessary optical and ergonomic standards (Zentralverband der Augenoptiker und Optometristen, 2020c, p. 3). In particular, the ZVA argues that the lack of personalised adjustment in online purchases can lead to suboptimal vision

correction, discomfort, and even potential harm, particularly for complex prescriptions or multifocal lenses. Additionally, the co-production process, which is central to the co-creation of quality and value-in-use, is largely absent in online sales. This lack of interaction between the optician and the customer undermines the ability to effectively personalise eyewear and meet individual needs (Zentralverband der Augenoptiker und Optometristen, 2020c, p. 4).

In addition, the ZVA points out that online measurement procedures do not typically include the comprehensive eye health assessments that are increasingly being incorporated into the services offered by bricks-and-mortar opticians (Zentralverband der Augenoptiker und Optometristen, 2020b, p. 3). These assessments are crucial for detecting early signs of eye disease and ensuring overall eye health, which online platforms cannot adequately replicate. While online sales may appeal to price-sensitive customers, the ZVA emphasises the importance of educating consumers about the risks associated with bypassing professional services (Zentralverband der Augenoptiker und Optometristen, 2020c, p. 4). Therefore, the organisation advocates regulations that ensure a minimum standard of care in online eyewear sales, including mandatory consultations with qualified opticians, to protect the health and satisfaction of customers.

In this market environment, smaller, independent opticians face considerable challenges in maintaining their market position. The 'Branchenbericht 2023-2024' notes a growing trend towards outsourcing aspects of production, such as lens edging and frame glazing, to external providers (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 31). In 2022, nearly half of all lenses were edged externally, up from 30% in 2018, indicating a shift towards cost-saving measures in response to competitive pressures.

To remain competitive in a consolidating market, independent opticians must continue to enhance their business processes and integrate new technologies into their service offerings. Expanding optometric services represents a significant strategic opportunity, differentiating these providers from larger chains and allowing them to offer comprehensive eye care. The ZVA's 2023 report indicates untapped potential in smaller businesses that do not fully utilise optometric services (Zentralverband der Augenoptiker und Optometristen, 2023b, p. 11). Basically, they can strive to implement new measurements of eye

health in their co-production processes to become primary eye care providers (Cagnolati, 2012, p. 12). In practice, this means that the time required for the necessary refraction is greatly extended for a full anamnesis including detailed optometric examinations and screening for risk factors for certain eye diseases as part of a preventive examination (Zentralverband der Augenoptiker und Optometristen, 2024a, pp. 14–31). Customers have to stay much longer in the co-production process, taking part in several tests and answering various questions, for example about medical conditions or social habits (Zentralverband der Augenoptiker und Optometristen, 2024a, pp. 14–15). On the one hand, this increase in the duration of the co-production process may have an impact on the perceived quality and its evaluation by the customer. On the other hand, the complexity of the measurements requires additional competences on side of the optician as well as an investment of time resources. It is therefore necessary to assess whether this additional effort genuinely enhances the customer's perception of value-in-use. As digitalisation transforms the industry, further integration of digital tools, such as tele-optometry and AI-driven diagnostics, could enhance the customer experience and service efficiency as well (Zentralverband der Augenoptiker und Optometristen, 2021b, p. 6). By embracing innovation, independent opticians can provide personalised, high-quality services that meet the evolving needs of their customers. However, opticians currently appear to be sceptical about the opportunities offered by investing in process improvements through the use of modern technology. This is particularly evident in the low level of investment planned for 2024. Only 23% of opticians plan to invest in new technology in that year. In contrast, over 55% of opticians are not planning any major investments (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 36).

5.2 Generic Business Process

Considering the industry-specific challenges of the German optician trades, it becomes essential to understand the particularities of the value-in-use co-creation process and the related quality perceptions among customers who engage with hybrid offerings. Using the GBP approach, this research seeks to uncover the complex ways in which customers evaluate the perceived quality of hybrid offerings, taking into account both tangible and intangible components. Recommending improvements to opticians' processes is another valuable

outcome of this research. Once the nuances of value-in-use and quality perception are fully grasped, the GBP model can then be applied to refine and optimize business processes within the industry. These improvements will be helpful for ensuring that the co-created value-in-use meets or exceeds customer expectations, thereby enhancing the overall quality perception of the hybrid offering.

As will be shown, the optician's business process model used in practice is a well-structured, customer-focused framework that ensures the delivery of high-quality vision care, such as eyeglasses and contact lenses, tailored to individual needs. This process is not merely transactional but involves a sophisticated sequence of activities that integrate both tangible and intangible resources, ensuring the creation of value-in-use for customers. The GBP model systematically illustrates each activity in the customer journey during the Provider, Joint and Customer Spheres.

From a CGT perspective, understanding the specific business context in which opticians operate is also crucial, particularly when analysing OCRs to gain actionable insights. As discussed, CGT believes that knowledge is constructed based on the interaction between the researcher and the data within a specific context. Therefore, a deep understanding of the business environment is necessary to accurately interpret OCRs and identify the underlying processes that contribute to customer satisfaction or dissatisfaction. In order to extract meaningful insights, it is essential to contextualise them within the operational reality. Without a full understanding of the industry's unique challenges, analysis of OCRs can lead to superficial or misleading conclusions. The nuances of customer feedback, particularly in a hybrid offering environment, can only be fully understood when the business processes that drive the customer experience are clearly delineated.

5.2.1 GBP Knowledge Sources

By applying CGT, the research does not merely collect data from OCRs but engages with it through a lens that considers the specific business processes and industry standards that shape customer experiences and perceptions. This approach allows the researcher to identify patterns and themes that are directly relevant

to the practicalities of service delivery in the optician industry. Understanding the business context in this sense is not just helpful but necessary to bridge the gap between abstract customer feedback and tangible business process improvements.

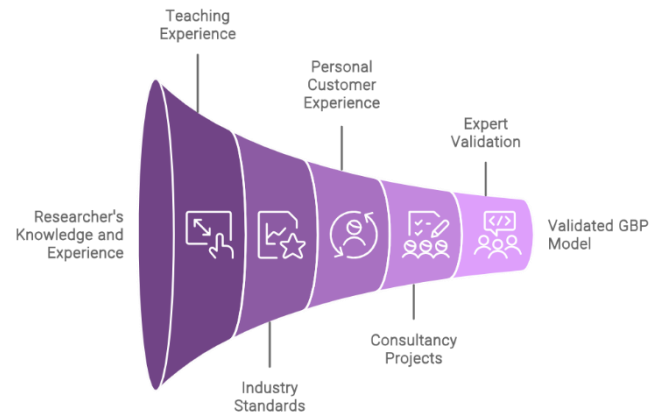


Figure 13 GBP Knowledge Sources

The sources of knowledge utilised to validate the GBP are particularly relevant because they provide the basis for the model's development. These sources ensure that the GBP is not only theoretically sound but also practically applicable within the industry. The knowledge sources reflect a combination of academic, practical, and experiential insights, which are crucial for aligning the GBP with real-world business processes and customer experiences. This alignment is vital for the credibility and applicability of the research findings.

Optician Trades GBP Knowledge Sources

1. **Teaching and academic experience:** The researcher's extensive teaching and academic involvement at University of Applied Sciences Aachen and for the 'Zentralverband der Augenoptiker und Optometristen' (ZVA) from 2014 to 2020 provided a solid foundation in process-oriented thinking within the optician industry. This experience allows the researcher to draw on well-established academic principles, e.g. from the field of process management, and apply them to the practical realities of business processes in the optician sector. The integration of these insights into the GBP ensures that the model is both theoretically sound and practically relevant, bridging the gap between academia and industry practice.

2. **Industry standards:** The Work and Quality Guidelines for Optics and Optometry 'Arbeits- und Qualitätsrichtlinien für Augenoptik und Optometrie AQRL' set by the ZVA were instrumental in shaping the GBP, as they represent the standard for best practices and quality expectations within the German optician industry (Zentralverband der Augenoptiker und Optometristen, 2024a). By benchmarking the GBP against these standards, the researcher ensures that the model is aligned with business practice. This alignment is critical to the acceptance and application of the model within the industry, as it ensures that the GBP reflects core activities for quality and service delivery. See Table 8 for a comparison between GBP and AQRL.
3. **Personal experience as a customer:** The researcher's own long-standing experience as a customer of opticians provide a unique, 'insider' perspective on the customer journey. This personal insight is invaluable for understanding the nuances of customer expectations and satisfaction, which are central to the concept of value-in-use. The inclusion of personal experience in the GBP's development helps to ground the model in real customer experiences, ensuring that it captures the subtleties of customer-provider interactions that are often overlooked in more abstract models.
4. **Consultancy projects:** Working with the former President of the Scientific Association for Ophthalmology and Optometry (WVAO) on various consultancy projects from 2013 to 2018 provided insights into the marketing and service delivery processes in the industry. These projects provided a practical context for testing and refining the GBP, allowing the researcher to incorporate real-world challenges and solutions into the model. The consultancy experience ensures that the GBP is not only theoretically robust, but also adaptable to the practical needs of optician businesses.
5. **Expert validation:** The final draft of the GBP was validated through discussions with expert opticians and lecturers from the ZVA Academy. This validation process was essential to ensure that the model is accurate, relevant and reflects the needs of the industry. Expert validation adds an extra layer of credibility to the GBP by confirming that

the model is based on industry expertise and is able to address the specific challenges faced by opticians.

These sources are critical to grounding the GBP because they provide a multifaceted perspective on the optician industry, combining academic theory, practical experience, industry standards and expert insight. By integrating these diverse sources of knowledge, the GBP is both comprehensive and nuanced, capable of addressing the complex interactions between tangible products and intangible services that define the hybrid offerings in the optician industry. The use of these sources ensures that the GBP is not only a theoretical construct but also a practical tool that can be applied effectively within the industry to improve customer satisfaction and optimise business processes.

5.2.2 Design of the GBP

The GBP for optician trades is structured into five main subprocesses: Presales Process, Co-Production Process 1, Production Process, Co-Production Process 2, and Usage Process. Each subprocess is designed to address specific aspects of the customer journey, ensuring that the hybrid offering meets the customer's requirements.

1. **Presales Process** involves initial customer activities, including the identification of the need for a visual aid and the selection of an optician. The process takes places in the Customer Sphere.
2. **Co-Production Process 1** includes detailed customer engagement with the optician to clarify visual needs, perform necessary screenings and refractions, and advise on lens and frame selection. The process takes places in the Joint Sphere. Customers experience, perceive and evaluate the quality attributes of the co-productive process.
3. **Production Process** focuses on the manufacturing of the visual aid, ensuring that it meets all quality standards. The process takes places in the Provider Sphere.

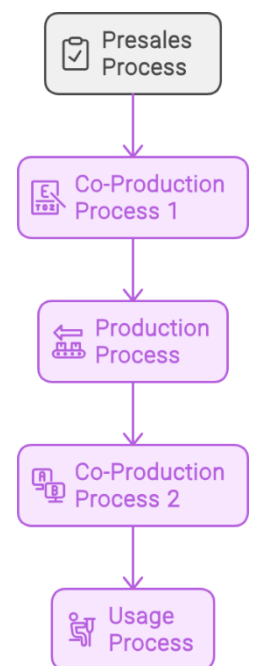


Figure 14 GBP

4. **Co-Production Process 2** addresses any adjustments required after the customer has received and tested the visual aid. The process takes places in the Joint Sphere. Customers experience, perceive and evaluate the quality attributes of the co-productive process.
5. **Usage Process** involves the customer's continued use of the visual aid, including any further support that may be needed. The process takes places in the Customer Sphere. Customers experience, perceive and evaluate the quality attributes of the provided value-in-use.

1. Presales Process

The Presales Process is the initial stage where the customer identifies the need for vision correction or enhancement and selects an optician. This phase is essential for initiating the relationship between the customer and the service provider and lays the foundation for the entire service delivery process.

- **Activity: Select Optician** The customer identifies a need for a visual aid and chooses an optician based on factors such as reputation, location, or previous experience. This selection is crucial as it initiates the entire business process.
- **Activity: Get in Contact** After selecting the optician, the customer reaches out to initiate communication. This contact could be through various means such as phone, email, or visiting the optician's store. It marks the beginning of the professional relationship and sets the stage for further interactions.

2. Co-Production Process 1

Co-Production Process 1 involves the customer and optician working together to clarify the customer's needs and tailor the service. This process is highly interactive, ensuring that the hybrid offering is tailored to the customer's specific requirements.

- **Activity: Clarify Requirements** The optician works closely with the customer to understand their specific visual needs, preferences and lifestyle requirements. This involves discussing the client's visual

challenges, previous corrective measures and a systematically recording of these needs.

- **Activity: Perform Screening (optional)** The optician conducts an initial screening, and possibly additional optometric examinations, to assess the client's visual acuity and overall eye health. This examination is a preliminary step to help identify any immediate problems that need to be addressed. If necessary, additional tests may be performed to further evaluate the client's eye health. As not all opticians offer this service and not all customers want it, it is marked as 'optional'.
- **Activity: Perform Refraction** A detailed refraction is performed to determine the client's exact prescription. This involves measuring the refractive error of the eyes to determine the correct lens power required to correct the vision. After the test, a documentation and review activity should take place to ensure that all test results and customer interactions are systematically recorded and reviewed prior to recommending frames and lenses.
- **Activity: Advice on Choosing Frame** The optician then advises the customer on the choice of frames. This involves considering aesthetic preferences, comfort, and the suitability of the frame for the chosen lenses.
- **Activity: Advice on Choosing Lenses** Based on the refraction results, the optician advises the customer on suitable lenses, taking into account factors such as material, lens coating and optical performance. The goal is to select lenses that not only correct vision, but also fit the customer's lifestyle.
- **Activity: Perform Initial Adjustment** Once the lenses and frames have been selected, an initial adjustment is made to ensure that the frames fit comfortably and securely. This step is essential to ensure that the visual aid is both functional and comfortable for the client.
- **Activity: Conclude Sales Transaction** The final stage of Co-Production Process 1 is to complete the sales transaction. This may include payment processing, final confirmation of the order and setting expectations for delivery times.

3. Production Process

The Production Process is where the visual aid is manufactured or assembled according to the specifications determined in Co-Production Process 1. This phase emphasises precision and quality to ensure that the hybrid offering meets the customer's expectations.

- **Activity: Produce Visual Aid** The visual aid, whether it is glasses or contact lenses, is manufactured based on the specifications provided. This includes making the lenses to the correct prescription, fitting them into the selected frames and applying any additional features, such as anti-glare coatings. This process must also include rigorous quality control checks for defects and accuracy, ensuring that the hybrid offering meets the necessary standards before moving forward.
- **Activity: Inform Customer** The customer is informed that their visual aid is ready for pickup. This communication is an important part of customer service, ensuring that the customer remains engaged and is aware of the next steps.

4. Co-Production Process 2

Co-Production Process 2 is a secondary phase of collaboration between the optician and the customer, focusing on post-production adjustments. This phase is crucial to ensure that the visual aid fully meets the customer's expectations after initial use.

- **Activity: Perform Adjustment** Once the customer has received and tested the vision aid, they may find that further adjustments are required for comfort or functionality. The optician makes these adjustments, which may include fine-tuning the fit of the frames. This activity also involves reassessing the performance of the vision aid in real-life conditions to ensure continued effectiveness. During this activity, the optician may also provide education and training to the client on the proper handling, cleaning, and storage of the visual aid, as well as instructions on what to do if problems arise. This activity may be repeated several times until the client is satisfied.

5. Usage Process

The Usage Process is the final phase, where the customer begins using the visual aid in their daily life.

- **Activity: Test Visual Aid** The customer tests the visual aid to ensure that it provides the desired vision correction and comfort. This testing is crucial for identifying any immediate issues that need to be addressed.
- **Activity: Use Visual Aid** Once the customer is fully satisfied with the visual aid, the process concludes with the customer successfully integrating the visual aid into their daily life.

The design of the GBP presented in figure 15 is essential to guide the forthcoming empirical research and coding activities within the GBP. By establishing a structured process design that delineates the key sub-processes, the GBP can provide a clear and systematic approach to categorising and theming customer feedback from OCRs. This will enable a deeper understanding of how the sub-processes contribute to value co-creation and overall customer satisfaction.

Furthermore, by ensuring that the coding process is aligned with the real world of opticians, the GBP will increase the relevance and applicability of the research findings. As the empirical research progresses, the GBP will guide the interpretation of the data, helping to identify critical patterns and areas for process improvement. However, it should be emphasised that the GBP presented is a standard scenario of real business processes. In practice, there are also process disturbances, such as purchase cancellations or critical complaints, which can lead to the repetition of activities, such as the production of visual aids, or even prevent the GBP from achieving the desired process outcome.

Generic Business Process of German Optician Trades

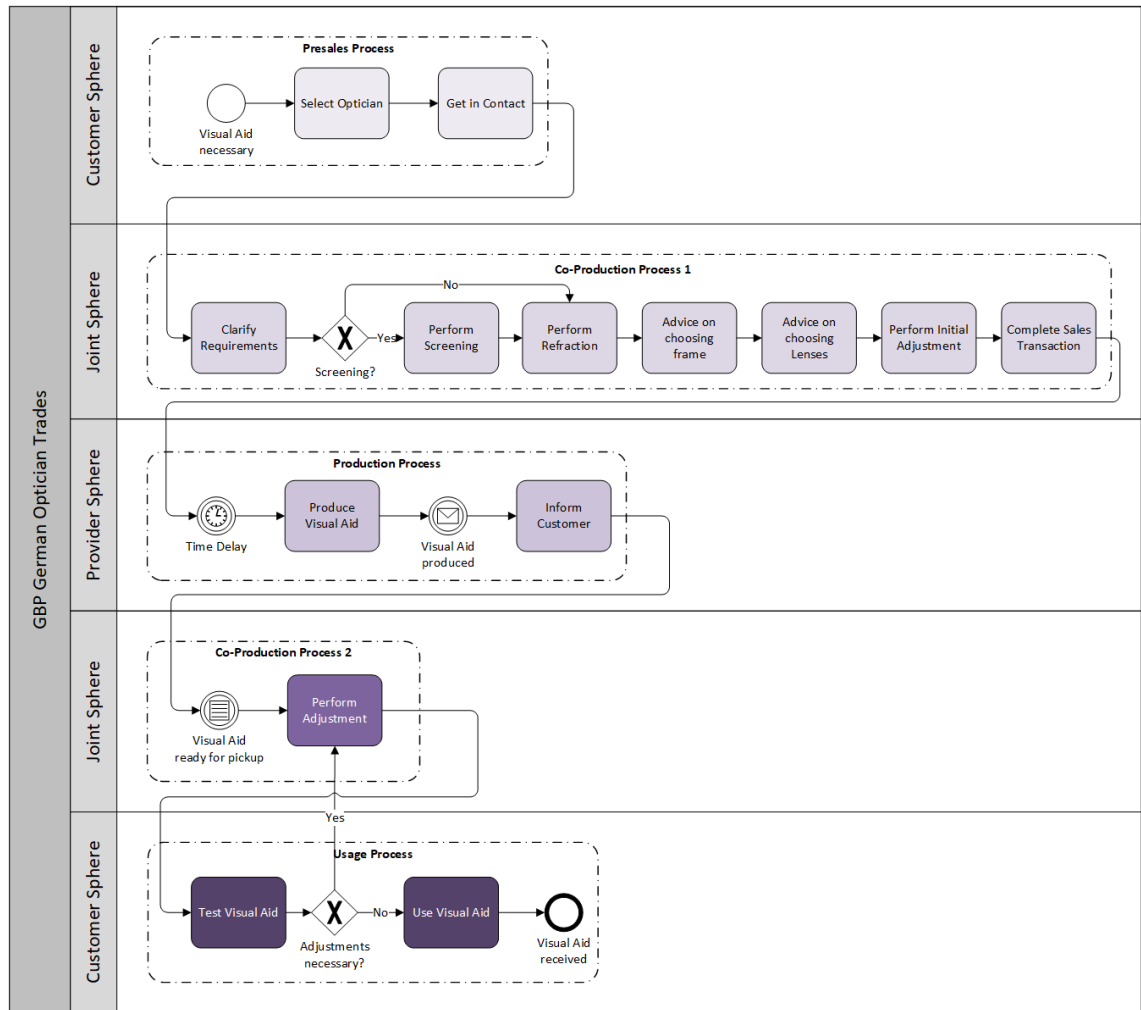


Figure 15 Generic Business Process of German Optician Trades

Comparison of the GBP and the ZVA AQRL

GBP	ZVA AQRL		
Process	Optometric Examination Procedures (p.14-31)	Prescription Glasses (p. 32 - 55)	Contact Lenses (p. 51 - 66)
Presales Process			
Co-Production Process 1	1.1 Needs Assessment and Medical History p.15	2.1 Specific Medical History for Glasses p.35	3.1 Specific Medical History for Contact Lenses p.56
	1.2 Visual Acuity Testing p.16	2.2 Determining Visual Acuity (Vsc and Vcc Habitual) p.36	3.2 Determining Visual Acuity (Vsc and Vcc Habitual) p.57
	1.3 Initial Tests p.17	2.3 Functional Tests p.36	3.3 Functional Tests p.57
	1.4 Refraction for Distance and Near p.18	2.4 Determining Distance and Near Correction p.36	3.4 Determining Distance Correction p.57
	1.5 Binocular Testing for Distance and Near p.19	2.5 Binocular Testing for Distance and Near p.36	3.5 Determining Near Correction p.58
	1.6 Examination of the Anterior Segment of the Eye p.21	2.6 Frame Consultation p.36	3.6 Inspection and Evaluation of the Anterior Segment of the Eye
	1.7 Examination of the Posterior Segment of the Eye p.22	2.7 Preliminary Adjustment of the Frame p.37	3.7 Consultation p.58
	1.8 Advanced Examinations p.23	2.8 Determining Centration Data p.38	
	1.9 Screening p.24	2.9 Lens Consultation p.39	
	1.10 Result Discussion and Recommendations p.29		
Production Process		2.10 Production of Prescription Glasses p.41	
Co-Production Process 2		2.11 Final Adjustment of Glasses for the Customer/Patient p.43	3.8 Provision of Contact Lenses p.59
		2.12 Delivery of the Prescription Glasses p.44	3.9 Delivery of Contact Lenses p.61
		2.13 Regular Functional Checks p.45	3.10 Regular Functional Checks p.64
Usage Process			

Table 8 Comparison of GBP and ZVA AQRL

5.3 Data Collection

In any empirical study, the process of data collection is important to ensure that the research is based on verifiable evidence, thereby facilitating the development of valid and reliable conclusions. This section focuses on the sampling methods, data sources and pre-processing steps as described in chapter 4.4 to ensure the suitability of the dataset for analysis. Particular attention is paid to the selection and cleaning of the data to ensure their relevance and accuracy for further coding. By detailing the data collection procedures, the chapter provides transparency into the methodological rigour applied, thus laying the foundation for the subsequent data analysis, and ensuring that the empirical findings can be trusted to accurately represent the experiences and perceptions of customers in the German optical industry.

5.3.1 Sampling

5.3.1.1 Sampling Procedure

The focus of this study is on small and medium-sized opticians throughout Germany. It explicitly excludes branches of large chains such as Fielmann and Apollo. This exclusion was justified on the grounds that smaller enterprises are better able to represent the diversity and complexity of value co-creation processes in the skilled crafts sector. The sampling approach used here was designed to achieve this objective by ensuring a balanced geographical and operational representation of these opticians.

The target population was defined as all optician businesses in Germany (with the exception of Fielmann and Apollo) that are listed on Google Maps and have received a defined minimum number of OCRs. The minimum threshold has been set with the intention of ensuring that each business in the sample has sufficient data for meaningful analysis. The sampling period for this study was conducted between June and July 2021. The population size for this study was approximately 9,885 optician stores, based on the then available data of the year 2020 (Zentralverband der Augenoptiker und Optometristen, 2021a, p. 10), excluding branches of the two largest chains.

The underlying calculation of the population under research is as follows:

11,370 Opticians - 880 Apollo branches - 605 Fielmann branches = 9,885 optician stores

The sampling process was based on a stratified random sampling approach to ensure comprehensive geographical coverage of Germany. In order to ensure an adequate regional distribution of the sample, the official list of German cities as published by Statistisches Bundesamt (2020a) was used. The list under consideration constitutes the source for the population figures of all 702 large and medium-sized cities and municipalities in Germany with a population of 20,000 or more as of 31 December 2019, which were used for building the sample. The list was imported into Excel, where the cities were sorted randomly. The cities on the list were not weighted according to their size. Similarly, an optician was selected for a medium-sized centre such as Euskirchen in the same way as for a large metropolis such as Berlin. The application of weighting would result in a significant over-representation of large cities with large populations and an under-representation of smaller cities in rural areas, such as those in eastern Germany. However, the aim was to include a wide range of customer experiences across as many different business processes as possible, so the decision was made that one city should be represented by one optician.

The sample size for this study was determined using a standard approach to sample size calculation in survey research (Cochran, 1977). First, the sample size was calculated assuming an infinite population, a 95% confidence level and a 5% margin of error. The formula used was:

$$n_0 = \frac{Z^2 * p(1 - p)}{E^2}$$

- Total Population N: 9885
- Confidence Level: 95% (Z = 1.96)
- Proportion Estimate (p): 0.5 (conservative)
- Margin of Error (E): 5% (0.05)

Substituting these values provided an initial sample size of $n_0 = 384.16$

Given that the total population of optician stores was known to be 9,885, a finite population correction (FPC) was applied to adjust the sample size. The corrected sample size was determined using the following formula:

$$n_{adjusted} = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where N=9,885 is the known population size. This adjustment resulted in a final sample size of approximately 370, which was considered appropriate for ensuring the representativeness of the sample.

The minimum number of OCRs required for inclusion in the main sample was determined through a focused pilot phase. The primary objective of this pilot study was to ascertain an OCR threshold that would minimise the number of cities excluded from the sample due to inadequate data, while still ensuring that the resulting dataset contained a sufficiently rich volume of customer feedback for meaningful analysis. In order to this end, three threshold levels – 15, 20, and 25 OCRs – were tested using a preliminary subset comprising 10% of the overall city list.

The findings indicated that a threshold of 25 OCRs would result in the exclusion of a substantial number of cities, thereby narrowing the geographical diversity of the sample. Conversely, a 15-OCR threshold encompassed a greater number of cities but resulted in a lower total volume of usable review content than was potentially achievable. The 20-OCR threshold was identified as the most suitable compromise, ensuring comprehensive geographic coverage while maintaining sufficient data depth. This threshold was subsequently adopted for the full sampling process and proved effective in preserving both the inclusivity and analytical utility of the dataset.

While the pilot study did not directly affect the coding framework, it was instrumental in confirming the viability of the OCR-based data collection strategy and in refining the inclusion criteria to balance coverage and content richness. Consequently, it played a pivotal role in enhancing the methodological rigour and practical feasibility of the sampling design.

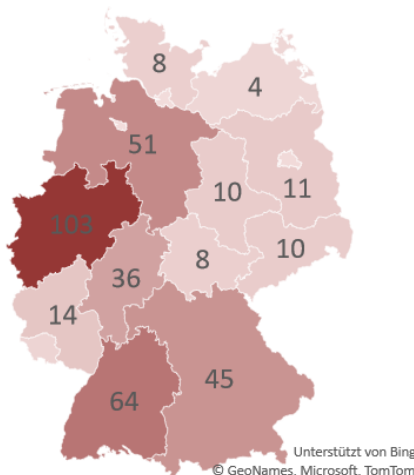
The precise population for the purpose of sampling in this study is as follows:

All German opticians with more than 20 reviews on Google Maps, excluding Apollo and Fielmann branches.

5.3.1.2 Sample Structure

The sampling procedure was conducted as follows: for each city selected at random, the optician business with the highest number of OCRs on Google Maps was selected using the search string 'augenoptiker + [stadt]', provided that it met the criterion of having at least 20 reviews. In the event that no business displayed on the results from Google Maps met the aforementioned criterion, the next city on the randomised list was selected. This process was continued until the final sample size of 370 optician stores was reached, following the examination of 515 cities. Despite the fact that 145 cities could not be included due to the minimum OCR threshold, the process ensured a wide distribution across German cities and towns.

**Distribution of towns and cities
by German federal states
N=370 Opticians**



Country	Cities	% N=370
North Rhine-Westphalia	103	27,84%
Baden-Wuerttemberg	64	17,30%
Lower Saxony	51	13,78%
Bavaria	45	12,16%
Hessen	36	9,73%
Rhineland-Palatinate	14	3,78%
Brandenburg	11	2,97%
Saxony-Anhalt	10	2,70%
Saxonia	10	2,70%
Thuringia	8	2,16%
Schleswig-Holstein	8	2,16%
Saarland	5	1,35%
Mecklenburg-Vorpommern	4	1,08%
Berlin	1	0,27%
Bremen	0	0,00%
Hamburg	0	0,00%

Figure 16 Geographical Distribution of Optician Sample

The final sample was compiled between 4 June and 7 June 2021. It encompasses a diverse range of geographical locations across Germany, including both urban centres and medium-sized towns. The sampling process yielded a total of 312 stores which were situated in medium-sized towns with a population of less than 100,000. Furthermore, 58 optician locations were identified within the sample which are distributed across major German cities

with a minimum population of 100,000. This distribution results in a ratio of 84.32% to 15.68%.

As indicated by Statistisches Bundesamt (2020a), the proportion of German medium-sized urban centres relative to large cities was 88.46% to 11.54% on 31 December 2019. It can therefore be concluded that the random selection of the sample also largely reflects the actual urban situation in Germany. A comparison of the relative distribution of cities between the total number of all German medium-sized and large cities and that in the sample reveals only minor discrepancies. The only large cities that were not included in the sample by chance were the city-states of Hamburg and Bremen.

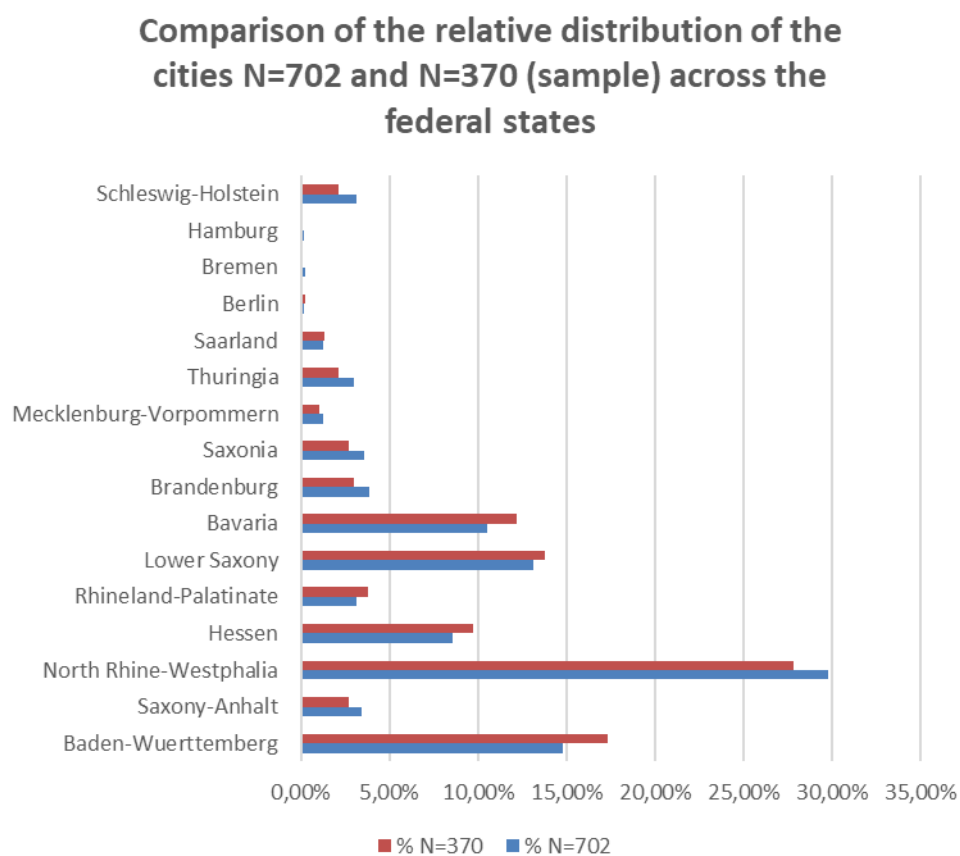


Figure 17 Comparison of Sample Distribution and General Distribution

In accordance with the methodology, a total of 31,128 OCRs were scraped and stored in 370 JSON datasets of varying dimensions. In order to facilitate further analysis of the extracted JSON raw datasets and their constituent reviews, they were transferred into a single Excel file. A preliminary examination of the data revealed that 215 datasets, representing 58.1% of the total, contain 50 or fewer reviews. A further 68 records of the raw dataset contain between 51 and 80

reviews. Consequently, 342 datasets, or 92.43% of the total, encompass less than 200 reviews.

5.3.2 Preprocessing

The preprocessing of the OCR dataset constituted a foundational stage in preparing the data for subsequent qualitative analysis in line with Constructivist Grounded Theory. The objective was to systematically enhance the consistency, intelligibility and relevance of the textual material while maintaining methodological transparency and traceability. This process involved a combination of automated tools and manual review phases. The preprocessing procedure was carried out in five clearly defined steps, each described below.

Step 1: Initial Cleaning of Non-English or Incomplete OCRs

The first step involved the removal of OCRs that were either not written in English or lacked substantive content suitable for qualitative coding. This process was executed through a combination of automated and manual techniques:

- Automated processing: A language detection script was employed to identify and exclude non-English OCRs.
- Manual screening: The output of the automated detection was subjected to a manual review to verify accuracy and to ensure that entries contained meaningful, codable content.

As a result of this dual-stage filtration, the dataset was reduced from 31,128 to 24,577 entries, representing a reduction of approximately 21%. Each retained OCR was assigned a unique identifier, comprising a sequential number and a reference to its original JSON source. This step ensured full traceability and data integrity, consistent with CGT principles.

Step 2: Text Normalisation via Excel Functions

The second phase focused on the normalisation of textual content to eliminate formatting inconsistencies that could impede automated coding or introduce distortions in downstream analysis. This phase was executed using Microsoft Excel functions:

- CLEAN(): Applied to remove non-printable characters, such as control symbols introduced during web scraping or export procedures.
- TRIM(): Used to eliminate excessive spacing within and around text entries.

These operations were fully automated but required verification through selective manual inspection. The result was a more uniform dataset, free of structural anomalies that could compromise the validity of computational text analysis procedures.

Step 3: Text Length Evaluation

To assess the richness of the textual data, the LEN() function in Excel was applied to calculate the character length of each OCR. This facilitated the identification of unusually short entries, which were then examined manually to determine their analytical value.

Despite initial expectations, short reviews were found to often contain concise but substantively valuable content, particularly in relation to themes such as staff friendliness or service efficiency. Consequently, no minimum length threshold was imposed; OCRs were retained so long as they included some degree of coherent textual expression relevant to the research focus.

Step 4: Emoticon and Non-ASCII Character Removal

To ensure compatibility with coding software and to preserve the semantic integrity of textual data, the SUBSTITUTE() function was used to identify and eliminate emoticons and non-ASCII characters. While these elements may carry contextual or affective meaning, their interpretive ambiguity in automated analysis posed a risk of misclassification or analytical distortion.

- Automated processing: Excel functions were employed to identify and remove standard emoticon representations.
- Manual validation: A final review was conducted to identify any remaining symbols or artifacts not captured by the automated procedure.

The exclusion of emoticons was a deliberate methodological decision. Although they are potentially meaningful, their analysis did not fall within the scope of the

present study, and their removal was therefore considered acceptable in view of the overarching research objectives.

Step 5: Final Dataset Validation and Test Imports

In the final stage of preprocessing, the dataset underwent a comprehensive validation procedure:

- Manual review: The entire dataset was inspected for residual anomalies, ensuring coherence, consistency, and relevance of all remaining entries.
- Test imports: The processed dataset was imported into both CAQDAS (NVivo) and Power BI environments. These test runs confirmed the dataset's technical compatibility and readiness for automated coding and visual exploration.

This iterative validation process resulted in a cleaned dataset comprising 24,561 entries. The dataset was deemed suitable for subsequent analysis and aligned with both the methodological requirements of CGT and the analytical affordances of digital tools. The preprocessing phase spanned several weeks, involving iterative testing and refinement to ensure optimal data quality and analytical utility.

5.4 Data Coding

The coding process followed a structured, iterative procedure that combined automated text-mining tools with manual refinement. This hybrid approach allowed the analysis of large volumes of OCRs while maintaining the interpretive depth and contextual sensitivity essential to CGT. The process was deliberately designed to move systematically from raw textual data to an integrated analytical framework that could be meaningfully related to the theoretical constructs and business processes examined in this research.

In broad terms, the procedure unfolded in a pre-coding stage and three interconnected coding cycles:

1. **Data Enrichment & Exploration (Pre-Coding):** Preparing and enriching the OCR dataset for coding, verifying its quality and developing an initial statistical understanding of its characteristics.

2. **First Coding Cycle (Initial Term Identification):** Generating preliminary codes through automated keyword extraction, followed by manual in-vivo review and refinement.
3. **Second Coding Cycle (Category and Theme Development):** Condensing terms into categories, grouping categories into themes and coding the dataset using automated and manual procedures.
4. **Third Coding Cycle (Integration with the GBP):** Linking categories and themes to the Generic Business Process model for deeper process-based analysis.

At each stage of the research, a combination of automation and manual interpretation was employed. Automated tools (e.g., keyword extraction, NVivo, Excel-based coding, Power BI dashboards) were utilised to ensure scalability and consistency, while manual review was employed to ensure that codes and categories were grounded in the content and interpreted within the business context of the German optician industry. Memo writing and reflexive documentation recorded analytical decisions, thereby providing transparency and traceability throughout.

5.4.1 Data Enrichment and Exploration

The first stage of data enrichment was initiated during the pre-processing phase by using the LEN() function. An additional attribute called 'characters' was appended to each individual OCR. This made it easier to understand the distribution of OCRs in terms of content length. The dataset was then further enriched by incorporating the extracted keywords and a sentiment score through the use of Power BI/Azure AI capabilities, introducing two additional attributes per OCR.

Record Identifier	Cleared Text	Extract key phrases	Characters	Date	Stars	PBI Sentiment
22454::2021-07-26_12-10-3	Nettes Team und tolle Beratung Es wurde sich viel Zeit genommen für die Gestellauswahl sowie das ausmessen der Augen Zu der Brille kann ich noch nichts sagen diese hole ich erst diese Woche ab <i>Nice team and great advice A lot of time was taken for the frame selection and the measurement of the eyes I can't say anything about the glasses yet I will pick them up this week</i>	Brille, ausmessen der Augen, Nettes Team, tolle Beratung, sagen, Gestellauswahl, hole	192	29.01.2020	5	0,503958166

Table 9 Example of an enriched OCR

An initial statistical exploration of the dataset was then undertaken using a Power BI dashboard. The researcher's objective was to develop an understanding of the dataset prior to the first coding cycle by considering the

distribution of review lengths, the distribution of year of creation and the distribution of ratings. Beneficially for the coding process, statistical analysis of the characters contained in each OCR showed that the automated pre-processing was effective in removing the majority of blank OCRs. Only 80 OCRs, or about 0.33% of the total, contain fewer than five characters. Conversely, 432 OCRs, or 1.76% of the total, have extensive text content, offering the potential for deeper insights into customer experiences and perceptions. A detailed evaluation and interpretation of the results is presented in the analysis and discussion chapters.

5.4.2 First Coding Cycle

The initial coding cycle was carried out in part using NVivo, a computer-assisted qualitative data analysis software (CAQDAS). To begin the coding process, NVivo's keyword frequency analysis was used to examine the keywords extracted from the OCRs. The aim was to identify the most frequently occurring words. The distortion caused by the frequent occurrence of stop words was avoided from the outset, as these had already been removed by the ExtractKeyPhrases function.

The automated analysis provided an overview of the most common terms within the dataset, providing valuable insight into the topics that customers were most likely to mention in their reviews. NVivo's word stem feature was used to group together all instances of the same root word. For example, the German terms 'empfehlen' and 'Empfehlung' were grouped under the stem 'empfehl'. This ensured that the analysis captured the full range of related terms without treating them as separate entities, thereby providing a more coherent view of the themes. The use of word frequency analysis and the word stem function enabled the researcher to identify the dominant categories in the dataset, which informed the subsequent coding process.

The results generated by Nvivo were imported into the Excel spreadsheet as a separate worksheet. Each term was given a unique identifier. As a final step in the preliminary coding process, a manual review of the most frequently occurring words was undertaken to prepare the list for use as a coding framework. In this way, the researcher was able to correct and clarify some of the ambiguous results of the automated Nvivo word stem analysis. For

example, there was a tendency for Nvivo to use the comparative form as a collective term for similar words, such as 'netteste (nicest)' instead of 'nett (nice)'.

Figure 18 provides an initial overview of some of the most common terms. Even this aggregated figure shows that certain terms are used much more frequently than others. Terms such as 'beratung' (advice), 'service' and 'preis' (price) were among the most frequently mentioned, indicating their relevance in shaping the customer perceptions.

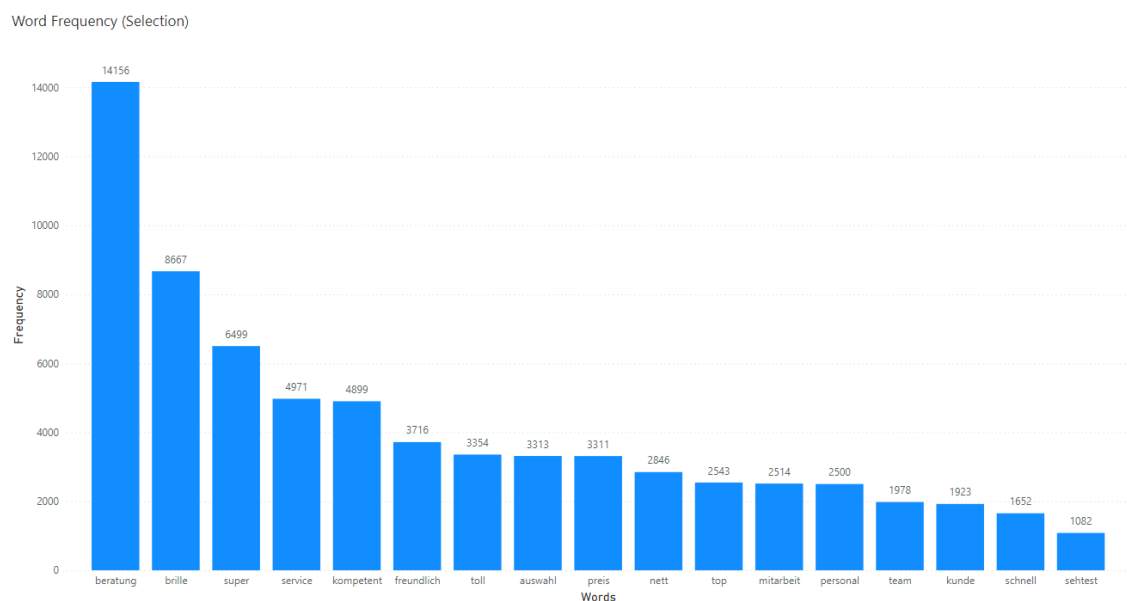


Figure 18 Word Frequency (Selection)

The manual review allowed for direct interaction with the data, facilitating the identification of potential patterns and categories that may not have been immediately apparent during automated data processing. This iterative engagement with the data, in line with CGT's methodology, ensured that the analysis remained firmly rooted in the actual content of the OCRs and the business context.

As a result, the first coding cycle produced a comprehensive set of preliminary terms that formed the basis of the subsequent category coding. The terms identified highlight the primary categories evident in the data set.

5.4.3 Second Coding Cycle

In the first coding cycle, a flexible approach was adopted to facilitate the emergence of term-based themes from the data. The second coding cycle was

conducted with the aim of condensing the extensive preliminary codes into meaningful coding categories that represented the customer experiences and perceptions documented in the OCRs. In a second step, the categories were grouped into meaningful themes. Finally, all OCRs were coded using an Excel-based automated coding procedure. During the second coding cycle, CGT was used to structure the iterative process of examining the data, assigning codes to categories, and grouping these codes into broader themes.

5.4.3.1 Category Coding

Although the keyword frequency analysis of the extracted key phrases proved valuable as a preliminary step, it was necessary to convert the multitude of individual terms into structured coding categories for an automated analysis. The iterative approach allowed for the development of a categorised coding framework as the data was further analysed. The coding process resulted in a list of 25 categories. Two more categories were created for terms deemed to be either 'irrelevant' or 'ambiguous'. Terms associated with these categories were then excluded from the development of themes and the final coding of the data set.

Full List of the 27 Categories			
Advice	Equipment	Product	Staff Behaviour
Ambience	Evaluation	Production	Staff Competence
Ambiguous	Expectation	Quality	Staff Role
Choice	Irrelevant	Recommendation	Style
Corona	Location	Satisfaction	Time
Co-Production	Price	Service	Usage
Customer	Preprocess	Solution	

Table 10 List of all Coding Categories

Once the categories had been defined, a further iterative categorisation procedure was used to facilitate the transition between the most frequently occurring words and their use within the reviews. The aim of this procedure was to ensure that the context of each term's use, and therefore the derivation of an overarching category, was as objective as possible. As part of this process, the researcher used an Excel spreadsheet to assign each of the 1,000 most frequent words to one of the 27 predefined coding categories. In practice, this meant that the researcher alternated repeatedly between each term and its use within the OCRs, depending on the specific context in which it was used.

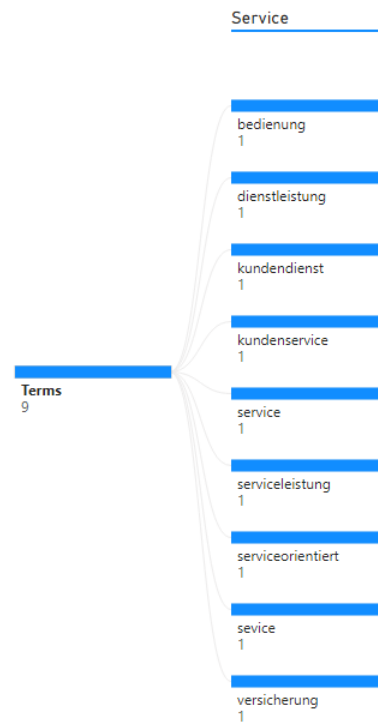


Figure 19 Example for 'Service'

In order to enhance the precision of the automated coding, a refinement of the final coding matrix was conducted. This matrix comprises the 25 research-relevant coding categories and the associated terms. The objective of this refinement was to address potential issues arising from term inflections and other morphological variations (Francom, 2025, p. 173). The optimisation step thus consolidated such variations under their root form, ensuring that all morphological variants were consistently recognised and assigned to the same category during automated coding. As illustrated in Figure 20, the resulting coding matrix is presented in a visual format, with each segment of colour representing a specific coding category. The numerical values assigned to these segments denote the number of unique terms that were ultimately grouped into each category.

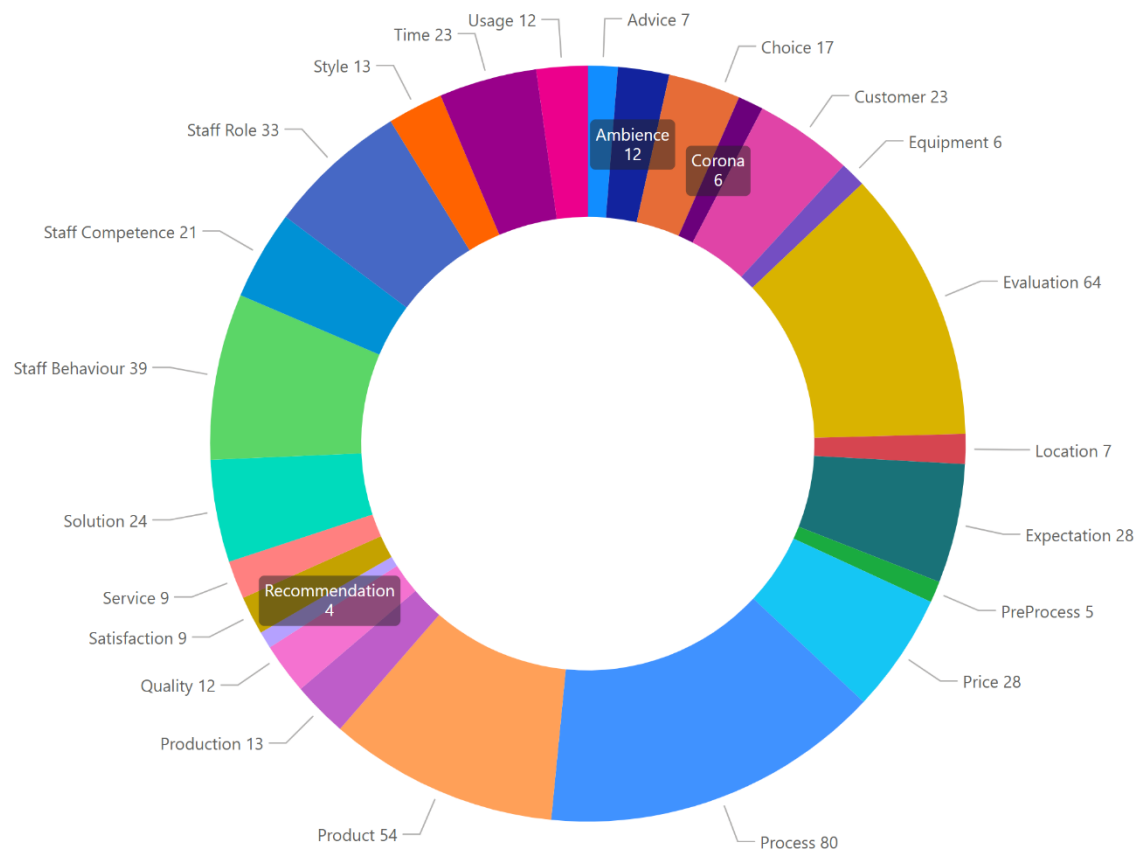


Figure 20 Coding Matrix with Assigned Terms per Coding Category

5.4.3.2 Category to Theme Assignment

Once the categories had been identified and the most common terms assigned, a systematic approach was taken to group the 25 categories into overarching themes. By engaging with the data, comparing and recontextualising the categories with a focus on GBP and using his own knowledge, the researcher was able to identify and develop broader themes that encapsulated the diverse customer perceptions captured in the OCR dataset. The development of the themes was based on the identification of patterns and relationships between different categories. For example, categories such as 'staff behaviour', 'staff role' and 'staff competence' were found to be closely related and to appear consistently together in the OCRs. As these categories all related to customers' perceptions of their interactions with staff, they were grouped together under the broader theme of 'Staff Attributes & Behaviour'.

The researcher assessed all categories for conceptual coherence, ensuring that each theme captured a distinct aspect of customer perception. This involved an

iterative process of comparing the categories with each other and with the data set to ensure that the themes reflected the nuances of the data. In this regard, it is worth noting that Theme 5 was assigned categories that have a direct correlation with the GBP.

Theme T1-CQP	Theme T2-SFA	Theme T3-SAB	Theme T4-HOC	Theme T5-PAP	Theme T6-HSC	Theme T7-VFM
Customer Quality Perception	Store Environment and Ambience	Staff Attributes and Behaviour	Hybrid Offering Components	Process and Production	Health and Safety Concerns	Value for Money
Customer	Ambience	Staff Behaviour	Advice	Preprocess	Corona	Price
Evaluation	Location	Staff Competence	Choice	Process		
Expectation		Staff Role	Equipment	Production		
Quality			Product	Usage		
Recommendation			Service			
Satisfaction			Solution			
Style						
Time						

Table 11 Themes and Categories

The principle of constant comparison was applied throughout the theming process. This involved constantly revisiting earlier stages of theme development to ensure that the themes identified remained firmly grounded in both the data and the GBP. Reflexivity was crucial as the researcher documented decisions and reflections through memoing. This approach facilitated transparency in the analysis and enabled the tracking of how categories evolved into themes over time. As a result, the categorisation and development of themes facilitated a more structured and meaningful analysis of the dataset, enabling the identification of key patterns in customer feedback and linking the coding results to the introduced theoretical frameworks. Appendix B provides detailed information and examples for the theme coding.

Theme 1: Customer Quality Perception (T1-CQP)

T1-CQP encapsulates the perceptions customers have of the quality they receive from the hybrid offering. It has a strong relation to the elements of the CQF, as it contains categories related to ‘Customer’, ‘Expectation’, ‘Evaluation’, ‘Satisfaction’, ‘Recommendation’ and ‘Quality’ in general. Furthermore, it contains the two distinct quality attributes of ‘Style’ and ‘Time’, which had been mentioned quite often by customers in the OCRs.

Theme 2: Store Environment and Ambience (T2-SFA)

T2-SFA relates to the physical environment and atmosphere of the optician's store, including aspects such as cleanliness, lighting, and general aesthetics. In their reviews, customers often emphasise the importance of a welcoming and

professional environment and describe how the layout and comfort of the store affects their experience.

Theme 3: Staff Attributes and Behaviour (T3- SAB)

T3-SAB includes customer feedback on the behaviour, professionalism, and friendliness of staff. Reviews often cite the helpfulness, competence and courtesy of optician staff as key factors influencing customer satisfaction. In addition, comments often highlight positive experiences, such as attentive service, as well as negative instances of perceived rudeness or lack of professionalism.

Theme 4: Hybrid Offering Components (T4-HOC)

T4-HOC covers the tangible and intangible elements of hybrid offerings, including the advice provided, the range of frames available, the technical equipment offered and the solutions to specific problems. Customer feedback highlighted their perceptions of the service provided and the outcomes they experienced.

Theme 5: Process and Production (T5-PAP)

T5-PAP concerns the generic process stages involved in the production and customisation of hybrid offerings. It has been observed that customers often refer to elements of the perceived business process. Consequently, this theme is directly linked to the GBP.

Theme 6: Health and Safety Concerns (T6-HSC)

T6-HSC The current theme is customer concerns about health and safety, particularly in the context of the recent pandemic. An analysis of the reviews shows that customers consider compliance with health protocols, such as the use of disinfectants, social distancing and staff wearing protective clothing, as factors that influence their decision to visit certain opticians.

Theme 7: Value for Money (T7-VFM)

T7-VFM includes customer feedback on the cost of hybrid offerings. Customers often expressed whether they felt prices were reasonable or excessive, often in relation to the quality received. Analysis of the OCRs showed that comments about value for money were common, reflecting how customers weigh financial considerations against quality of service.

5.4.3.3 OCR Coding

Once the categories and themes to be coded had been defined, an Excel function was used to automatically code each individual OCR by determining whether it contained one or more terms from the categories. If a term was referenced more than once within a given review, it was counted only once. This resulted in a comprehensive coding matrix for all OCRs in the dataset. In this first round of automated coding, 24,577 OCRs were coded as 'true' or 'false' across 25 categories and 7 themes, resulting in 786,464 codes.

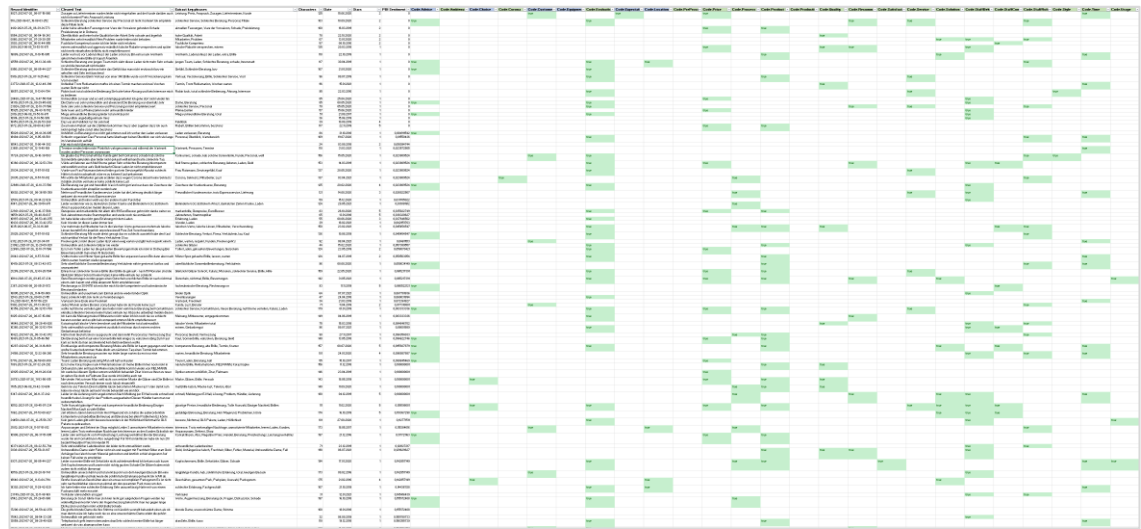
The image is a screenshot of a large Excel spreadsheet representing a coding matrix. The spreadsheet has a grid of cells. The first column contains a list of OCR IDs. The subsequent columns are organized into groups, with the first group containing 25 columns representing different categories. Each cell in the matrix is either green, indicating a 'true' code, or white, indicating a 'false' code. The green cells are scattered throughout the matrix, representing the presence of specific terms in the OCRs. The overall layout is a dense grid of data points.

Figure 21 Example Screenshot of the Coding Matrix

In this phase of the analysis, the valency of words, whether they conveyed a positive or negative connotation, was not a central consideration. The primary focus was on the thematic reference of the words in relation to superordinated categories. This approach allowed the analysis to remain aligned with the overarching objective of understanding which topics are referenced by customers. Rather than interpreting words based on emotional sentiment, the focus was on identifying their occurrence within the OCRs, from which a certain relevance to quality perception can be deduced. However, in the subsequent analysis, both sentiment analysis and customer self-assessment via the Google star rating are used to look for possible correlations between the occurrence of certain categories and the positive, neutral or negative rating of the OCR.

5.4.4 Third Coding Cycle

The aim of the third coding cycle is to establish a link between the category codings and the GBP. Although the first and second coding cycles were partially

automated, they were still relatively free in their emergent development. By using the GBP, a narrower frame of reference was applied. The result was a coding matrix that linked the themes and their associated categories to the five sub-processes of the GBP, which in turn related to the spheres of the CQF. The Excel-based OCR dataset was then expanded according to this matrix, as each OCR was automatically coded to one or more of the GBP sub-processes.

			Theme T1-CQP	Theme T2-SFA	Theme T3-SAB	Theme T4-HOC	Theme T5-PAP	Theme T6-HSC	Theme T7-VFM
			Customer Quality Perception	Store Environment and Ambience	Staff Attributes and Behaviour	Hybrid Offering Components	Process and Production	Health and Safety Concerns	Value for Money
Generic Business Process Codes	Customer Sphere 1	Presaless Process		Location			Preprocess		
	Joint Sphere 1	Co-Production Process 1	Time	Ambience Location	Staff Behaviour Staff Competence Staff Role	Advice Choice Equipment Product Service	Process		
	Provider Sphere	Production Process	Time				Production		
	Joint Sphere 2	Co-Production Process 2	Time	Ambience Location	Staff Behaviour Staff Competence Staff Role	Advice Equipment Product Service	Process		
	Customer Sphere 2	Usage Process	Recommendation Style			Solution	Usage		
			Customer Evaluation Expectation Quality Satisfaction					Corona	Price
CQF Higher Level Codes									

Figure 22 Final Version of the OCR Coding Matrix

The next step was to link the OCR dataset to a Power BI dashboard developed by the researcher to provide a more comprehensive view of the coding results. This dashboard allows the text, star rating and corresponding code to be displayed for each individual OCR. It is also possible to filter by individual codes or star ratings. This allowed the researcher to quickly gain insight into the accuracy of the automated coding by reviewing samples based on selected codes. In addition, the dashboard can provide statistical data for further analysis.

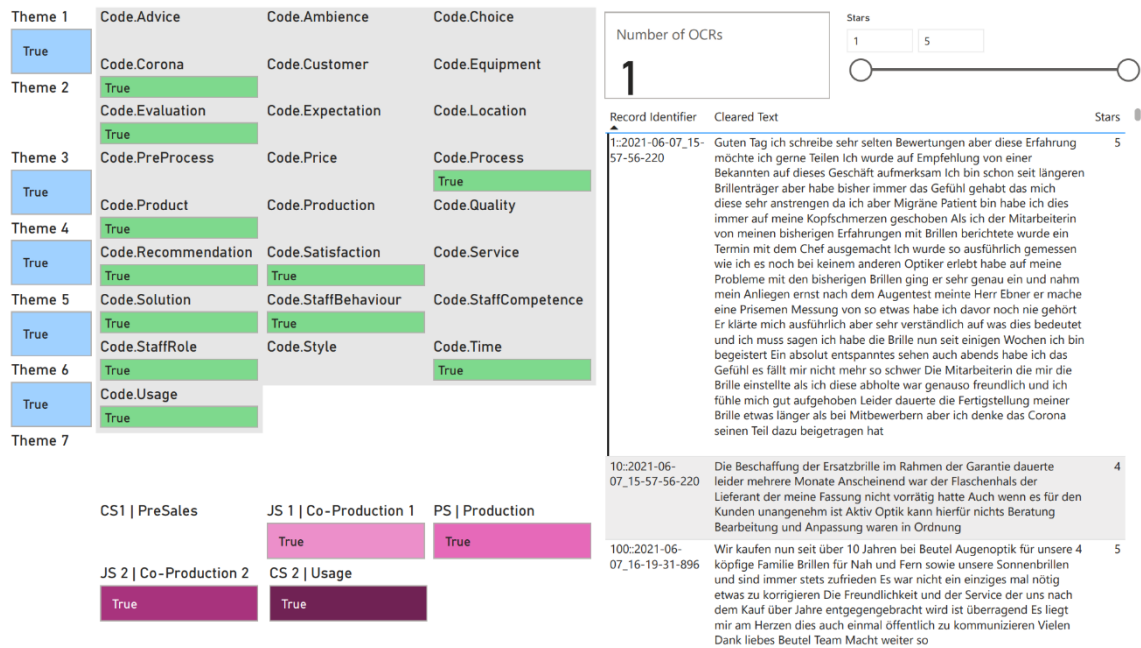


Figure 23 OCR Coding Dashboard with Example Selection

As a consequence of the refinement process, the assignments of terms to individual categories were subjected to a manual review. Terms that were inconsistent or unclear were defined in a more precise manner or removed from the category.

To illustrate, the German word 'schön' was initially allocated to the coding category 'Style'. Upon examination of the OCR dataset in Power BI, it became evident that the term is inherently ambiguous, posing a significant challenge for the automated coding of OCRs. Its meaning is contingent upon the context, rendering it difficult to ascertain a definitive interpretation. The term is frequently employed to convey an aesthetic evaluation, such as the visual presentation of a product or service. Moreover, the term can be used to describe general satisfaction that is not visually oriented, or it can be employed to intensify positive emotions, as evidenced by the German phrase 'schön entspannter Besuch' (pleasantly relaxed visit). Furthermore, the ironic or sarcastic use of 'schön' presents an additional challenge, as it can convey a negative evaluation despite the word's typically positive connotations. Furthermore, the term 'schön' frequently functions as an intensifying particle. In this context, the term is used to either emphasise a statement, as in the example 'schön reibungslos' (smoothly without problems), or to convey a negative aspect in an ironic manner, as in the example 'schön blöd' (really stupid). The aforementioned

particle usage further complicates the coding process, as it can be easily misinterpreted in the absence of an accurate contextual understanding. Consequently, the term was relocated to the ambiguous category, as otherwise there would have been an excess of false positives within the 'Style' category.

Similarly, the coding matrix had to be modified several times because the initial results did not sufficiently differentiate between the individual OCRs. This meant that a significant number of the longer reviews in particular would have been assigned many or even all of the higher-level codes. While this would not be considered a technical error, it would significantly reduce the usefulness of the coding, particularly in terms of its application to the GBP. Once again, the iterative approach of CGT was used to develop revised iterations of the coding matrix.

Despite the rigorous methodology used to construct the dataset, some reviews were inadvertently included in the OCR dataset relating to customer experiences with hearing aids or jewellery purchases. This was discovered at a late stage in the project. As a result, a new search string strategy was developed for the dataset using relevant keywords (e.g. 'hörgerät' (hearing aid), 'akustiker' (hearing aid professional), 'juwelier' (jeweller) to identify and remove these irrelevant OCRs. To explain, the problem arises from the fact that in Germany a small but significant proportion of shops sell both spectacles and hearing aids. Similarly, some opticians also sell jewellery or watches. If an identified OCR was clearly related to hearing aids or watches/jewellery, it was removed from the dataset. Conversely, if there was an identifiable reference to the purchase of visual aids, it was retained in the dataset. This process produced 256 results, resulting in a final dataset of 24,321 OCRs after correction.

5.5 Quality Assurance

Ensuring the reliability and validity of the coding process is essential to achieving meaningful results, especially with large data sets such as in this study. The necessary post-processing especially during the third coding cycle was already an important step towards quality assurance of the data set and thus the results of the analysis. To re-examine the quality of the data set achieved so far, another discerning systematic quality assurance (QA) was

applied to ensure that the automated coding process accurately reflected the content of 24,321 online customer reviews (OCRs) with highest possible confidence. The QA procedure was applied on a representative random sample drawn from the full data set and included manual checks of the automated coding, post-coding by the researcher, optimisation of the automated coding procedures, and re-checking of the results.

5.5.1 QA Sample Examination

A 95% confidence level was deemed to be an acceptable threshold for the quality assurance process. In accordance with the methodology proposed by Cochran (1977), this gives rise to the following values for the sample size.

- Total Population: 24,321
- Confidence Level: 95% ($Z = 1.96$)
- Proportion Estimate (p): 0.5 (conservative)
- Margin of Error (E): 5% (0.05)

The sample size was calculated using a 95% confidence level and a 5% margin of error, based on the following formula (Cochran, 1977):

$$n = \frac{Z^2 * p(1 - p)}{E^2}$$

As a result of this calculation, a random sample of 384 reviews was selected from the total dataset of 24,321 reviews. In this case, the known population reduction was not applied. As a result, the sample size is slightly larger than it would have been if the finite population correction had been applied. To ensure that the distribution of OCRs matches that of their star rating, the sample is representative of that distribution. Of the 24,321 OCRs, 22,516 received a five-star rating, 940 received a four-star rating, 144 received a three-star rating, 137 received a two-star rating and 584 received a one-star rating. In accordance with the above figures, the random selection for the QA sample is as follows:

- 356 reviews from 5-star ratings
- 15 reviews from 4-star ratings
- 2 reviews from 3-star ratings
- 2 reviews from 2-star ratings
- 9 reviews from 1-star ratings

In a preliminary examination of the sample, the objective was to ascertain whether any irrelevant OCRs, such as those pertaining to hearing aids or jewellery, were present. This was not the case. Moreover, a review was conducted to identify any critical spelling mistakes that could negatively impact the automated coding process. Only four terms were identified and subsequently corrected using autocorrect in both the sample and the original data set to prevent unnecessary coding errors.

5.5.2 Automated Coding Improvements

A further step was to identify any terms or pairs of terms that corresponded to one of the 25 coding categories but had not yet been recorded by the automated coding process. To prevent these unrecorded terms from leading to erroneous coding, they were incorporated into the coding matrix of the sample and, analogously, into the entire data set. This ensured that they would be taken into account by the automated coding process. As illustrated in the table, the most critical categories were found to be 'Satisfaction', 'Time' and 'Ambience'.

Identifier	Term	Category
CIA01	gern wieder	Satisfaction
CIA02	gerne wieder	Satisfaction
CIA03	glücklich	Satisfaction
CIA04	begeistert	Satisfaction
CIA05	sich Zeit	Time
CIA06	viel Zeit	Time
CIA07	desinfiz	Corona
CIA08	schön eingerichtet	Ambience
CIA09	schöner Laden	Ambience
CIA10	enttäuscht	Satisfaction
CIA11	bezahlbar	Price

Table 12 Coding Improvements

Subsequently, the entire corpus of terms was subjected to a final examination in order to ascertain the overall results. Where appropriate, minor modifications were implemented in individual query terms. To illustrate, the term 'Style' was abbreviated to the stem "styl," thereby encompassing variant forms such as the colloquially utilised "stylish" (stylish).

5.5.3 Manual OCR Cross-Checking

Once the initial quality assurance measures had been completed, the researcher proceeded to manually recode all 384 reviews from the QA sample. A distinction was made between cases of incorrect coding, which were classified as either 'false positives' or 'false negatives'. If a term in a review resulted in an automated coding that did not match the context in which the term was used, this was classified as a 'false positive'. Conversely, coding that was not automated but was obvious to the researcher from the content of the review was classified as a 'false negative'. An illustrating example can be found in Appendix C.

The errors identified in the manual review were used to improve the automated coding process. For example, changes were made to the algorithmic keyword dictionaries and new rules were introduced to accommodate multi-theme reviews. These refinements helped to reduce the error rate and improve the accuracy of the automated coding system. The following table 13 provides an overview of all the incorrect codes that remained in the sample after all the optimisation measures had been implemented. Only categories that actually contain an incorrect code are shown.

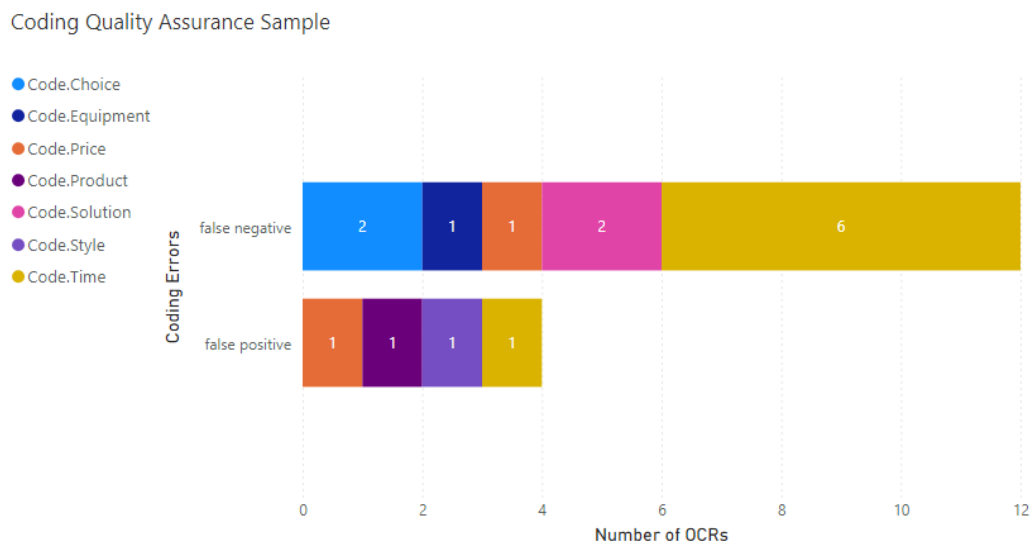


Figure 24 Remaining Number of Coding Errors after Optimisation

A total of 16 OCRs have partial instances of incorrect encoding. It is noteworthy that none of the 16 OCRs have more than a single instance of incorrect coding. It can therefore be concluded that the automated coding is highly reliable after

the implementation of the optimisation measures described. It can be inferred that the higher-level categories are also structurally robust, at least with respect to the assignment of categories. As calculated, a confidence level of 95% would allow the inclusion of 19 incorrectly coded reviews with 384 OCRs. The result achieved therefore meets the requirements.

The sole noticeable coding category is 'time'. To doublecheck the reliability of the automated coding compared to the manual coding for this category, Cohen's Kappa (Cohen, 1960) was calculated based on the following confusion matrix.

Category 'Time'	Automated 'true'	Automated 'false'	Total
Manual 'true'	69	6	75
Manual 'false'	1	308	309
Total	70	314	384

Table 13 Manual vs. Automated Coding

Cohen's Kappa is a statistical tool that adjusts for agreement by chance, which is of particular importance when coding qualitative data. The expected agreement by chance was calculated to be 69.37%. After accounting for this, Cohen's Kappa was computed as 0.941, indicating almost perfect agreement. This result demonstrates that the automated coding process for the category 'Time' is also consistent with the manual coding, confirming the general reliability of the automated coding procedure in this instance even when some false coding results occur.

5.5.4 Achieving Theoretical Saturation

The concept of saturation in CGT is not solely contingent on the quantity of data; rather, it entails the comprehensive elaboration of categories and the cessation of theoretical insights emerging from new data. As Charmaz (2014, p. 206) posits, saturation is attained when further data collection no longer yields novel theoretical concepts and when existing categories are sufficiently comprehensive to elucidate the phenomena under study. This iterative process, supported by the constant comparison method throughout the coding cycles, proved to be instrumental in determining when saturation had been reached.

The sampling procedure, which was applied in a systematic manner, facilitated the inclusion of a diverse range of customer reviews from 370 optician stores.

The approach ensured comprehensive coverage of experiences, facilitating the identification of key themes across diverse customer demographics. The theoretical sampling strategy, in conjunction with the incorporation of both brief and extended reviews, furnished the requisite depth for a comprehensive grasp of value-in-use co-creation processes, thus facilitating the attainment of saturation.

The automated coding process was also of great importance in that it enabled the rapid identification of recurring themes within the dataset. The pre-coding of key phrases by AI constituted the basis for the efficient identification of themes during the initial coding phase. Subsequently, manual refinement was conducted in conjunction with the iterative nature of focused coding, thereby ensuring that emergent categories were continuously compared and developed. This dual approach, combining automation with manual refinement, enabled the researcher to trace new insights back to existing categories, thereby providing further support for the conclusion that theoretical saturation had been reached.

Furthermore, the theoretical saturation was monitored by assessing whether the additional data led to the emergence of new categories or merely contributed further details within the already established categories. The manual review of the sample enabled the researcher to search for themes that had not been coded, particularly within longer reviews. However, no research-relevant new categories emerged, thereby supporting the conclusion that saturation had been achieved.

5.6 Conclusion

The objective of this chapter was to initiate the empirical process of answering RQ3 by presenting a data-driven method for analysing how customers perceive quality and satisfaction in a co-production scenario. In accordance with Objective 3, the chapter has established the initial point for identifying and analysing the tangible and intangible quality-related factors that shape customer satisfaction in hybrid offerings within the German optician industry.

The primary phases of the empirical research process are delineated, encompassing the collection of OCR data and the subsequent step-by-step coding of reviews. The demonstration of the systematic identification and

progressive refinement of emerging categories and themes was achieved by combining automated and manual coding processes. The balancing of automation with manual interpretation, the management of the size and diversity of the dataset and the determination of theoretical saturation necessitated constant reflection, memoing and manual refinement to ensure the comprehensive capture of customer perceptions. The coding process also highlighted the researcher's role as a mediator between the data and the coding, underlining the inherent subjectivity of qualitative analysis.

Notwithstanding the significant progress this chapter has made in the empirical phase of the research, it is important to note that its intention is to serve as a foundation rather than a conclusion. The subsequent chapter, Chapter 6, will concentrate on a thorough examination of the coded dataset to furnish a more detailed understanding of the processes of value co-creation in the German optical industry. Chapter 7 will then integrate these empirical findings with the theoretical concepts and frameworks to situate them within the wider discourse on value-in-use, hybrid offerings, and the service-dominant logic.

The challenges encountered in this phase have served to underscore the significance of rigorous methodological practices, reflexivity, and iterative refinement – principles that will continue to guide the remaining analysis and discussion. It is acknowledged that the dataset may contain a small number of irrelevant or mis-coded OCRs. However, the high level of confidence in the coding process means that such cases are not considered significant enough to affect the validity of the overall results.

6. Data Analysis

6.1 Analysis of Optician Stores Data

6.2 OCR Analysis

6.3 Conclusion

This chapter represents a pivotal point in the empirical progression of this research, marking the transition from the methodological framework and coding approaches established in earlier chapters to a comprehensive examination of online customer feedback within the German optician industry. The objective is to analyse and present empirical insights and key figures that reveal the dynamics of customer perceptions, satisfaction levels and value-in-use co-creation mechanisms specific to hybrid offerings.

The analysis begins with an examination of the structural characteristics of the optician sample dataset. This section serves to validate the representativeness of the data by analysing the regional distribution and demographic composition of the sampled optician stores across Germany. Beyond the structural analysis, the chapter then systematically presents empirical findings from the OCR dataset, focusing on patterns in the frequency, length, and ratings of reviews. In addition, the analysis uses the categorical and thematic coding to identify key categories that are central to understanding how customers evaluate their experiences. This structured approach provides a deeper understanding of how various factors interact to influence value co-creation, preparing the ground for subsequent discussion. The final section analyses the GBP codings, mapping customer feedback to specific stages of the optician's business process.

6.1 Analysis of Optician Stores Data

This first sub-section introduces the detailed exploration of the optician sample dataset, with a particular focus on relevant structural aspects of optician stores across Germany. It presents a comprehensive analysis of the distribution patterns and characteristics of the 370 stores included in the sample. The study also examines possible correlations, e.g. between the number of inhabitants in a city and the ratings.

The data set includes the master data of the sample. Accordingly, the figures presented refer to the raw data, which was collected immediately after the data scraping in June-July 2021. Consequently, the results presented are based on the total number of 31,128 OCRs. However, as the aim of this part of the analysis is to examine the composition of the optician sample itself, rather than the individual OCRs, this is not a relevant consideration for the analysis.

6.1.1 Regional Distribution

The opticians included in the dataset are distributed across a range of urban and rural locations, with a notable concentration in medium-sized towns. Of the 370 opticians included in the dataset, 312 are located in towns with a population between 20,000 and 100,000, while 58 are situated in towns with a population exceeding 100,000. This distribution is attributable to the demographic composition of the German settlement landscape, in which medium-sized towns substantially outnumber larger urban centres (Statistisches Bundesamt, 2020a). Moreover, the dataset encompasses opticians from both densely populated federal states, such as North Rhine-Westphalia, and less densely populated regions, including Saarland and Saxony-Anhalt.

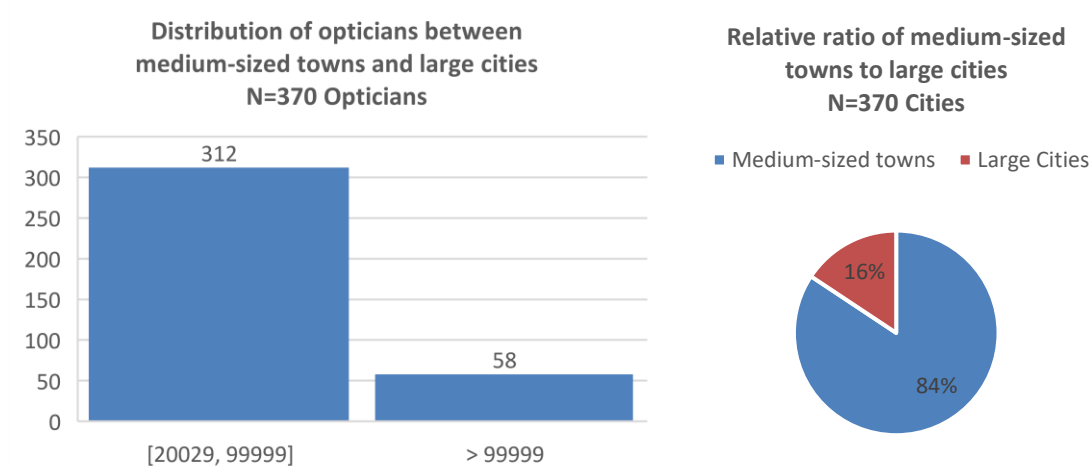


Figure 25 Distribution of Opticians according to City Size

Table 14 presents the key figures for the sample, also showing the distribution of opticians across all 14 German federal states (excluding the city states of Hamburg and Bremen, which were omitted due to sampling variability). The number of opticians is broadly proportional to the number of towns represented in each state, reflecting the underlying population distribution.

Federal State	Cities	Residents	% Residents	Opticians	OCRs	Average OCRs	Average Rating
Baden-Wuerttemberg	64	3799749	12.65%	64	5046	79	4.74
Bavaria	45	4061987	13.53%	45	2932	65	4.79
Berlin	1	3669491	12.22%	1	368	368	4.20
Brandenburg	11	537586	1.79%	11	480	44	4.77
Hesse	36	2615371	8.71%	36	2024	56	4.66
Lower Saxony	51	2955569	9.84%	51	3144	62	4.70
Mecklenburg-Vorpommern	4	428023	1.43%	4	155	39	4.75
North Rhine-Westphalia	103	7277195	24.24%	103	13945	135	4.74
Rhineland-Palatinate	14	1043541	3.48%	14	896	64	4.66
Saarland	5	326083	1.09%	5	354	71	4.64
Saxony	10	1648999	5.49%	10	679	68	4.72
Saxony-Anhalt	10	754245	2.51%	10	363	36	4.86
Schleswig-Holstein	8	503481	1.68%	8	390	49	4.84
Thuringia	8	404557	1.35%	8	352	44	4.58
Total	370	30025877	100.00%	370	31128	84	4.73

Table 14 Optician Sample Key Figures

The population figures refer only to the towns included in the sample and therefore do not represent the full population density of each federal state. In the reference year 2019, these towns accounted for approximately 30 million inhabitants – about 36 per cent of Germany’s total population (Statistisches Bundesamt, 2020b). While the catchment populations are not identical across states, the proportionality between state population size and sample coverage supports the geographical representativeness of the dataset for analysing patterns in the German optician industry.

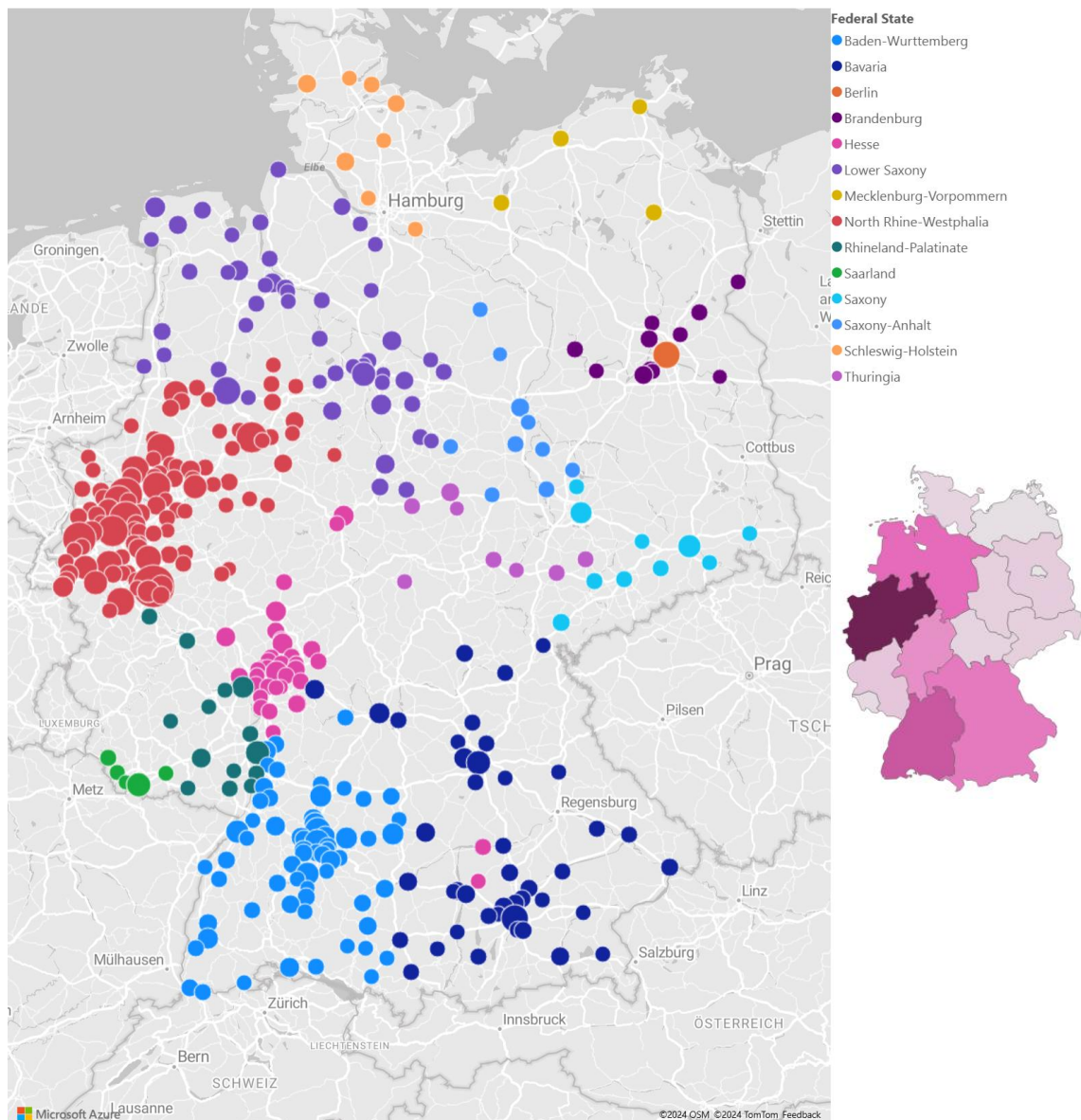


Figure 26 Visualisation of Geographical Sample Distribution

As illustrated in Figure 26, the dataset covers the entire territory of Germany, with regional clusters evident in densely populated federal states and urban areas such as North Rhine-Westphalia, Bavaria and Baden-Württemberg. In contrast, sparsely populated eastern regions, including Mecklenburg-Vorpommern, Thuringia, and Brandenburg, are represented by fewer opticians, reflecting their lower absolute population numbers.

No weighted sampling was applied with respect to federal-state population sizes. This was a deliberate decision to preserve comparability between opticians as individual units of analysis, irrespective of the population size of their respective catchment areas. The research focus is on patterns of customer feedback at the store level, not on producing population-weighted national

estimates. Applying weights would have disproportionately emphasised opticians in larger population centres and reduced the influence of those in smaller towns, thereby distorting the balanced representation of business process variation that is central to this study. The case of Berlin illustrates this point: although the city state has approximately 3.6 million inhabitants, the sample includes only a single optician from Berlin, despite the fact that in reality several hundred optician businesses operate there. A population-weighted approach would have required a disproportionately high number of Berlin opticians in the sample to reflect its large population, which would have shifted the analytical focus away from balanced representation of business-level variation across Germany.

6.1.2 OCRs and Average Ratings

The unprocessed version of the complete sample comprises 31,128 OCRs across the 370 individual data sets. Prior to data cleansing, the mean number of OCRs per optician was 84. However, the number of OCRs varies considerably between opticians. In the dataset, 215 records, representing 58.1% of the total, contain 50 or fewer OCRs. 68 records contain between 51 and 80 OCRs. In total, 342 records, or 92.43% of the total, contain fewer than 200 reviews.

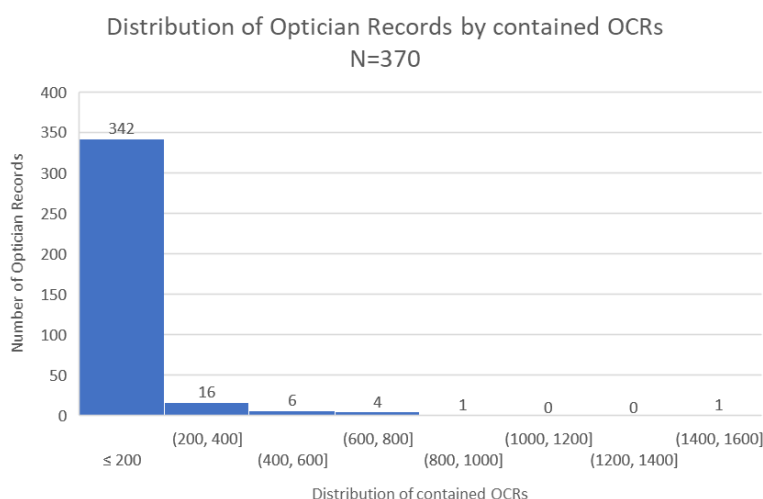


Figure 27 Distribution of Optician Records > 199 OCRs

The largest dataset record comprises 1,565 OCRs, representing an exceptional case. The next largest record contains 868 OCRs, and only 28 records (7.57%)

contain 200 or more OCRs. When considering only those 92.43% of datasets with less than 200 OCRs, the average dataset size is 54 OCRs.

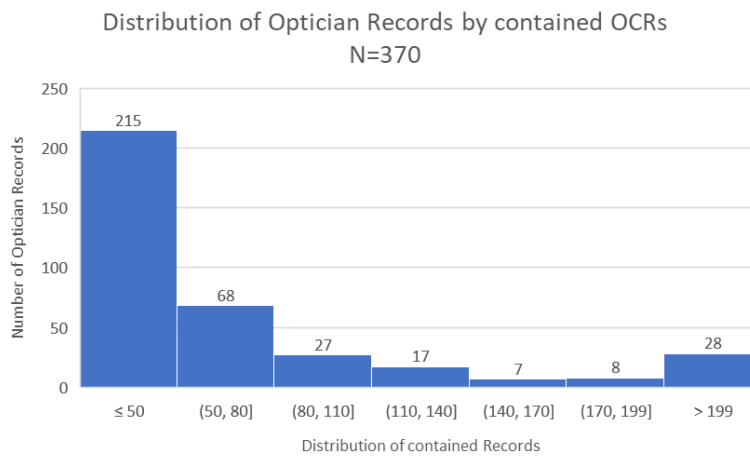


Figure 28 Distribution of Optician Records 1-199 OCRs

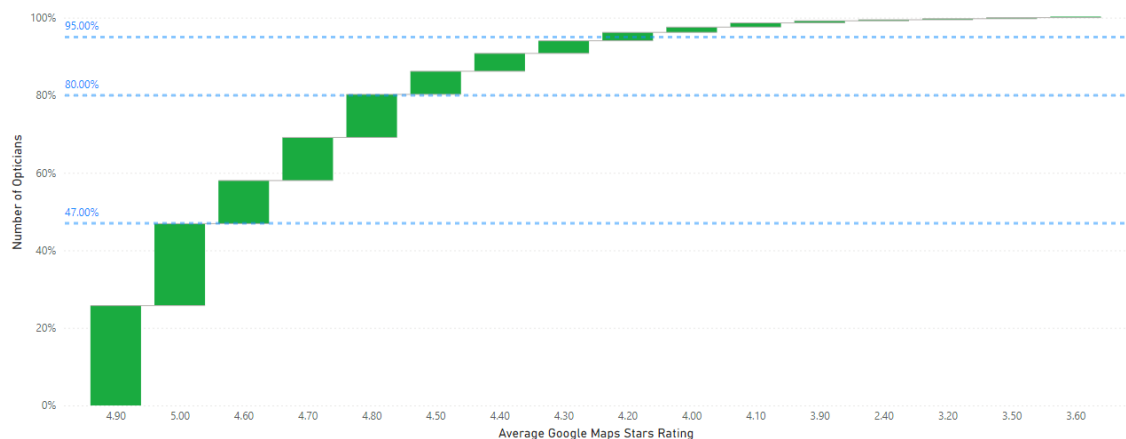


Figure 29 Distribution of Average Stars Rating in Percent

The mean OCR star rating for the sampled opticians is 4.73, indicating a predominantly positive assessment. A total of 95% or more of the 370 OCR records have an average rating of 4.2 stars or higher. Thus, 80% of the sampled opticians have a rating of 4.6 stars or above. Furthermore, approximately 47% of the opticians in the sample are even in the two highest rating categories, 4.9 and 5.0 stars. There is only one outlier with a significantly

lower rating of 2.4 stars. Overall, only six opticians in the sample (1.6%) have an average rating of less than 4.0 stars.

6.1.3 Correlations

To investigate potential factors affecting the number of reviews and average ratings, a Pearson correlation analysis was conducted with a view to establishing any possible relationships between the key variables in the dataset. The variables in question are the number of reviews, average ratings, and city population size. The objective was to ascertain whether a correlation exists between these three variables. In the event of a strong correlation, the methodology of treating each optician equally in the aggregated OCR dataset, irrespective of their regional location or the number of OCRs, would require critical examination.

The statistical correlation analysis was undertaken in Python (v3.11). Established open-source libraries were employed, including SciPy for statistical computations, pandas for structured data management, and matplotlib and seaborn for data visualisation. The use of these libraries is well established in empirical research and provides a robust, transparent, and reproducible framework for the execution of statistical analyses (Virtanen *et al.*, 2020, p. 264).

The Pearson correlation coefficient (r) was applied to examine the strength and direction of linear associations between continuous variables (Sauer, 2019, p. 112). This coefficient ranges from -1 to $+1$, where:

- $r = 1$ denotes a perfect positive linear relationship,
- $r = -1$ denotes a perfect negative linear relationship, and
- $r = 0$ denotes the absence of a linear relationship.

Two relationships were investigated:

1. Number of Reviews (OCR count per optician) and Average Ratings (total scores on a scale of 1–5)
2. City Population (number of residents) and Average Ratings

The following scatter plots visualise the results of the correlation calculation.



Figure 30 Correlation Scatter Plots Optician Sample (N=370)

Variable 1	Variable 2	Pearson r	p value
Reviews	Total Scores	0.147	0.0046
Residents	Total Scores	-0.037	0.474

Table 15 Results of Pearson Correlation Coefficient (r) Calculation

The results are presented in Table 15. A weak but statistically significant positive correlation exists between the number of reviews and average ratings ($r = 0.147$, $p = 0.0046$). In contrast, no statistically significant relationship is observed between city population size and average ratings ($r = -0.037$, $p = 0.474$). These findings indicate that while a greater number of reviews is modestly associated with higher ratings, the size of the city in which an optician operates does not appear to systematically influence customer evaluations. The optician with the highest number of OCRs in the dataset and an average rating of 4.9 serves as an illustrative case. Its store is located in a city with a population of just 55,847. Figure 31 shows a corresponding snapshot of the Power BI dashboard.

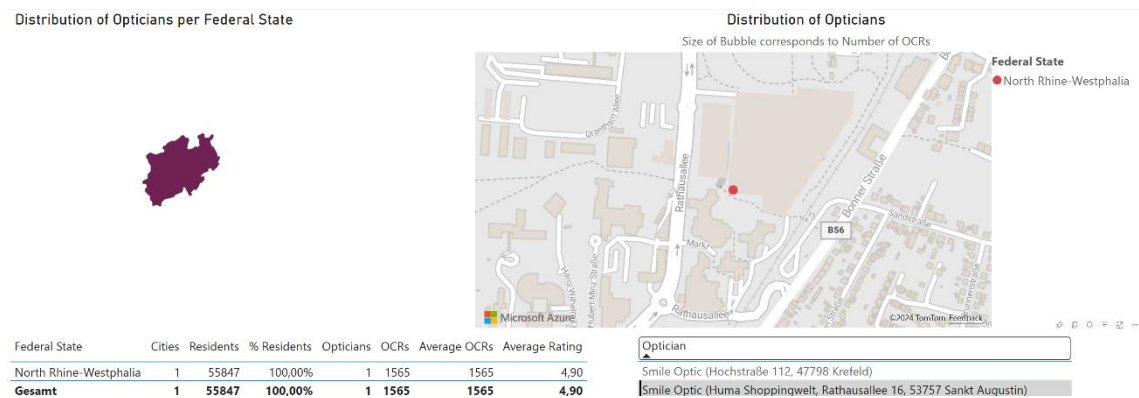


Figure 31 Snapshot from the Power BI Dashboard

6.2 OCR Analysis

This section examines the OCR dataset in detail. The analysis is structured to proceed from an assessment of the dataset's structural characteristics and integrity to the subsequent interpretation of its content. The initial step (chapter 2.1) provides a quantitative overview of the dataset, focusing on review length, temporal distribution and rating valence. These measures enable the identification of potential anomalies, irregularities or biases that might influence the analysis.

Once the dataset's structure and quality have been established, the analysis proceeds to categorical coding (chapter 6.2.2) in order to classify and interpret the reviews. This stage examines the distribution and frequency of categories emerging from the coding process, thereby identifying the dominant quality attributes that shape customer perceptions. Thematic analysis is then employed to explore the co-occurrence and interrelationships between categories, revealing how different aspects of customer experience interact (chapter 6.2.3). Finally, the findings are situated within the operational framework of the Generic Business Process (GBP), enabling a process-oriented interpretation of how specific stages of the optician's business process contribute to the co-creation of value-in-use (chapter 6.2.4).

6.2.1 Key Figures

The purpose of this preliminary analytical step is to examine the dataset's fundamental structure and assess its suitability for subsequent interpretation. The final dataset, comprising 24,321 OCRs, forms the basis for the following analysis. Three dimensions are emphasised: (1) the valence of ratings, (2) the length of the review text, and (3) the temporal distribution of review publication dates. In addition, a supplementary comparison between Google star ratings and AI-derived sentiment classifications was undertaken as an integrity check. As these results are informative but not central to the main discussion, they are presented in Appendix D.

6.2.1.1 Review Length and Temporal Distribution

The length of the OCRs in the processed data set varies considerably, with a tendency towards relatively short text content. The outcome of the pre-processing is that only 85 OCRs (=0.35%) have a length of five characters or fewer. In contrast, 403 OCRs (=1.66%) exhibit a length of over 800 characters. OCRs that can be considered medium in length, falling between 51 and 300 characters, constitute 66.16% of the entire data set.

Distribution of OCRs by Length (Characters)

N=24321

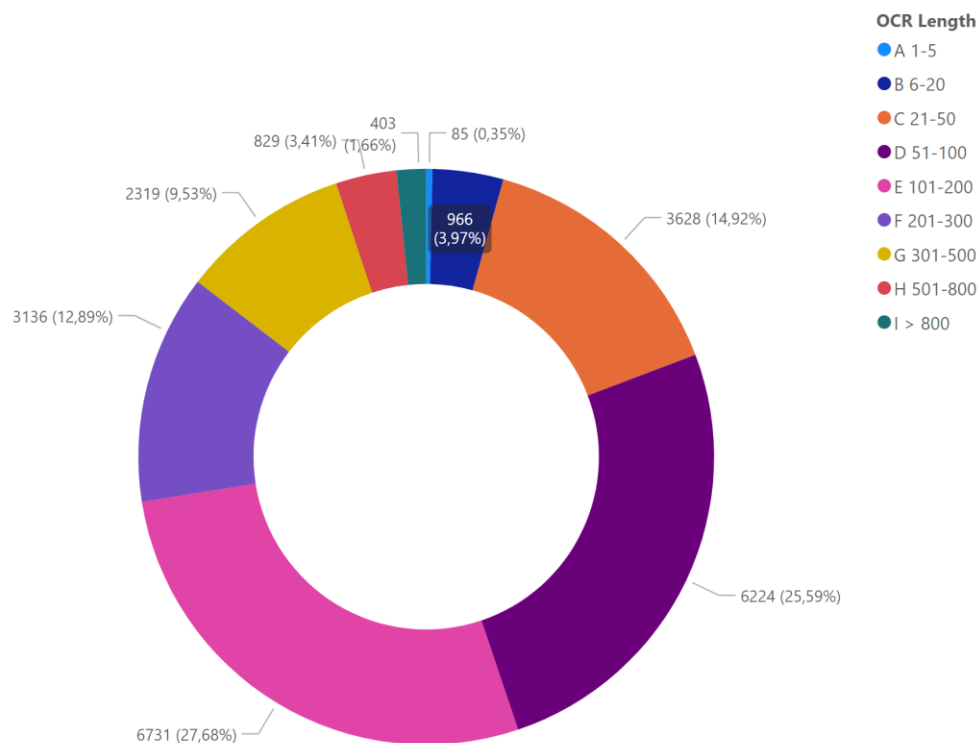


Figure 32 Distribution of OCRs by Length (Characters)

The initial two entries in the data set for the posting date of an OCR date back to 2011. As illustrated by the chart below, the annual growth rates were high until 2016, although from a very low level. From 2017 on, the absolute number of OCRs has increased significantly each year, with a decreasing relative growth rate. Ultimately, almost 81% of the 24,321 OCRs were published in the period 2019-2021. The decrease shown in the graph is due to the collection period, as the data set was compiled in June-July 2021, leaving the rest of this year unexamined. Approximately 13,790, or 57%, of the OCRs were published during the period of the global pandemic caused by the novel coronavirus.

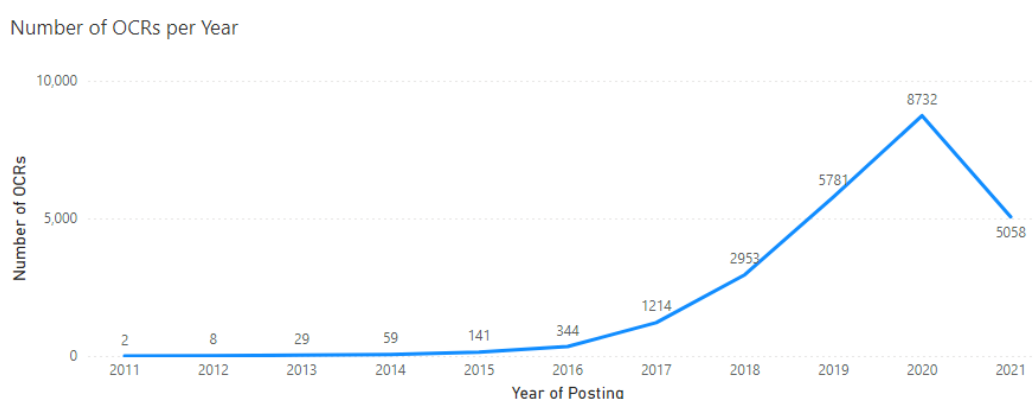
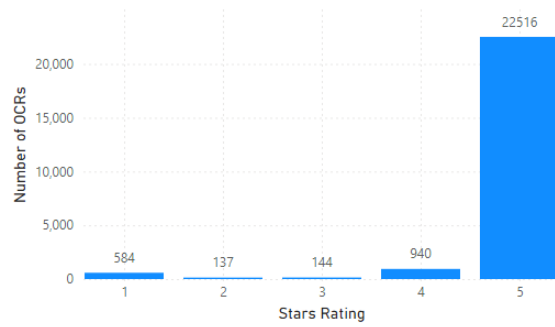


Figure 33 Posted OCRs per Year

6.2.1.2 Rating Valence and Distribution Patterns

A further analysis of the data reveals a significant discrepancy between the positive and negative ratings. In total, 22,516 of the 24,321 OCRs received a very positive evaluation with a 5-star rating. Conversely, only a small proportion of 584 OCRs were assigned a negative evaluation of 1 star. When the ratings are clustered according to their valence, with 'positive' ratings assigned a value of 4 or 5 stars and 'negative' ratings a value of 1 or 2 stars, the difference becomes even more pronounced. Overall, 96.44% of the 24,321 ratings are positive, while only 2.96% are negative. Furthermore, the number of neutral ratings, assigned a value of 3 stars, is even lower at 0.59%.

Distribution of OCRs per Stars Rating



Categorised OCR Distribution in Percentage

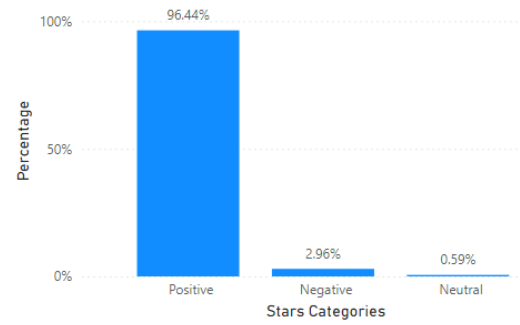


Figure 34 OCR Stars Rating in absolute Figures and in Percentage

As shown in figure 35, a comparison of the mean length of OCRs in relation to their star rating reveals a notable discrepancy. Negative reviews with 1-2 stars are, on average, significantly longer than positive reviews with 4-5 stars. The mean length of a five-star OCR is 166, whereas the mean length of a one-star OCR is 454. As the scatter plot in figure 36 visualises, this phenomenon is predominantly attributable to the considerable number of exceptionally brief, positive OCRs.

Average Characters by Stars Rating

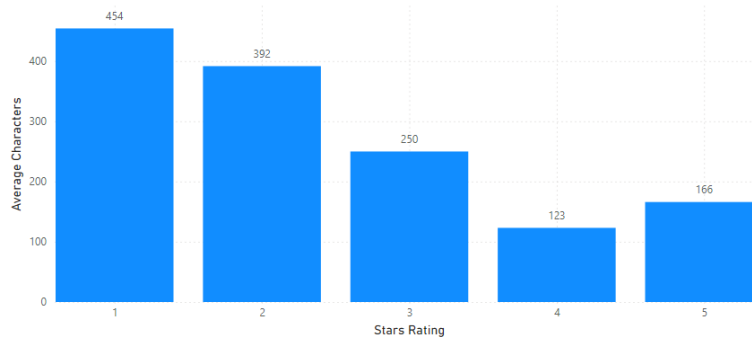


Figure 35 Average Characters by Stars Rating

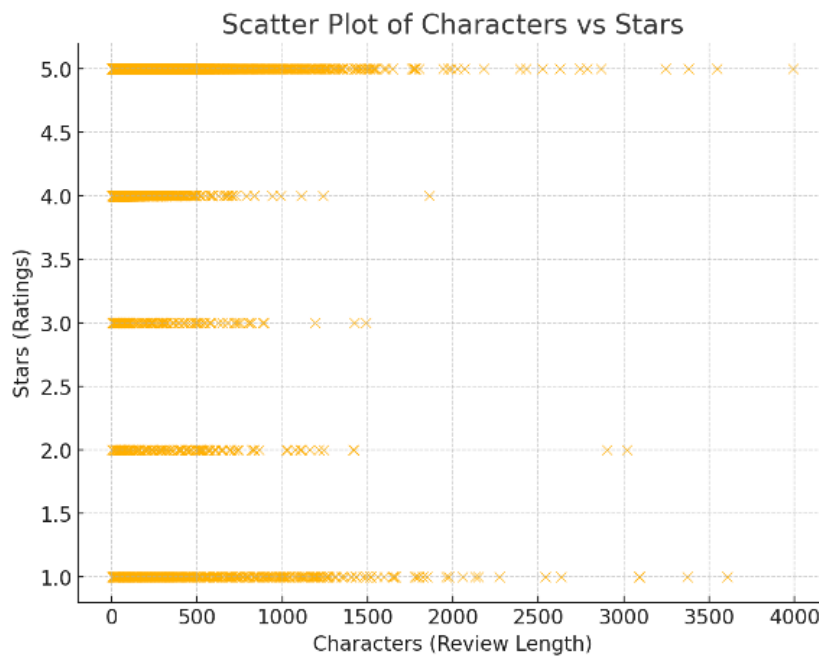


Figure 36 Scatter plot of review length by star rating

Upon consideration of the absolute number of very long OCRs with 1,500 or more characters, the distribution appears to be more balanced. As figure 37 shows, 27 (44,26%) have been awarded a negative rating, while 34 (55,74%) have been awarded a positive rating.

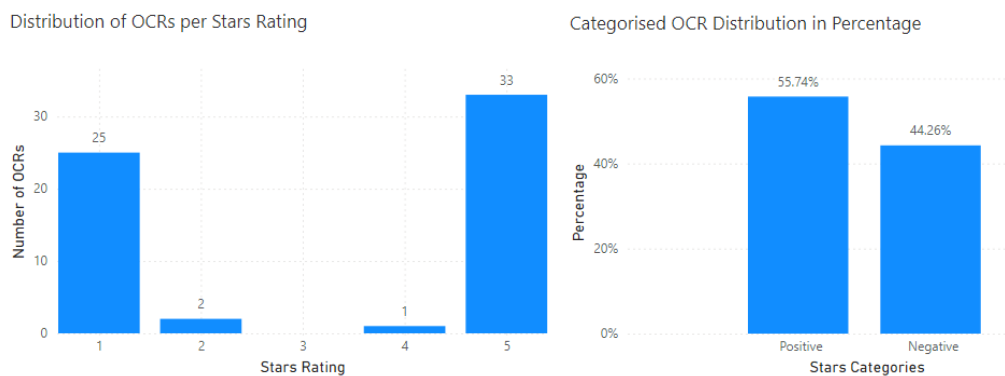


Figure 37 Relationship between positive and negative OCRs

However, when the number of longer OCRs is related to the sum of all positive and negative OCRs, a significant difference becomes apparent. Among the negative OCRs, approximately 17.06% have a length of more than 800 characters, whereas only 1.19% of the positive OCRs have a comparable content volume. A definite picture also emerges upon comparison of OCRs with a length of > 300 to <= 800 characters. The proportion of negative OCRs of this length is 29,95% of the total number of negative OCRs. In contrast, the same proportion for positive OCRs is only 12,42%. Figure 36 depicts the distribution

of individual reviews, showing that most positive reviews are clustered at very short lengths, whereas negative reviews are more evenly distributed across longer lengths. Figure 38 complements this by presenting the percentage distribution of review lengths within each valence group. The two perspectives are consistent: although some positive reviews are longer, their proportion is small relative to the large volume of short positive reviews, which accounts for the lower mean length observed for positive reviews.

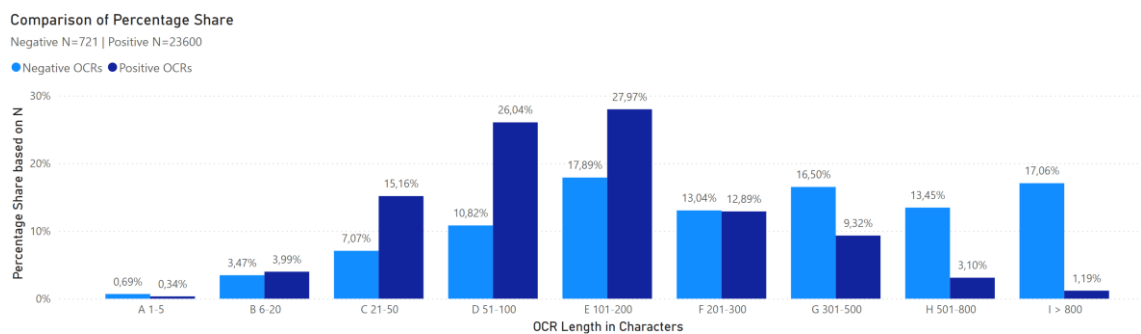


Figure 38 Percentage distribution of positive/negative review lengths

In conclusion, although there is considerable variance in review length, a consistent pattern emerges in which negative reviews tend to be significantly longer than positive ones. This indicates that negative experiences are more frequently accompanied by detailed commentary.

6.2.2 Category Coding Analysis

This section presents the consolidated outcomes of the category coding, providing the analytical foundation for exploring how different quality attributes shape customer perceptions of value-in-use within hybrid offerings.

The results are presented to guide a structured analysis that will identify dominant and peripheral quality attributes, reveal patterns of customer feedback and highlight anomalies warranting closer investigation. This approach positions the coding outcomes as a basis for correlating customer-expressed themes with measurable factors such as review length, rating valence and process-stage relevance within the Generic Business Process model.

6.2.2.1 Basic Category Coding Results

Based on the coding process described in chapter 5.4.3.1, the 25 Category Codes were assigned to the 24,321 OCRs. As a result, 127,713 'true' codes were applied to the OCRs contained in the data set. Table 17 gives an overview of the coding outcomes.

List of the applied 25 Coding Categories			
Advice	Evaluation	Quality	Staff Role
Ambience	Expectation	Recommendation	Style
Choice	Location	Satisfaction	Time
Corona	Price	Service	Usage
Co-Production	Preprocess	Solution	
Customer	Product	Staff Behaviour	
Equipment	Production	Staff Competence	

Table 16 List of applied Coding Categories

Code	True-Coded OCRs	% True-Coded OCRs	Share of all Coding
Code.Advice	15098	62,07%	11,82%
Code.Ambience	1475	6,06%	1,15%
Code.Choice	3895	16,01%	3,05%
Code.Corona	340	1,40%	0,27%
Code.Customer	3049	12,54%	2,39%
Code.Equipment	279	1,15%	0,22%
Code.Evaluation	19317	79,43%	15,13%
Code.Expectation	1066	4,38%	0,83%
Code.Location	176	0,72%	0,14%
Code.PreProcess	381	1,57%	0,30%
Code.Price	5035	20,70%	3,94%
Code.Process	5162	21,22%	4,04%
Code.Product	11778	48,43%	9,22%
Code.Production	733	3,01%	0,57%
Code.Quality	1818	7,48%	1,42%
Code.Recommendation	5182	21,31%	4,06%
Code.Satisfaction	6034	24,81%	4,72%
Code.Service	5960	24,51%	4,67%
Code.Solution	2239	9,21%	1,75%
Code.StaffBehaviour	14726	60,55%	11,53%
Code.StaffCompetence	9062	37,26%	7,10%
Code.StaffRole	8578	35,27%	6,72%
Code.Style	751	3,09%	0,59%
Code.Time	5107	21,00%	4,00%
Code.Usage	472	1,94%	0,37%
	127713		100,00%

Table 17 Category Coding Results

Figure 39 shows the percentage of assigned 'true' encodings for all categories (multiple codings per OCR were possible). Apart from the rather generic category 'Evaluation' with 79.43 %, the categories 'Advice' and 'StaffBehaviour' stand out with 62.07 % and 60.55 % respectively. Following the relatively generic category of 'Product', the next most frequently occurring categories are 'StaffCompetence' (37.26%) and 'StaffRole' (35.27%).

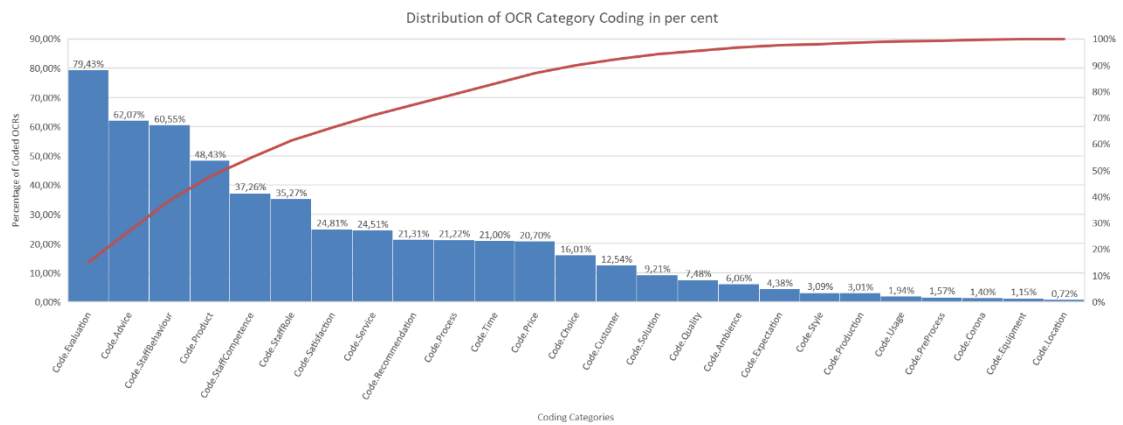


Figure 39 Distribution of OCR Category Coding in per cent

The categories pertaining to customer behaviour, namely 'Satisfaction' (24.81%) and 'Recommendation' (21.31%), are coded at a considerable distance from the aforementioned categories. A reference to the 'Service' category is identified in 24.51% of all OCRs, while a direct 'Process' reference is auto-coded in 21.22%. The 'Time' category is coded in 21.00% of OCRs, while 'Price' is a topic in 20.7% of OCRs. The category 'Choice' is still referenced in 16.01% of OCRs, while 'Ambience' is coded in only 6.06% of OCRs and 'Style' in only 3.09%. The 'Usage' category is represented in only a relatively small number of OCRs, with a percentage of 1.94%. A similar observation can be made with regard to the categories 'Equipment' and 'Location', which were each identified in 1.15% and 0.72% of cases, respectively. References to the 'Corona' category are identified in 1.4% of OCRs, while the 'Preprocess' category is recognised in 1.57% of OCRs. The concept of 'Quality' is explicitly addressed in 7.48% of the OCRs, which is similar to the proportion addressing the concept of 'Solution' (9.21%). Additionally, 4.38% of the OCRs explicitly utilise terms that have been assigned to the 'Expectation' category. Terms which related to 'Production' were found in 3.01% of all OCRs, whereas the self-referential 'Customer' category was coded in 12,54% of the dataset.

If, in an alternative representation, the frequency of a coding for a category is set in relation to the total number of codings, a comparable picture emerges. For example, 11.82% of the total number of codes (127,713) were for the category 'Advice', 7.10% for 'StaffCompetence' and 4.00% for 'Time'.

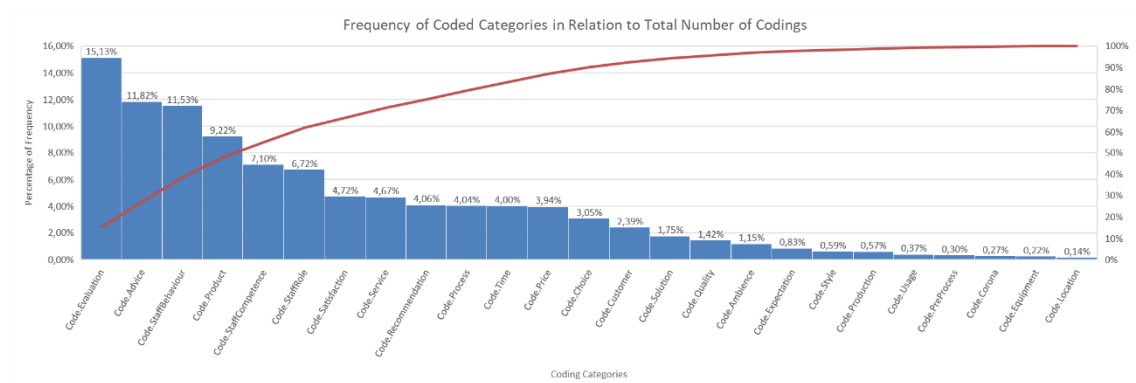


Figure 40 Frequency of Coded Categories in Relation to Total Codings

6.2.2.2 Multiple OCR Coding Frequency

This section examines the multiple coding frequency and the relationship between the length of customer reviews and the number of category codes assigned during the automated coding process. As illustrated in the subsequent visual representation, only 172 instances, representing 0.71% of the total dataset, were unable to be captured by the automated coding process. The largest coding category are OCRs with four assigned codes, representing 4,163 or 17.12% of all OCRs. As the length of the OCRs correlates with the number of assigned codes (see below), the number of multiple-encoded OCRs decreases in line with the lower number of longer OCRs in the data set. This is evidenced by the fact that almost 9 out of 10 OCRs (88.79%) have eight or fewer codes, whereas only 0.19% of all OCRs are assigned 15 to a maximum of 20 codes.

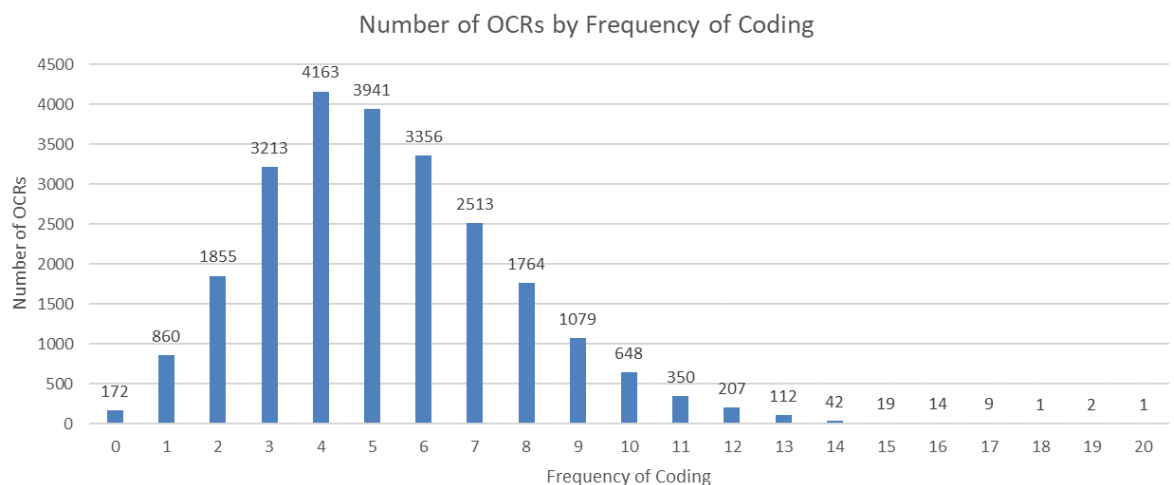


Figure 41 Number of OCRs by Frequency of Coding

Two correlation methods were employed to examine the relationship between the number of codes assigned and the length of the reviews, Pearson's correlation coefficient and Spearman's rank correlation. These methods were selected on the basis of their capacity to quantify the strength and direction of relationships between continuous variables and ordinal ranks, respectively.

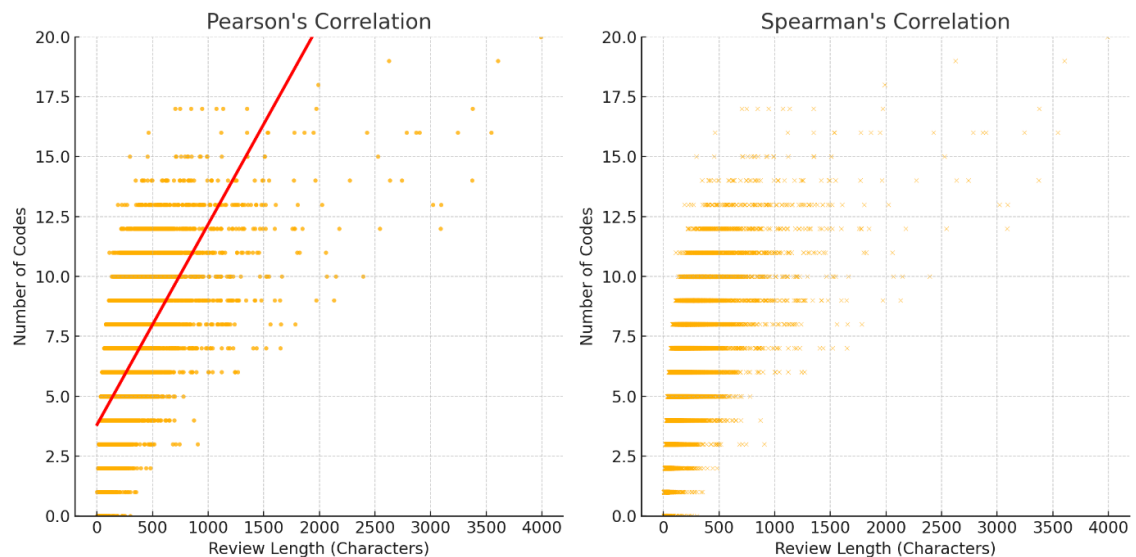


Figure 42 OCR Length vs. Coding Correlation Scatter Plots

Pearson's correlation was employed to ascertain whether the length of reviews, quantified by the number of characters, exhibited a linear correlation with the number of codes assigned. The Pearson correlation coefficient was found to be $r=0.67$, indicating a moderate positive linear relationship between review length and coding frequency. However, it should be noted that Pearson's correlation relies on the assumption of linearity, which may not be fully applicable to this particular dataset, given the wide variability in the length and complexity of customer reviews.

To accommodate the potential for non-linearity in the data, Spearman's rank correlation was also employed. Spearman's correlation is a non-parametric method that is used to ascertain the strength and direction of a monotonic relationship between two variables (Spearman, 2010). In contrast to Pearson's, Spearman's does not assume a linear relationship and is less susceptible to the influence of outliers. In contrast, the method employed ranks the values of each variable and calculates the correlation based on these ranks. The Spearman's correlation coefficient for this dataset was $r_s=0.79$, indicating a stronger positive monotonic relationship than that observed with Pearson's correlation. These

findings indicate that, while the relationship between review length and coding frequency is not perfectly linear, longer reviews are consistently associated with a higher number of codes. The scatter plots illustrate the correlation between review length (in characters) and the number of codes assigned, using both Pearson's and Spearman's coefficients. The left-hand Pearson's plot shows a linear regression line overlaid on the scatter plot, indicating the linear relationship between the two variables. The right-hand Spearman's plot is shown without a regression line, which better reflects the rank-based monotonic relationship between the variables.

6.2.2.3 Category Anomalies

A further step involved the detailed analysis of each individual coding category to ascertain whether there were any significant deviations in the distribution of the star rating. The length classification was also considered. This analysis was conducted using a comprehensive pivot table, which presents the distribution of the correspondingly coded OCRs across the length classes and the star rating for each coding category. Table 18 shows an example for the coding category 'Advice'.

	Code.Advice				
Stars	1	2	3	4	5
Characters					
1-5	0	0	0	0	0
6-20	1	0	2	31	254
21-50	1	0	3	112	1707
51-100	10	2	7	132	3761
101-200	20	6	5	108	4400
201-300	16	4	10	41	2088
301-500	21	10	8	36	1503
501-800	13	9	7	11	514
> 800	35	6	5	6	193
	0,77%	0,25%	0,31%	3,16%	95,51%
				Total	15098

Table 18 Pivot Table Example for 'Advice'

In the further course of the analysis, it turned out that it was not possible to generate any additional insights from an overly detailed analysis of the individual length classes. To reduce the effort involved, the focus was then placed on the structural distribution of the star ratings in the individual categories. The previously introduced structure of negative (1-2 stars), neutral

(3 stars) and positive (4-5 stars) was used here. Table 19 shows the results of this analysis.

Category	Negative	Neutral	Positive	Negative_Z	Neutral_Z	Positive_Z
Code.Advice	1,02%	0,31%	98,67%	-1,047581255	-1,019690595	1,07798933
Code.Ambience	0,68%	0,61%	98,71%	-1,145172916	-0,139956014	1,089570632
Code.Choice	1,49%	0,41%	98,10%	-0,913739199	-0,726857188	0,925445936
Code.Corona	7,94%	1,76%	90,29%	0,927204351	3,258463532	-1,168854639
Code.Customer	6,17%	0,49%	93,34%	0,420689152	-0,487896443	-0,351106852
Code.Equipment	2,51%	0,72%	96,77%	-0,622743972	0,174049781	0,569706473
Code.Evaluation	2,05%	0,43%	97,52%	-0,753694794	-0,656014878	0,768498025
Code.Expectation	5,16%	0,66%	94,18%	0,133514608	-0,003108309	-0,125261409
Code.Location	3,41%	1,14%	95,45%	-0,365914065	1,408915447	0,215653698
Code.PreProcess	13,39%	1,05%	85,56%	2,480700523	1,154314675	-2,437831947
Code.Price	4,95%	0,99%	94,06%	0,072428656	0,987062639	-0,158072583
Code.Process	5,91%	0,68%	93,41%	0,347248295	0,059799054	-0,331970486
Code.Product	3,92%	0,56%	95,52%	-0,219406232	-0,286552077	0,232427467
Code.Production	6,82%	0,68%	92,50%	0,607670303	0,07185716	-0,577946179
Code.Quality	8,47%	0,77%	90,76%	1,078332747	0,330737533	-1,044109441
Code.Recommendation	1,64%	0,15%	98,21%	-0,870596667	-1,481587224	0,953669793
Code.Satisfaction	1,66%	0,27%	98,08%	-0,865751241	-1,155491927	0,919391125
Code.Service	2,16%	0,47%	97,37%	-0,721047376	-0,553142631	0,728422973
Code.Solution	6,79%	0,58%	92,63%	0,598386554	-0,226946763	-0,541981642
Code.StaffBehaviour	1,89%	0,48%	97,62%	-0,79803422	-0,516814173	0,797503026
Code.StaffCompetence	0,89%	0,20%	98,91%	-1,083577953	-1,351332512	1,142065313
Code.StaffRole	3,31%	0,54%	96,15%	-0,393960353	-0,357524406	0,403030816
Code.Style	6,79%	0,67%	92,54%	0,599014392	0,023732468	-0,565420564
Code.Time	4,29%	0,76%	94,95%	-0,115072966	0,311842141	0,079780563
Code.Usage	13,98%	1,06%	84,96%	2,651103628	1,182140709	-2,600599428

Table 19 Distribution of OCR ratings and Z-Score per Category Code

The analysis revealed some insights. In general, positive reviews dominate across all categories, ranging from 84.96% to 98.71%. Negative reviews occur much less frequently, with the lowest percentage is 0.68%, and the highest is 13.94%. Neutral reviews account for only a small proportion, ranging from 0.15% to 1.76%. In order to identify any anomalous data, z-scores were calculated for each category. The z-score represents a statistical measure that indicates the distance of a specific value from the mean, expressed in terms of standard deviations.

The following formula was used: $z = \frac{x - \mu}{\sigma}$

where 'x' is the value being analysed, 'μ' is the mean, and 'σ' is the standard deviation.

A z-score exceeding 2 or falling below -2 typically signifies that a value is anomalous, exhibiting a degree of divergence from the remainder of the dataset. Three categories exhibited notable divergences from the prevailing

trend. The category designated as 'Corona' demonstrated an anomalous prevalence of neutral reviews, as indicated by a z-score of 3.26, which was not further considered. In contrast, two other categories demonstrated a notable increase in the number of negative reviews and a corresponding decrease in the number of positive reviews. The 'PreProcess' category exhibited a higher proportion of negative reviews ($z = 2.48$) and a lower proportion of positive reviews ($z = -2.44$). Similarly, the 'Usage' category displayed a significant increase in negative reviews ($z = 2.65$) and a decrease in positive reviews ($z = -2.60$). Given the pivotal role of the categories 'Usage' and 'PreProcess' as upstream and downstream sub-processes of the GBP, the negative customer comments were subjected to an in-depth analysis.

6.2.2.4 In-depth Category Analysis

6.2.2.4.1 'Usage' Category

In light of the heightened incidence of adverse OCRs pertaining to the 'Usage' category, the 66 OCRs in question were subjected to a more in-depth examination. The manual analysis conducted by the researcher led to the identification of six key themes that were frequently cited by customers as the basis for their negative assessment, whereby multiple assignments are possible.

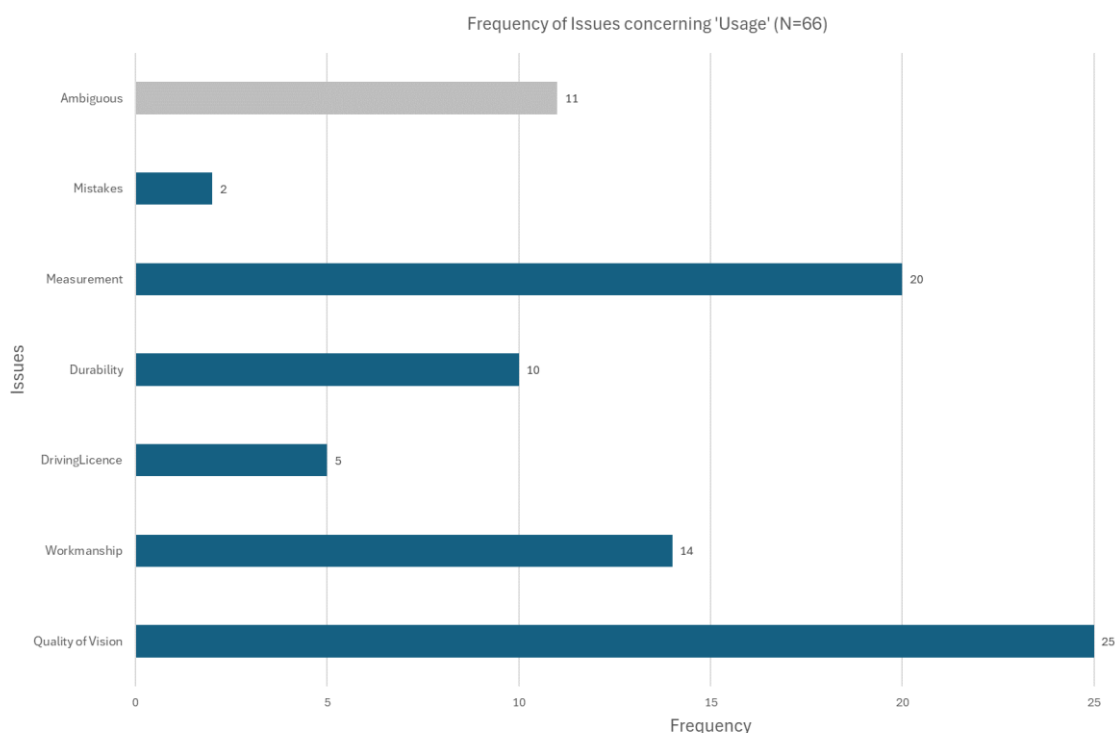


Figure 43 Frequency of Issues concerning 'Usage' Category

Findings:

- The comprehensive examination revealed that 25 out of the 66 OCRs were associated with suboptimal visual acuity following the provision of the service. This manifested in various ways, including blurred vision and headaches.
- 14 cases pertain to the quality of the spectacles resulting from the craftsmanship, for example, a poor fit or technical issues.
- 5 OCRs pertain to the specific service of the driving licence vision test for novice drivers, which is legally mandated in Germany. The criticism here is that a need for a visual aid was derived from the eye test, which was not confirmed in a subsequent test conducted by another provider.
- 10 of the OCRs address the durability of the glasses, for example, the chipping of colour on the frame.
- 12 OCRs show a reference to the results of an incorrect measurement by the optician, which is often in the context of a subsequent test by a general practitioner or optician.
- Only 2 OCRs refer to general errors such as mix-ups.
- 11 OCRs cannot be clearly assigned to a category code.

6.2.2.4.2 'Preprocess' Category

The 51 negative OCRs pertaining to the 'PreProcess' sub-process were also subjected to a manual analysis, which led to the identification of five key themes frequently mentioned by customers as the basis for their negative assessment.

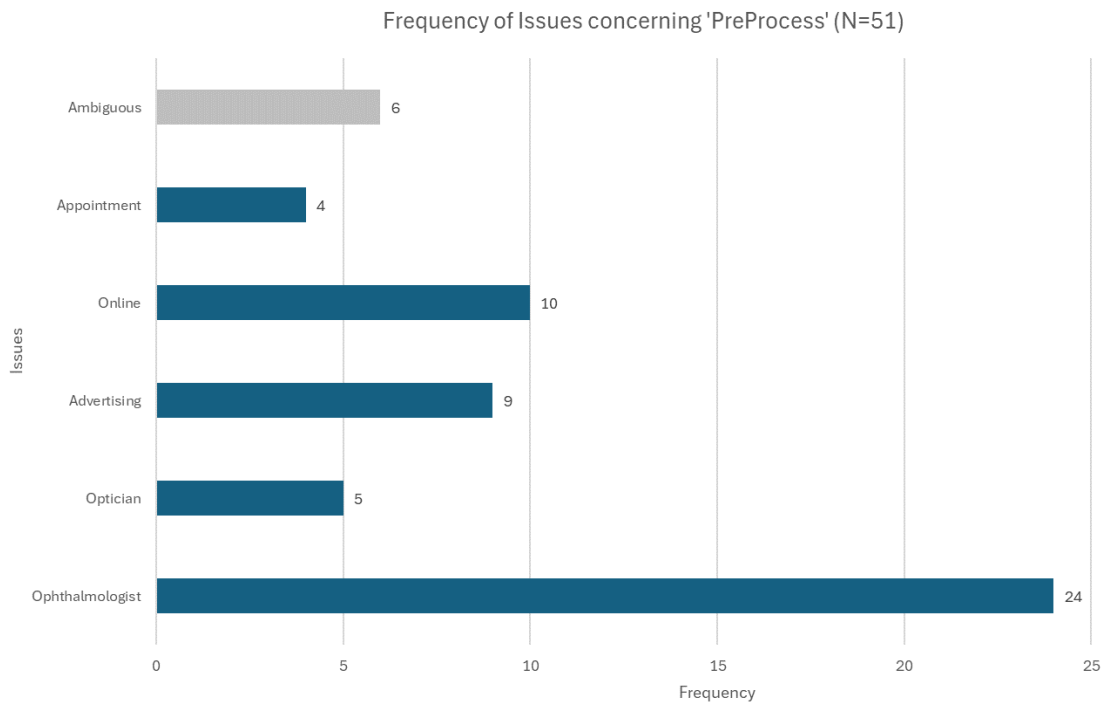


Figure 44 Frequency of Issues concerning 'PreProcess' Category

Findings:

- The most frequent reference by far was to an ophthalmologist as an upstream or downstream process, with 24 mentions. The term "optician" was also used 5 times. Two analogous problem scenarios were identified. It can be reasonably inferred that either the values initially prescribed by the ophthalmologist or other optician were not taken into account by the optician, at least from the customer's point of view. Alternatively, the customer was dissatisfied with the measurement results provided by the optician and sought an alternative assessment from an ophthalmologist or another optician. It is important to note that although a follow-up examination is not, from a logical standpoint, an upstream process in the context of the GBP, it is from the perspective of the optical industry. In this context, an ophthalmologist does not fit visual aids. As a result, a follow-up measurement also initiates another GBP, potentially with an alternative optician.

- In 9 cases, the customer made negative comments about the advertising promises or the overly offensive advertising activities of opticians.
- 10 times a reference was made to online activities. This was either in the context of the optician not fulfilling expectations raised online, or that online purchasing was chosen as an alternative due to problems with bricks-and-mortar retailers.
- In 4 cases, reference was made to online appointment booking.
- 6 OCRs could not be clearly assigned to a problem.

6.2.3 Theme Coding Analysis

6.2.3.1 Basic Theme Coding Results

As explained in chapter 5.4, the 25 primary coding categories were grouped into seven overarching themes for further analysis. T6-HSC and T7-VFM are an exception as they contain only one coding category each. The other five themes were assigned a minimum of 2 and a maximum of 8 categories. Based on this approach, figure 45 shows how many OCRs have been automatically coded by a respective theme code.

As anticipated based on the category coding analysis, there are notable discrepancies in the overall number of codes per theme:

- The themes T1-CQP (22193 OCRs, 91.25%), T3-SAB (17776 OCRs, 73.09%) and T4-HOC (21165 OCRs, 87.02%) were subjected to a high level of coding.
- This is in contrast to the themes T2-SFA (1631, 6.71%) and T6-HSC (340, 1.40%), which were coded less frequently.
- The coding frequency of the themes T5-PAP (5831, 23.98%) and T7-VFM (340, 1.40%) was also significantly lower than that of the three most frequently coded topics.
- Analogue to the category coding, only 172 OCRs or 0.71% were not coded with a theme.

This discrepancy between the coded themes is not attributable to the total number of coding categories assigned to each topic. T6-HSC and T7-VFM, for instance, both have a single category assignment but exhibit a difference by a factor of 14.8. Additionally, it is important to consider that T6-HSC was only

relevant for a limited period due to the impact of the coronavirus pandemic. Consequently, it is analysed separately once more.

As another example, T5-PAP contains four coding categories and T3-SAB just three, nevertheless there is a difference of factor 3.1. The frequency distribution provides an initial indication of the relevance of Opticians as human beings for customer quality perception and evaluation, represented by T3-SAB. In contrast, it can be stated that feedback on the theme 'Value for Money' appears to be of secondary importance in the customer feedback.

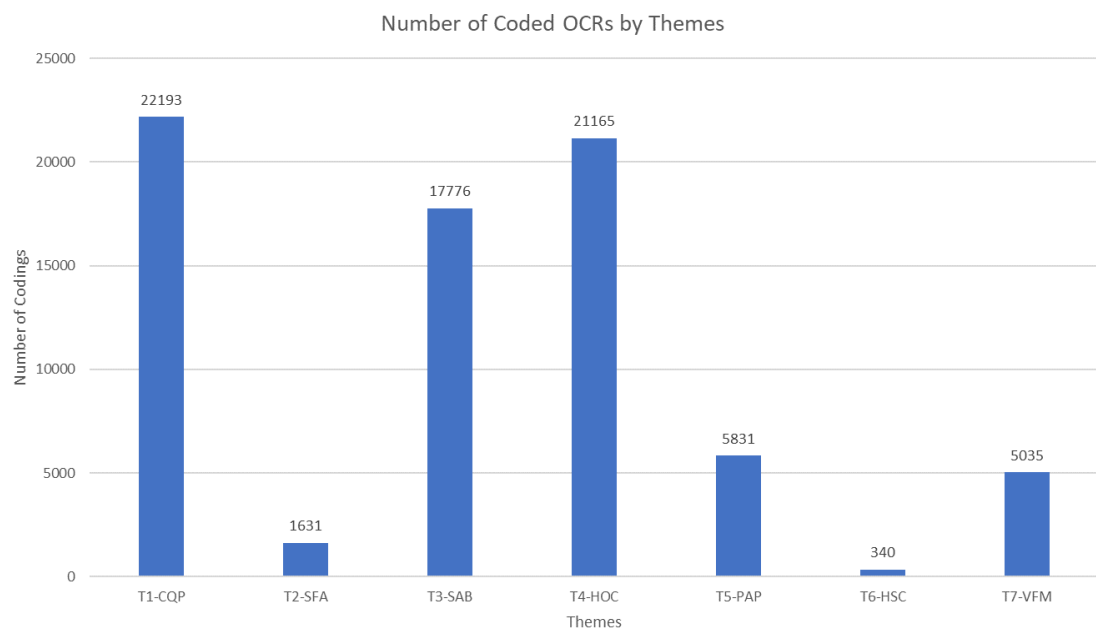


Figure 45 Number of Coded OCRs by Theme

A theme is deemed to be 'true' if one of the assigned category codes is identified as 'true' by the applied Excel function (see chapter 5.4.3.3 for the procedure). Figure 46 provides insights into the number of OCRs that have been multiple-coded in the total dataset.

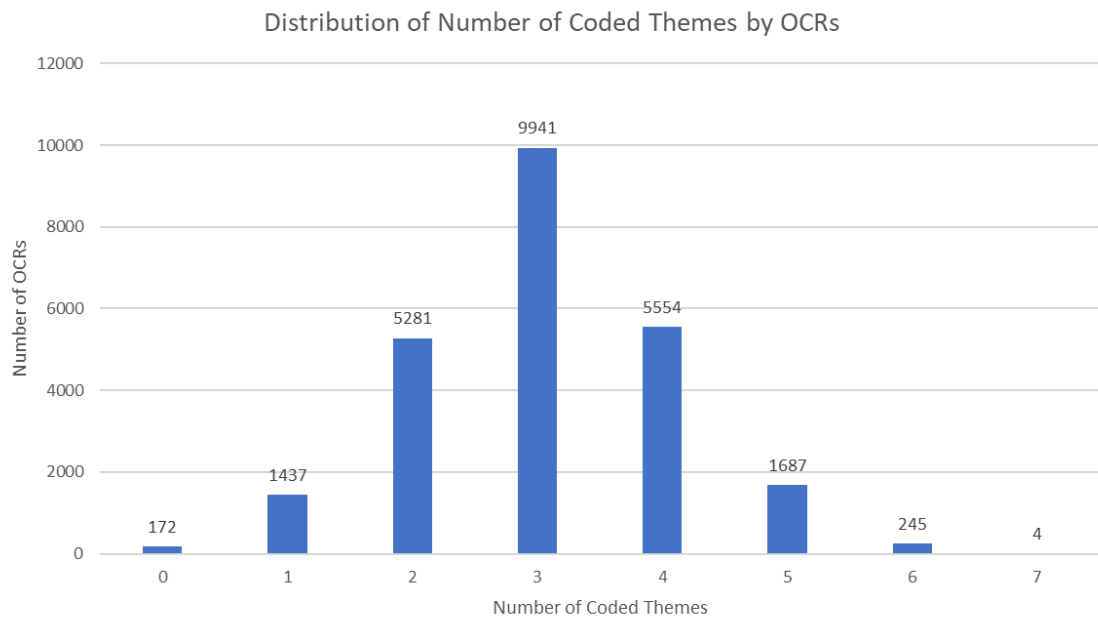


Figure 46 Distribution of Number of Coded Themes by OCRs

On average, three theme codes are assigned to an OCR, with a relatively uniform distribution, as evidenced by the median of also 3 codings per OCR. The subsequent chapter will provide further insights into details of the assigned multiple codings for each theme. Prior to this, a possible correlation between the individual themes will be analysed.

6.2.3.2 Theme Co-occurrence and Correlation

In order to gain a deeper insight into the interconnections between the coded themes within the dataset, a cross-tabulation and Phi coefficient analysis were conducted. These methods enabled an investigation of both the frequency with which themes occurred together and the strength of their associations.

- Cross-tabulation was employed to determine the frequency with which two themes co-occurred in the same OCR. By comparing the binary-coded themes (whether a review was coded 'true' or 'false' for a particular theme), the number of instances where both themes appeared together was calculated. This provided insight into the frequency with which certain themes are addressed simultaneously in customer reviews.
- The Phi coefficient (ϕ) was employed to quantify the strength of the relationship between two binary variables (themes). This method is particularly well-suited to the analysis of binary-coded data, as it allows for the calculation of the association between the presence or absence of

two themes (Yule, 1912). The Phi coefficient is derived from the Pearson correlation and is specifically employed when working with 2x2 tables or dichotomous data. This method normalises the co-occurrence data and provides insight into the strength of the relationship between themes, particularly when both are either present or absent together.

The cross-tabulation analysis revealed the frequency of co-occurrence between the seven coded themes.

	T1-CQP	T2-SFA	T3-SAB	T4-HOC	T5-PAP	T6-HSC	T7-VFM
T1-CQP	22193	1545	16009	19822	5630	326	4828
T2-SFA	1545	1631	1388	1528	729	34	386
T3-SAB	16009	1388	17776	15766	4635	270	3785
T4-HOC	19822	1528	15766	21165	5529	317	4676
T5-PAP	5630	729	4635	5529	5831	173	1590
T6-HSC	326	34	270	317	173	340	91
T7-VFM	4828	386	3785	4676	1590	91	5035

Table 20 Co-occurrence of Themes (Cross-tabulation)

The most frequent co-occurring pairs were:

- Customer Quality Perception (T1-CQP) and Hybrid Offering Components (T4-HOC), which appeared together in 19,822 instances.
- Customer Quality Perception (T1-CQP) and Staff Attributes and Behaviour (T3-SAB), with 16,009 co-occurrences.
- Staff Attributes and Behaviour (T3-SAB) and Hybrid Offering Components (T4-HOC), with 15,766 co-occurrences.

These results suggest that certain themes, particularly those related to customer quality perception, staff attributes, and hybrid offering components, are commonly addressed in the same customer reviews. However, this high co-occurrence does not necessarily imply a strong predictive relationship between these themes, as further explored in the Phi coefficient analysis.



Figure 47 Phi Coefficient Heatmap of Themes

The Phi coefficient analysis provided more nuanced insights into the co-occurrence patterns by measuring the strength of the association between themes. The results indicated relatively weak associations between most themes, with the highest positive associations being:

- Customer Quality Perception (T1-CQP) and Hybrid Offering Components (T4-HOC): $\phi=0.22$
- Hybrid Offering Components (T4-HOC) and Process and Production (T5-PAP): $\phi=0.13$
- Store Environment and Ambience (T2-SFA) and Process and Production (T5-PAP): $\phi=0.13$

Although cross-tabulation reveals frequent co-occurrence for certain theme pairs, the Phi coefficients demonstrate that such co-occurrence translates into only weak predictive relationships. In statistical terms, the presence of one theme offers limited information about the likelihood of the other, underscoring the predominantly independent nature of the coded dimensions. This pattern reflects the thematic heterogeneity of the OCR corpus, in which customer discourse spans a broad spectrum of quality-relevant aspects without converging strongly on specific thematic pairings. Consequently, each theme should be examined as an analytically distinct construct, with interpretations

grounded in its individual distribution and context rather than in assumptions of substantive inter-dependence.

6.2.3.3 Theme Activation Level

The following subsections present a detailed analysis of the individual theme codes. In particular, the extent to which each theme is activated by the 'true' coding of its categories is considered. The distribution of activated category codes for each theme was also analysed. During the automated coding process, a theme is always assigned to an OCR if at least one of the coding categories assigned to the respective theme is identified as 'true'. However, the data do not allow the strength of activation of a theme to be determined by the number of assigned coding categories identified as 'true'. This is not relevant for themes T6-HSC and T7-VFM as there is a 1:1 relationship between category coding and theme. For the other five themes, however, such an analysis could provide meaningful insights.

In the course of the analysis, a specific effect was observed that is a consequence of the significant differences in length and, consequently, the information content of the individual OCRs in the dataset. A comparison of all OCRs coded with a specific theme revealed that, due to the prevalence of short reviews with low information content, there is a statistical distortion in the representation of the common occurrence of the coding category. A focus on the 'total' dataset gives the impression of greater fragmentation, which in turn suggests that the categories may be assigned arbitrarily to a theme. However, when a data cut is made and the analysis is conducted with the comparison class of OCRs exceeding 800 characters in length, a markedly more homogeneous image emerges regarding the common occurrence of the coding categories pertaining to a given theme, at least in part. Therefore, the following analyses for the themes 1-5 consistently present both frequency distributions ('Total' vs. '> 800').

6.2.3.3.1 T1-CQP Customer Quality Perception

The theme 'T1-CQP Customer Quality Perception' encompasses the more generic elements of customer quality perception, as well as two industry-specific quality attributes, namely 'Time' and 'Style'. It is made up of eight coding categories and has been coded for 91,25% of all OCRs. The most

common coding category is 'Code.Evaluation'. In relation to the total of all OCRs coded with the theme 'T1-CQP', 87.04% theme-coded OCRS are also coded by 'Code.Evaluation'. This makes this code the basic coding for the entire theme.

A comparison of the two classes, 'Total OCR' and '>800 OCRs', reveals notable differences.

- The proportion of content-rich OCRs referencing the role of the customer using the code 'Customer' has increased from 13.74% to 49.75%.
- Furthermore, the codes for 'Expectation' (4.80% to 24.88%), 'Quality' (8.19% to 37.31%) and 'Satisfaction' (27.19% to 43.28%) are also coded significantly more often in percentage terms.
- The increase is also notable for the 'Style' code from 3.38% to 20.90%.
- However, the 'Time' code is particularly noteworthy. While only 23.01% of all topic-coded OCRs were coded accordingly, the figure for OCRs > 800 characters is now 69.40%.

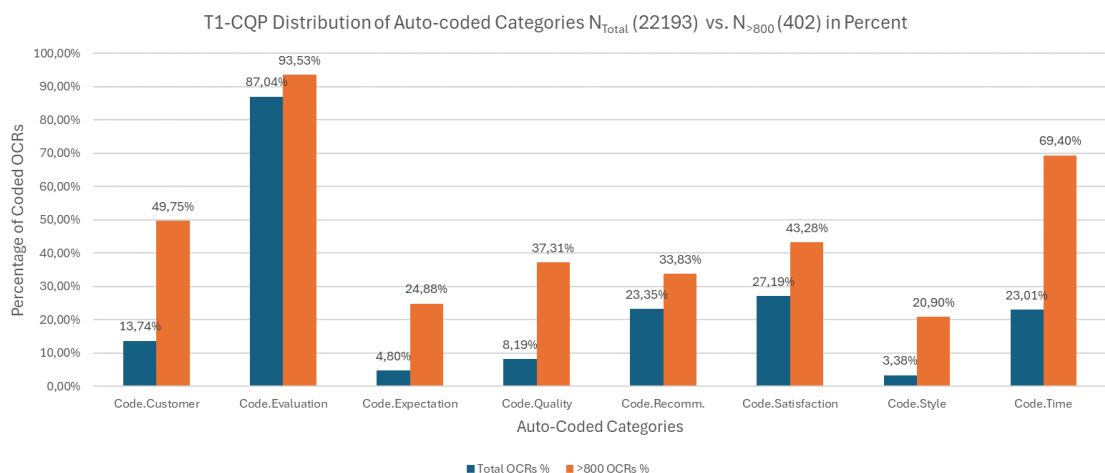


Figure 48 T1-CQP Distribution of Auto-coded Categories

	Code.Customer	Code.Evaluation	Code.Expectation	Code.Quality	Code.Recomm.	Code.Satisfaction	Code.Style	Code.Time	OCRs
Total OCRs	3049	19317	1066	1818	5182	6034	751	5107	22193
Total OCRs %	13,74%	87,04%	4,80%	8,19%	23,35%	27,19%	3,38%	23,01%	
>800 OCRs	200	376	100	150	136	174	84	279	402
>800 OCRs %	49,75%	93,53%	24,88%	37,31%	33,83%	43,28%	20,90%	69,40%	

Table 21 T1-CQP Distribution of Auto-coded Categories

The elevated percentage of encodings within the OCRs > 800 category also gives rise to a greater prevalence of multiple encoding as a logical consequence. If the median in the 'Total' data set is at two codes, it is four codes in the '> 800' data set (coloured 'blue' in the data table). This illustrates

the effect previously described, whereby the prevalence of short OCRs results in a significant fragmentation of the coding due to their inherently limited information content. Conversely, when only the OCRs with more extensive content are considered, the coding in the theme T1-CQP becomes markedly more homogeneous.

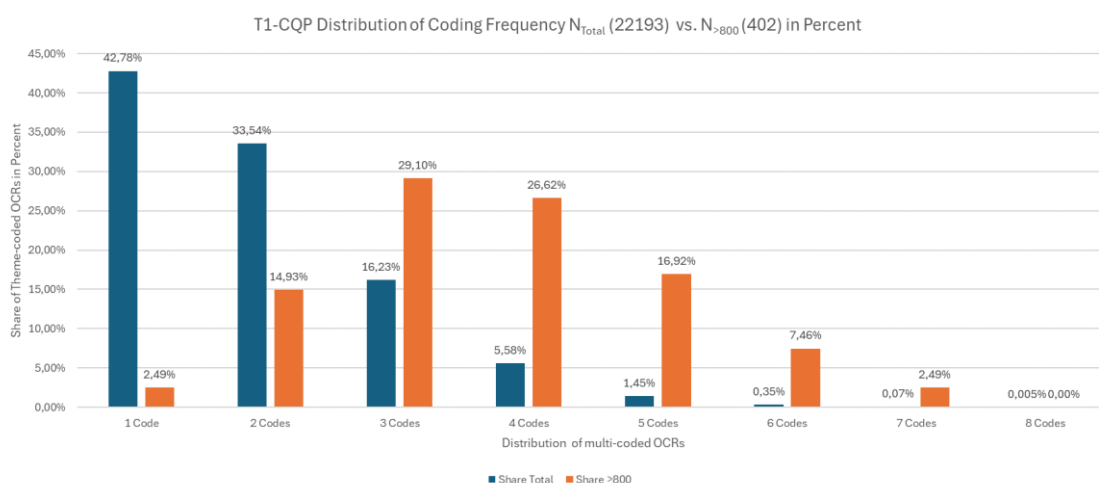


Figure 49 T1-CQP Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	9495	42,78%	10	2,49%
2 Codes	7444	33,54%	60	14,93%
3 Codes	3601	16,23%	117	29,10%
4 Codes	1238	5,58%	107	26,62%
5 Codes	321	1,45%	68	16,92%
6 Codes	78	0,35%	30	7,46%
7 Codes	15	0,07%	10	2,49%
8 Codes	1	0,005%	0	0,00%
	22193		402	

Table 22 T1-CQP Distribution of Coding Frequency

6.2.3.3.2 T2-SFA Store Environment and Ambience

The theme 'T2-SFA Store Environment and Ambience' involves customers' evaluations of the physical optician store environment. It addresses aspects such as location, ambience, and accessibility and consist of only two coding categories. Only 6.71% of all OCRs have been coded by this theme. The data indicates that the coding category 'Ambience' is the most activating for the theme T2-SFA, with 90.44% / 88.78% of all 1475 and 87 theme-coded OCRs,

respectively. In contrast, only 176 (10.79%) / 18 (18.37%) were coded by 'Location'.

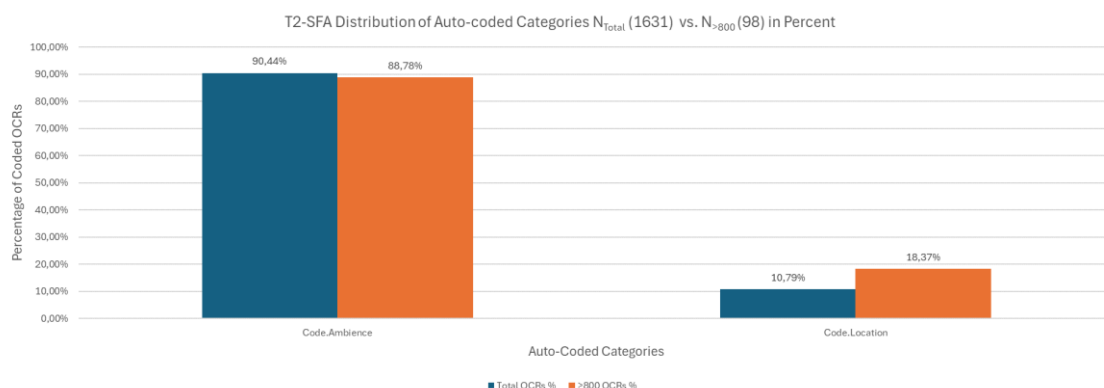


Figure 50 T2-SFA Distribution auf Auto-coded Categories

	Code.Ambience	Code.Location	OCRs
Total OCRs	1475	176	1631
Total OCRs %	90,44%	10,79%	
>800 OCRs	87	18	98
>800 OCRs %	88,78%	18,37%	

Table 23 T2-SFA Distribution auf Auto-coded Categories

The results demonstrate that the data set comprises a rather artificial thematic amalgam, at least from the customer's perspective. With regard to total theme-coded OCRs, the proportion of double-codings with both categories is 1.23%, which is very low. The picture remains consistent when only the OCRs exceeding 800 characters are considered. In this case, the single coding rate is 92.86%, which is also relatively high.

Therefore, a more fruitful avenue for further discussion of the results would be to refer to the individual coding categories rather than the theme T2-SFA, given the evident lack of a significant relationship between the two coding categories from the customer perspective which is reflected in the OCRs.

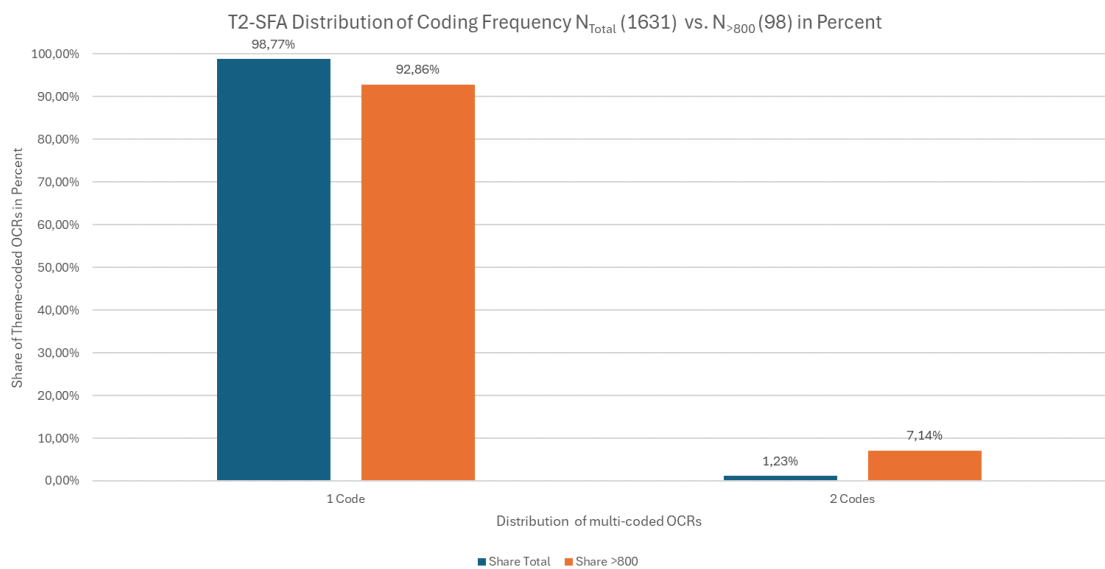


Figure 51 T2-SFA Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	1611	98,77%	91	92,86%
2 Codes	20	1,23%	7	7,14%
	1631		98	

Table 24 T2-SFA Distribution of Coding Frequency

6.2.3.3.3 T3-SAB Staff Attributes and Behaviour

The theme 'T3-SAB Staff Attributes and Behaviour' pertains to the interpersonal interactions between staff and customers. It encompasses perceptions of staff competence, behaviour and role and has been coded for 73,09% of all OCRs. With regard to the homogeneity of its three category codes, T3-SAB exhibits a notable discrepancy in comparison to T2-SFA. This is evident from a median of 2 in both OCR sets and an almost exact doubling of triple coding in the OCRS > 800, reaching 34.50%. Furthermore, T3-SAB is the most homogeneous of all the theme encodings, which, when considered alongside the high number of coded OCRs (17,776), makes it an important key theme for the further discussion of the results.

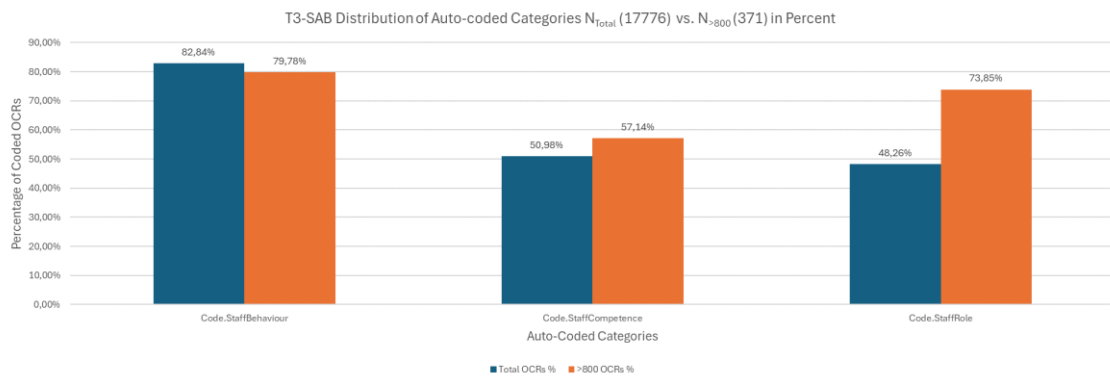


Figure 52 T3-SAB Distribution of Auto-coded Categories

	Code.StaffBehaviour	Code.StaffCompetence	Code.StaffRole	OCRs
Total OCRs	14726	9062	8578	17776
Total OCRs %	82,84%	50,98%	48,26%	
>800 OCRs	296	212	274	371
>800 OCRs %	79,78%	57,14%	73,85%	

Table 25 T3-SAB Distribution of Auto-coded Categories

A comparison of the OCR quantities 'Total' and '> 800' shows that there are only relatively minor percentage changes in the two code categories 'StaffBehaviour' and 'StaffCompetences'. This also indicates the stability of the coding across all length classes. The increase from 48.26 % to 73.85 % in the 'StaffRole' coding is to be expected due to its generic character, but it offers little scope for new findings.

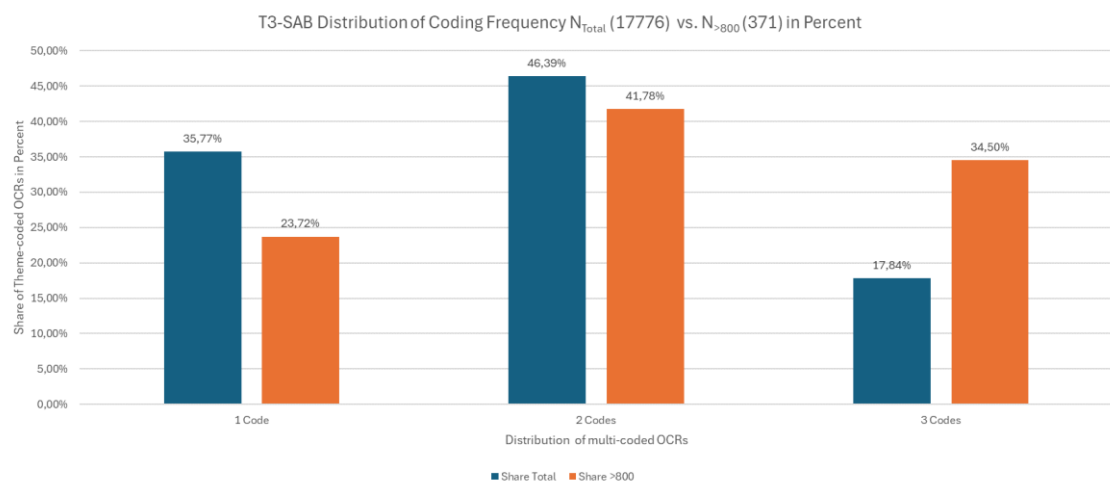


Figure 53 T3-SAB Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	6358	35,77%	88	23,72%
2 Codes	8246	46,39%	155	41,78%
3 Codes	3172	17,84%	128	34,50%
	17776		371	

Table 26 T3-SAB Distribution of Coding Frequency

6.2.3.3.4 T4-HOC Hybrid Offering Components

The theme 'T4-HOC Hybrid Offering Components', which was coded for 87.02% of all OCRs, includes both tangible and intangible components of hybrid offerings. Such components include product and choice, diagnostic equipment, and customer advice as well as service and solution. In this theme, there are also notable shifts in the percentage frequency of coding when examining the number of OCRs > 800. While the increase in 'Product' coding was anticipated due to its generic nature, the five-fold increase in 'Solution' coding from 10.58% to 53.23% is particularly noteworthy. It appears that in longer OCRs, customers tend to provide more detailed descriptions of the solutions provided by the optician to address their visual problems. It is also interesting to note that 'advice' is coded as slightly less relevant, while the tangible components 'choice' and 'equipment' are coded significantly more in percentage terms.

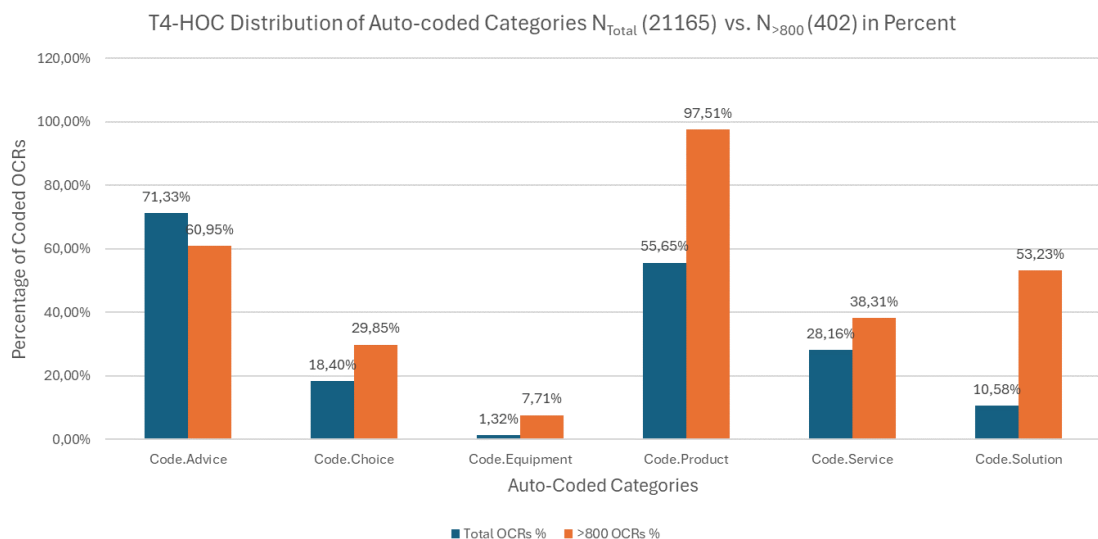


Figure 54 T4-HOC Distribution of Auto-coded Categories

	Code.Advice	Code.Choice	Code.Equipment	Code.Product	Code.Service	Code.Solution	OCRs
Total OCRs	15098	3895	279	11778	5960	2239	21165
Total OCRs %	71,33%	18,40%	1,32%	55,65%	28,16%	10,58%	
>800 OCRs	245	120	31	392	154	214	402
>800 OCRs %	60,95%	29,85%	7,71%	97,51%	38,31%	53,23%	

Table 27 T4-HOC Distribution of Auto-coded Categories

A comparison of the quantities 'Total' and '> 800' reveals an effect that is similar in nature to the T1-CQP. Here, there is a shift in the median from 2 to 3 codes. At the same time, '> 800' shows a stronger approximation of the distribution of the codes to a normal distribution, while for 'Total' it falls continuously in the direction of the higher length classes. Furthermore, it can be posited that the theme T4-HOC becomes increasingly homogeneous with longer OCRs.

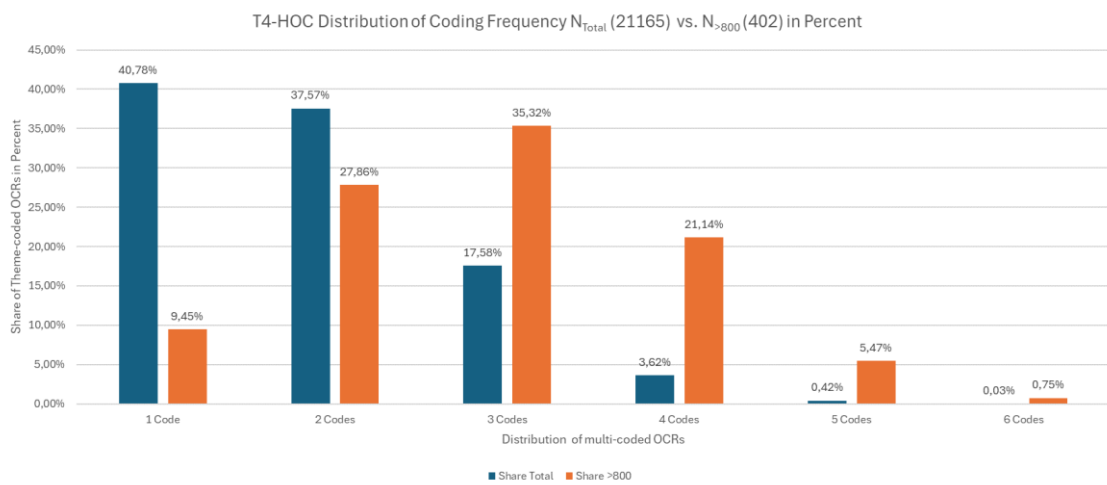


Figure 55 T4-HOC Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	8631	40,78%	38	9,45%
2 Codes	7951	37,57%	112	27,86%
3 Codes	3720	17,58%	142	35,32%
4 Codes	767	3,62%	85	21,14%
5 Codes	89	0,42%	22	5,47%
6 Codes	7	0,03%	3	0,75%
	21165		402	

Table 28 T4-HOC Distribution of Coding Frequency

6.2.3.3.5 T5-PAP Process and Production

The theme 'T5-PAP Process and Production' encapsulates customer insight into the processes involved in the co-creation and customisation of visual aids and has been coded for 23.98% of all OCRs. It encompasses the stages from the initial consultation to the delivery of the finished product as well as

preliminary activities by the customer and the usage of the visual aid. This theme presents a comparable issue to T2-SFA, albeit in a slightly modified form. The activation of topic coding is triggered by the strongly represented category code 'Code.Process' in 88.53% of all OCRs, a figure that is even more pronounced in the longer OCRs at 93.51%. This contrasts with three other less common coding categories. While these coding categories exhibit a notable increase in frequency within the longer OCRs, they remain considerably less frequent than the 'Process' coding. This discrepancy is likely attributable to the fact that the 'Process' category encompasses a multitude of relatively generic terms with a process reference, whereas the other three categories are considerably more specific.

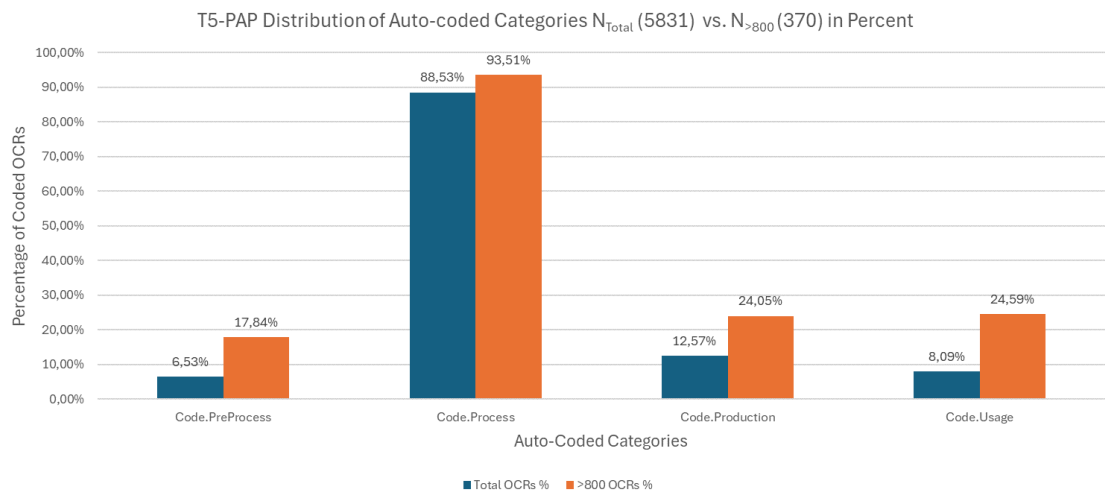


Figure 56 T5-PAP Distribution of Auto-coded Categories

	Code.PreProcess	Code.Process	Code.Production	Code.Usage	OCRs
Total OCRs	381	5162	733	472	5831
Total OCRs %	6,53%	88,53%	12,57%	8,09%	
>800 OCRs	66	346	89	91	370
>800 OCRs %	17,84%	93,51%	24,05%	24,59%	

Table 29 T5-PAP Distribution of Auto-coded Categories

In the case of an in-depth analysis, it would certainly make sense to consider the individual categories separately from each other. This is also reflected in the median, which, albeit close, is still 1 coding even in the sum of OCRs > 800. The number of triple and quadruple codes is also quite low. From a more general perspective, however, it can be seen from the 5831 theme activations that at least parts of the co-creation process are evaluated by customers.

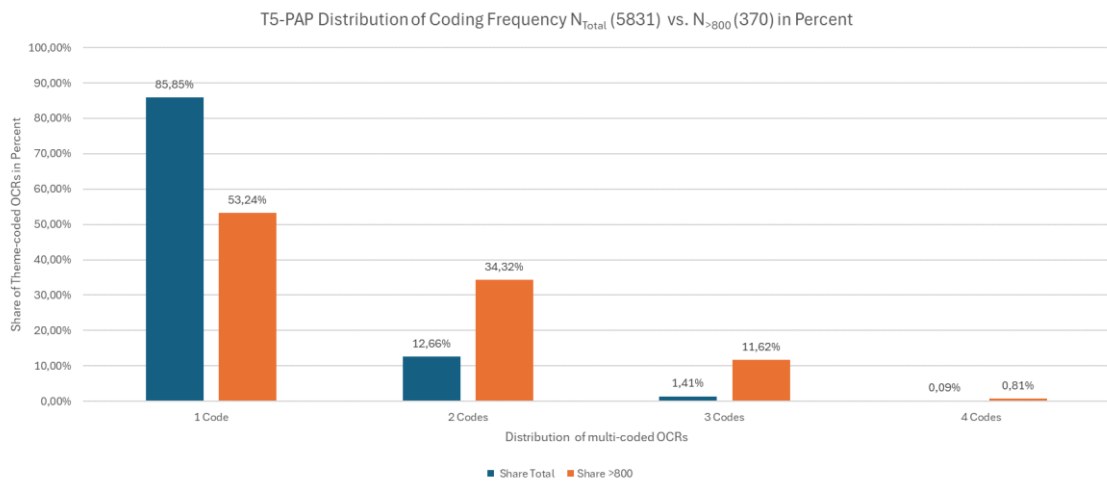


Figure 57 T5-PAP Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	5006	85,85%	197	53,24%
2 Codes	738	12,66%	127	34,32%
3 Codes	82	1,41%	43	11,62%
4 Codes	5	0,09%	3	0,81%
	5831		370	

Table 30 T5-PAP Distribution of Coding Frequency

6.2.3.3.6 T6-HSC Health and Safety Concerns

The research project was designed well in advance of the Covid19-pandemic in Germany in early 2020. Therefore, the potential impact of this event could not have been foreseen at the outset. By historical coincidence, the data set includes the crucial first wave of this global pandemic, as the data collection was completed at the end of July 2021. With regard to the optician industry, it is noteworthy that it was considered a systemically important entity in Germany, thereby maintaining the provision of hybrid offerings for vision correction, with the exception of a brief period of uncertainty at the beginning of March 2020 (Zentralverband der Augenoptiker und Optometristen, 2020a). Consequently, the initial entry in the data set referencing the novel aspects of pandemic-related hygiene was made on 20 March 2020. Figure 58 strikingly shows the March 2020 ‘Covid19-Gap’ in the OCR data set.

Covid19-Gap

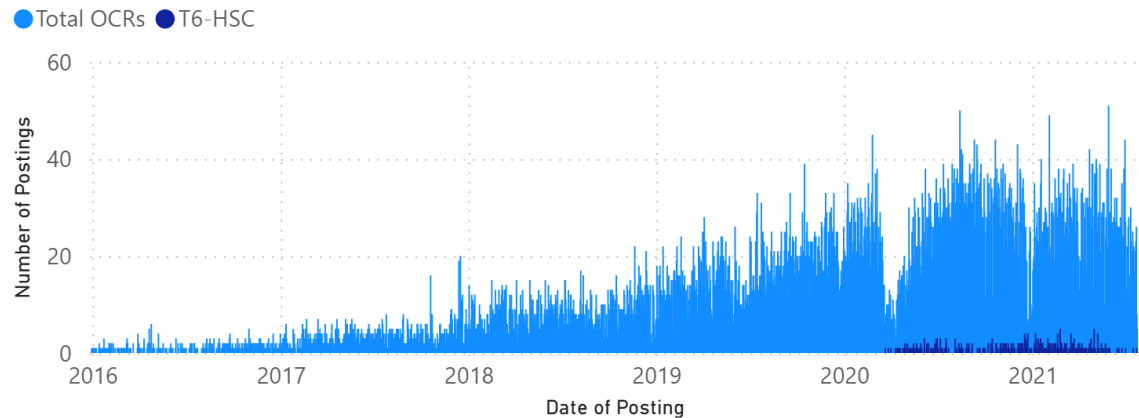


Figure 58 Covid19-Gap

OCR Postings during the Covid19-Pandemic



Total OCRs N=12334 | T6-HSC N=340 | March 2020-July 2021

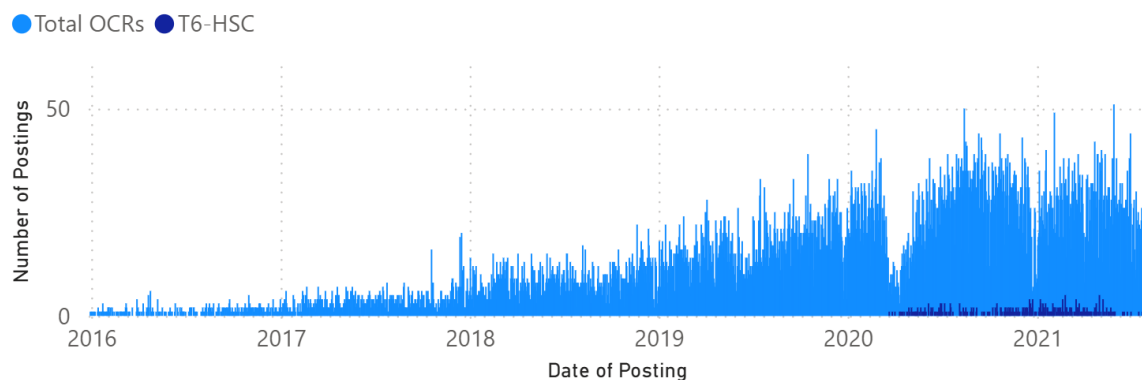


Figure 59 OCR Postings during the Covid19-Pandemic

Given the close physical proximity between the optician and the customer, for example when measuring or fitting spectacles, it would be reasonable to assume that the issue of novel coronavirus, and in particular hygiene, would also be included in the optician's customer feedback. Nevertheless, an analysis of the data set reveals that this occurs at a relatively low level in comparison to the total number of postings. Of the 12,334 OCRs posted between March 2020 and July 2021, only 340 (or 2.8%) relate to the pertinent subject of 'T6-HSC Health and Safety Concerns'. This theme addresses customer feedback specifically related to health and safety measures and covers topics such as hygiene protocols, the use of personal protective equipment and adherence to health guidelines. Of course, it is not the intention of this analysis to cast doubt on the overall catastrophic consequences of the pandemic. However, as far as the perception and evaluation of quality by German optician customers is

concerned, the pandemic can be seen more as a low-level 'background noise', as illustrated in Figure 59 (see also chapter 6.2.2.3).

6.2.3.3.7 T7-VFM Value for Money

The theme 'T7-VFM Value for Money' encompasses customer evaluations of the pricing of optician services and products. As with T6-HSC, customer perceptions of opticians' pricing are more of a by-product than the primary focus of this study. As chapter 6.2.2.3 shows, the price of visual aids is not an above-average negative factor in the customers' evaluations. Although up to 28 terms and term variants were assigned to the coding category for auto-coding, only 5035 OCRs or 20.70% were coded in total. The price of the provided hybrid offerings is therefore not an irrelevant factor, but other themes and categories seem to dominate the customer perception and thus satisfaction and quality ratings. Nevertheless, the data reveals an intriguing trend. Until around 2016, the proportion of OCRs that were auto-coded with the category 'Price' exhibited a continuous decline, falling from 50.00% to 24.42% for a relatively small absolute number of OCRs. Since 2017, the proportion of price coding has remained relatively stable at around 20-21%, despite a significant increase in the number of OCRs. Unfortunately, a more detailed analysis of this interesting development is beyond the scope of this study. However, it illustrates the potential for analysing trends from historical OCR data sets in the context of longitudinal studies over time.

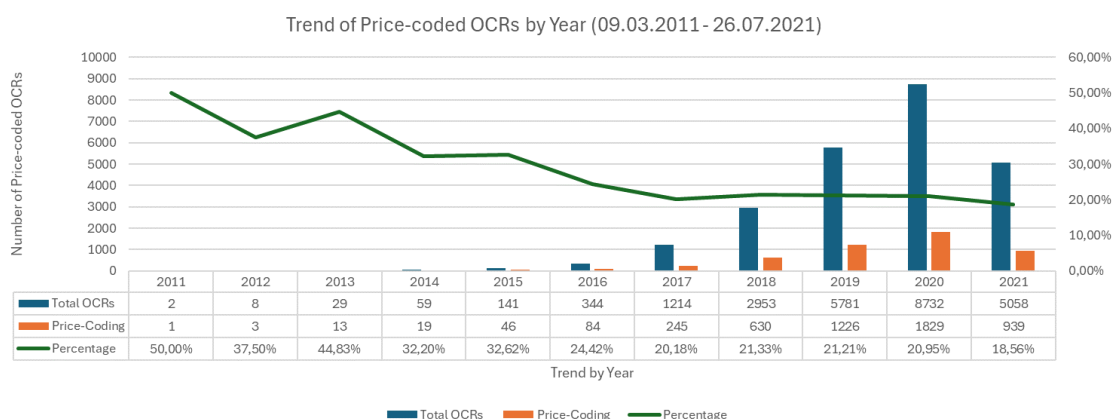


Figure 60 Trend of Price-coded OCRs by Year

6.2.4 GBP Coding Analysis

This chapter uses the GBP model to provide an alternative approach to structured analysis, as the results of the category coding have been mapped onto specific stages of the optician's business process. In this way, the GBP becomes an analytical tool that attempts to demonstrate that certain stages of the process are particularly influential in shaping customer perceptions. The aim is to support a more detailed understanding of how the GBP approach can be empirically applied to interpret customer feedback and identify critical touchpoints within the co-creation business process that are crucial for improving customer satisfaction and optimising business practices in the optician industry.

6.2.4.1 Basic GBP Coding Results

The GBP is comprised of five sub-processes, each of which has been allocated to one of the three spheres of the CQF. These were assigned specific coding categories analogous to the procedure for theme coding. The resulting categorisation scheme is thus transverse to the theme coding. In total, the five processes of the GBP represent 18 of the 25 coding categories. Figure 61 provides an overview of the GBP coding frequencies resulting from this assignment.

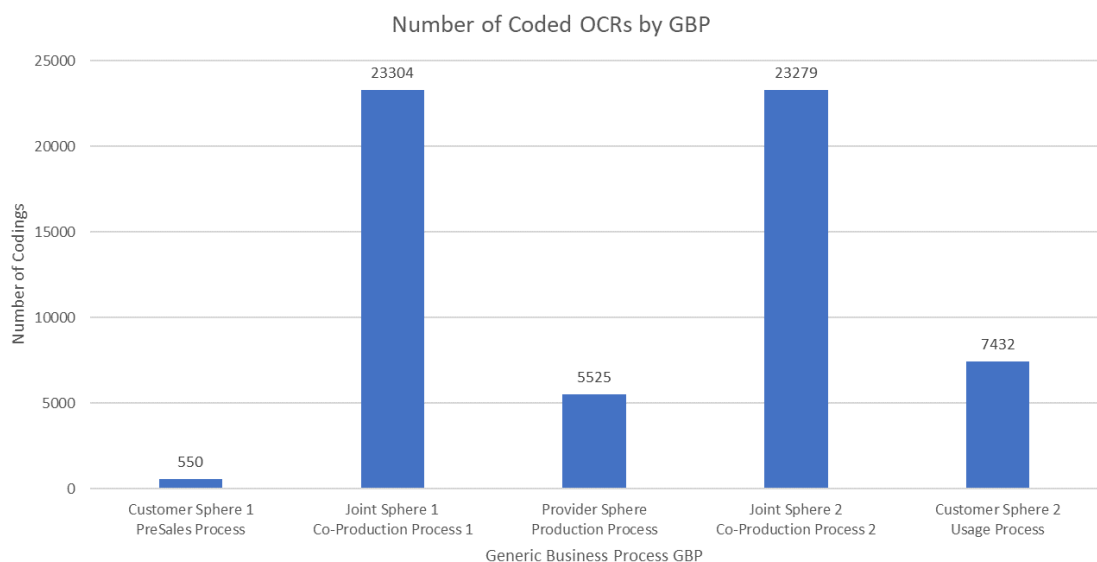


Figure 61 Number of Coded OCRs by GBP

A first overview shows that the codes of the OCRs assigned to the Joint Sphere clearly predominate in terms of frequency, with 23 304 for Joint Sphere 1 (12

coding categories) and 23 279 for Joint Sphere 2 (11 coding categories). However, it is necessary to restrict the presentation of the two Joint Spheres separately at this point. From the point of view of GBP, it is clear that there are two Joint Spheres and thus two Co-Production processes in the German optician industry. However, it was not possible for the researcher to distinguish between these two phases on the basis of the auto-coded data in the OCRs. The only significant difference between the two Joint Spheres is that Joint Sphere 1 contains the category 'Choice', which is not included in Joint Sphere 2. More detailed line-by-line coding could potentially identify differences in customer perceptions of these two sub-processes, which in practice are separated in time. However, this would go beyond the chosen methodological approach and the scope and possibilities of this research project. Consequently, both processes are combined for analysis by applying the category scheme of Joint Sphere 1.

The Presales Process of the first Customer Sphere consists of two categories and was coded 550 times. In contrast, the Usage Process of the second Customer Sphere consists of four categories and was coded 7432 times. Notably, there is no overlap in category coding between the two spheres. The Provider Sphere was coded 5525 times and includes two different coding categories. One of the coding categories, 'time', is also a coding category for the Joint Sphere.

As the Figure 62 shows, only 903 OCRs out of the 24,321 were not coded with at least one GBP subprocess. 12,789 or 52,58% have been coded at least one time and 8028 or 33,01% have been coded two times.

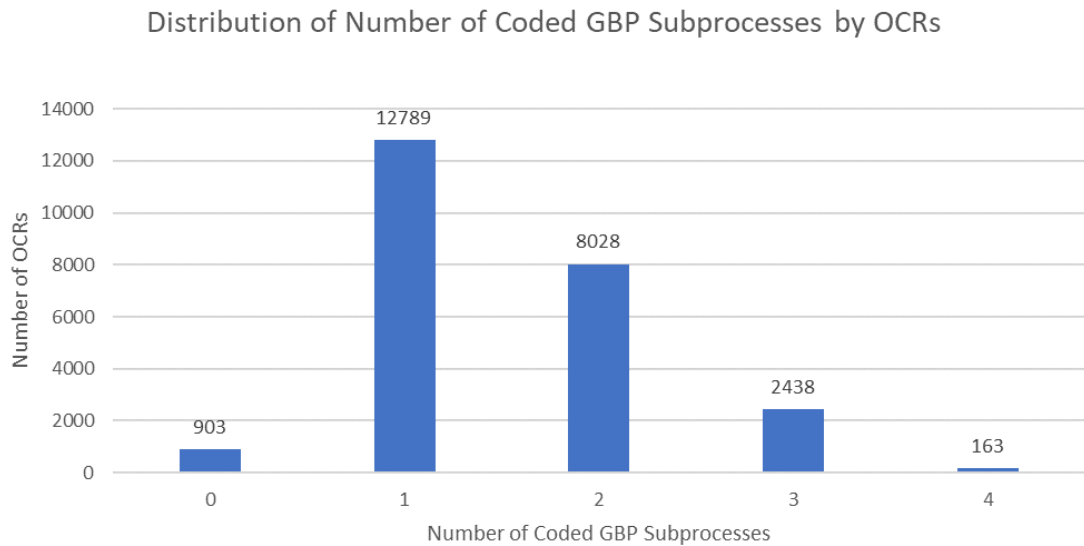


Figure 62 Distribution of Number of Coded GBP Subprocesses by OCRs

6.2.4.2 Co-occurrence Analysis

A co-occurrence analysis of the GBP sub-processes revealed significant patterns. The Co-Production process emerged as the most frequently mentioned phase, often co-occurring with other phases. It overlaps with the Presales process (546 occurrences), suggesting that customer discussions around Co-Production are sometimes linked to their experiences during the Pre-sales phase. The highest co-occurrence was found between Co-Production and the Usage Process (7,319 instances), suggesting that customers tend to link their experiences of service co-production to elements of the Usage Process.

	Customer Sphere 1 Presales Process	Joint Sphere Co-Production Process	Provider Sphere Production Process	Customer Sphere 2 Usage Process
Customer Sphere 1 Presales Process	550	546	263	285
Joint Sphere Co-Production Process	546	23304	5523	7319
Provider Sphere Production Process	263	5523	5525	2384
Customer Sphere 2 Usage Process	285	7319	2384	7432

Figure 63 GBP Subprocess Co-occurrence Analysis

The Presales process had the least overlap with both the Production Process (263 instances) and the Usage Process (285 instances). This suggests that customers may not place as much emphasis on presales interactions in the OCRs. On the other hand, there is a stronger co-occurrence between the Co-

Production and the Production Process (5,523 instances). This finding highlights that customers' perceptions of the co-production phase are linked to their perception of the provider's production process. The Production Process is rarely discussed independently but tends to appear alongside discussions of Co-Production or usage. This suggests that customers appear to assess the quality of the Production Process in the context of their overall service experience.

6.2.4.3 Customer Spheres 1|2

The Customer Sphere of the GBP is divided into two subprocesses 'Presales' and 'Usage'. For the Presales Process, Figure 64 shows the auto-coding results for the code 'Location' and 'Preprocess'.

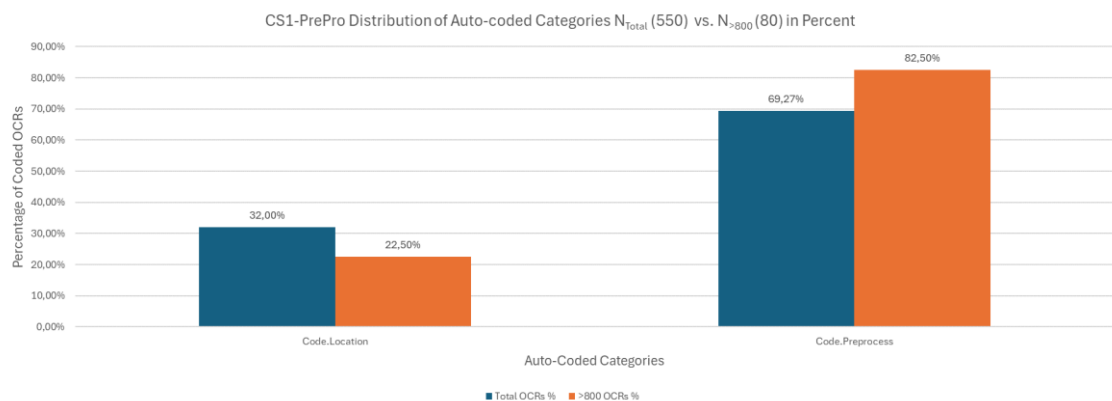


Figure 64 CS1-PrePro Distribution of Auto-coded Categories

	Code.Location	Code.Preprocess	OCRs
Total OCRs	176	381	550
Total OCRs %	32,00%	69,27%	
>800 OCRs	18	66	80
>800 OCRs %	22,50%	82,50%	

Table 31 CS1-PrePro Distribution of Auto-coded Categories

The category coding 'Preprocess' activates the coding of Customer Sphere 1 significantly more often than the coding 'Location', with a share of 69.27%. This increases to a share of 82.50% if only the OCRs with a character length > 800 are taken into consideration. In comparison to the previous analyses, it can be stated that the coding 'location' is rather weak. In the same way, it can be found that there is hardly any overlap between these two categories, similar to T2-SFA. The number of single-coded OCRs is 98.73% and drops only slightly to 95% even when considering the longer OCRs.

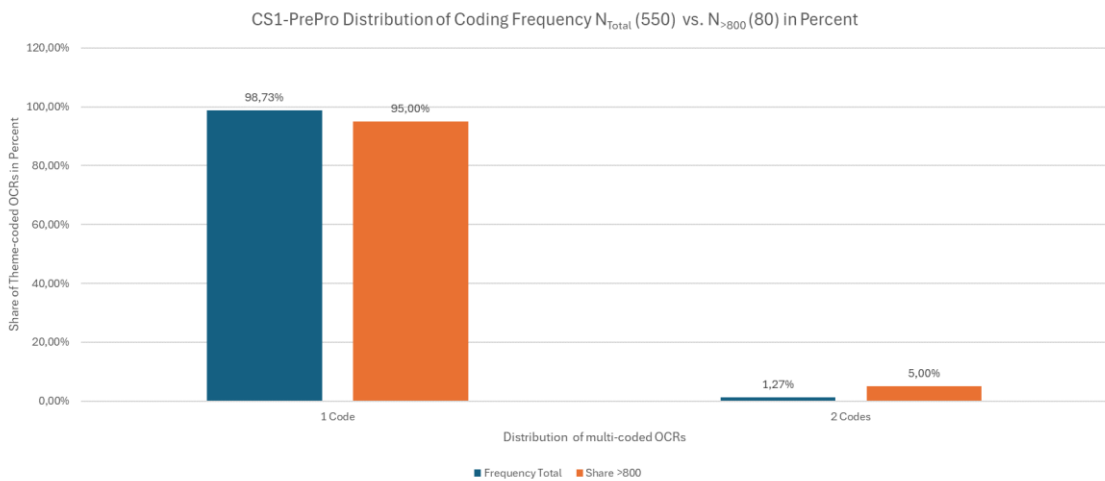


Figure 65 CS1-PrePro Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	543	98,73%	76	95,00%
2 Codes	7	1,27%	4	5,00%
	550		80	

Table 32 CS1-PrePro Distribution of Coding Frequency

When looking at the second customer sphere 'Usage', a clearly differentiated picture emerges. While the 'Recommendation' code dominates the set of all OCRs with a share of 69.73%, the relative dominance of OCRs > 800 shifts to the 'Solution' code with then 66,67%. The 'Style' and 'Usage' codes with 26,17% and 28,35% also become significantly more relevant when the information content increases, while the relative frequency of the 'Recommendation' coding drops to 42.37%.

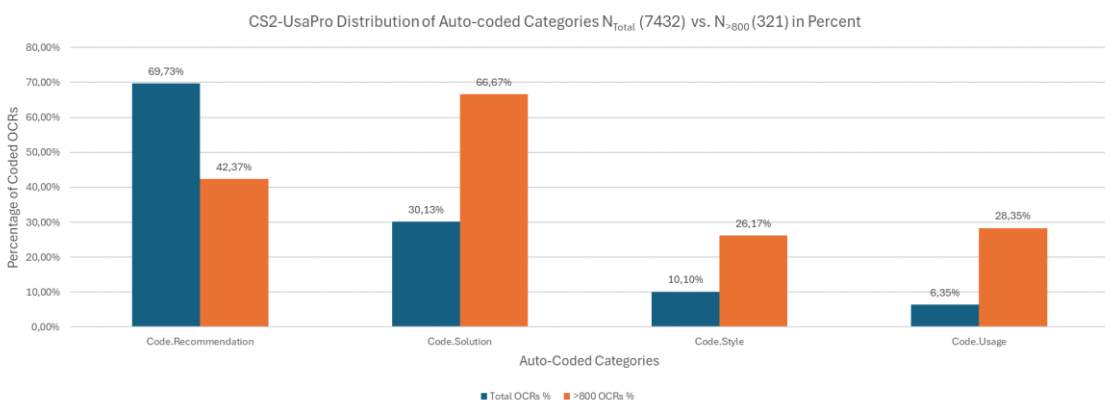


Figure 66 CS2-UsaPro Distribution of Auto-coded Categories

	Code.Recommendation	Code.Solution	Code.Style	Code.Usage	OCRs
Total OCRs	5182	2239	751	472	7432
Total OCRs %	69,73%	30,13%	10,10%	6,35%	
>800 OCRs	136	214	84	91	321
>800 OCRs %	42,37%	66,67%	26,17%	28,35%	

Table 33 CS2-UsaPro Distribution of Auto-coded Categories

A shift or, to a certain extent, homogenisation of the coding can also be seen in Figure 67. Although the median for the longer OCRs is still 1, the number of single-coded OCRs falls from 85.33% to 52.02%. Double encodings make up a third of all encoded OCRs in the class > 800.

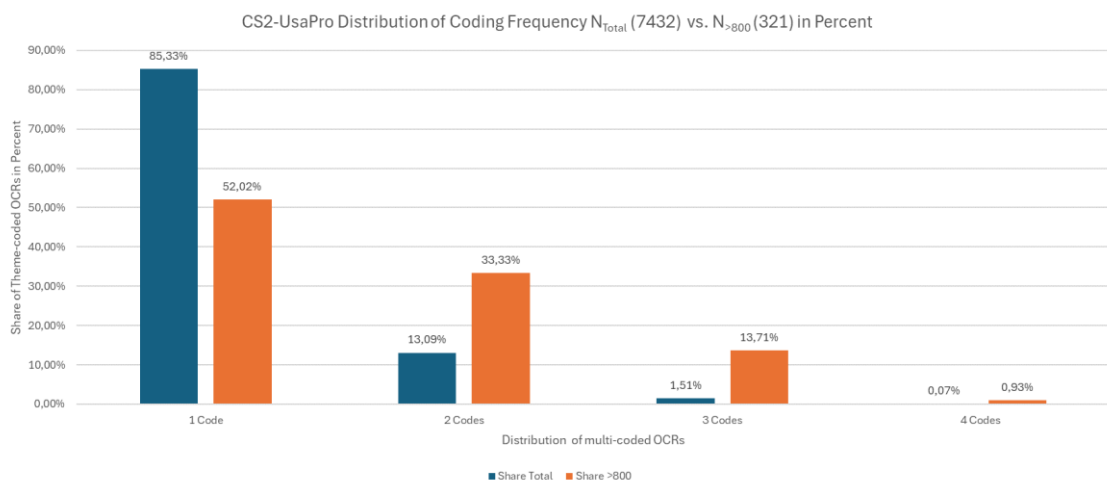


Figure 67 CS2-UsaPro Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	6342	85,33%	167	52,02%
2 Codes	973	13,09%	107	33,33%
3 Codes	112	1,51%	44	13,71%
4 Codes	5	0,07%	3	0,93%
	7432		321	

Table 34 CS2-UsaPro Distribution of Coding Frequency

6.2.4.4 Joint Sphere

As already mentioned, the Joint Sphere has by far the highest number of codings. Of course, this is also due to the fact that it is assigned the most categories in comparison (12). However, it is also the central lead coding of the entire case study in terms of the co-creation process. It is interesting to see how the relative frequency of the coding 'Advice' in the OCRs > 800 decreases slightly from 64.79% to 60.79%, while the categories 'StaffBehaviour' and 'StaffCompetence' even increase in relative frequency from 63.19% to 73.45% and from 38.89% to 52.61%, respectively. However, the biggest jump was in the

coding category 'Process' from 22.15% to 85.86% of all coded OCRs. The 'Time' coding category also shows a strong relative increase to 69.23%. The same is true for the 'Product' coding, which at 97.27% encodes almost all OCRs > 800 assigned to the Joint Sphere.

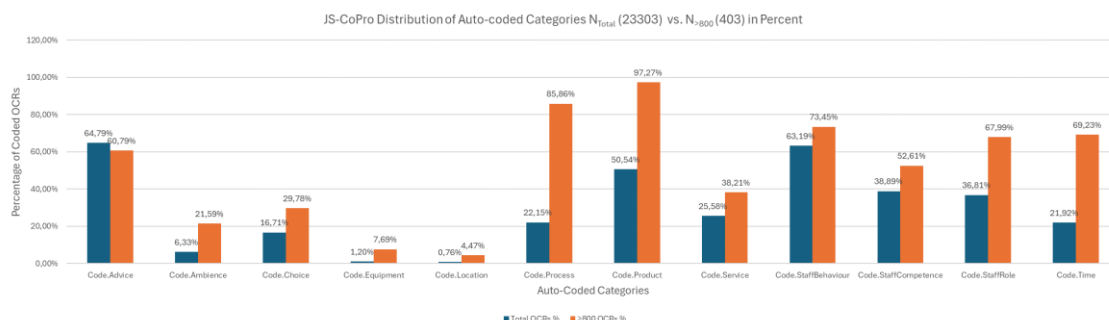


Figure 68 JS-CoPro Distribution of Auto-coded Categories

	Code.Advice	Code.Ambience	Code.Choice	Code.Equipment	Code.Location	Code.Process	Code.Product
Total OCRs	15098	1475	3895	279	176	5162	11778
Total OCRs %	64,79%	6,33%	16,71%	1,20%	0,76%	22,15%	50,54%
>800 OCRs	245	87	120	31	18	346	392
>800 OCRs %	60,79%	21,59%	29,78%	7,69%	4,47%	85,86%	97,27%

Code.Service	Code.StaffBehav.	Code.StaffComp.	Code.StaffRole	Code.Time	OCRs
5960	14726	9062	8578	5107	23303
25,58%	63,19%	38,89%	36,81%	21,92%	
154	296	212	274	279	403
38,21%	73,45%	52,61%	67,99%	69,23%	

Table 35 JS-CoPro Distribution of Auto-coded Categories

The distribution of multiple codes shows a similar picture to the T1-CQP theme, although the categorisation scheme is clearly different. While the median for the total of all OCRs is 3 codes, it increases to 6 for OCRs > 800. There is also a comparable decrease in the number of codes assigned on either side of the median on the x-axis.

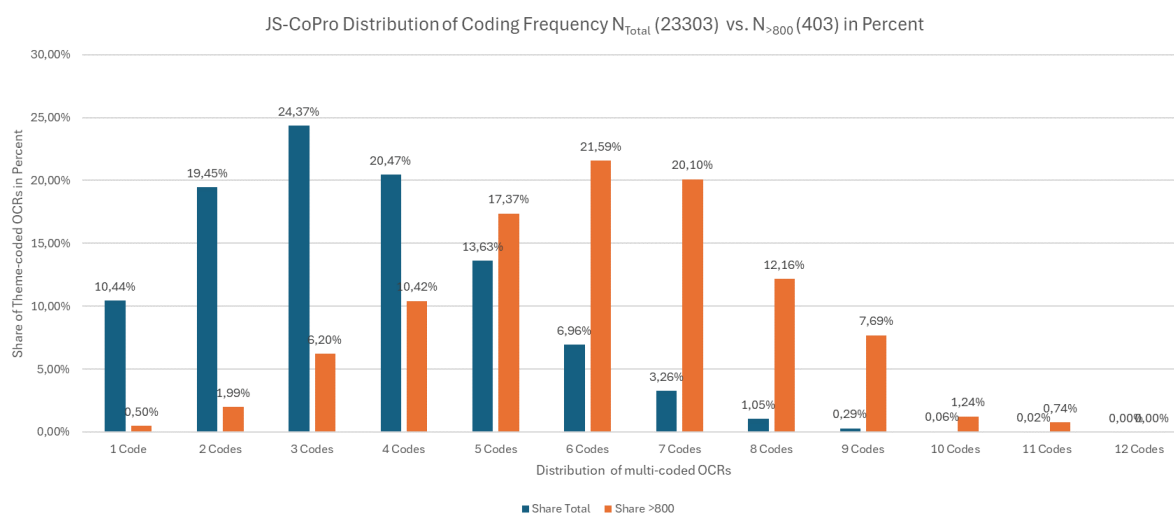


Figure 69 JS-CoPro Distribution of Coding Frequency

Classes	Frequency Total	Share Total	Frequency >800	Share >800
1 Code	2433	10,44%	2	0,50%
2 Codes	4533	19,45%	8	1,99%
3 Codes	5679	24,37%	25	6,20%
4 Codes	4771	20,47%	42	10,42%
5 Codes	3176	13,63%	70	17,37%
6 Codes	1621	6,96%	87	21,59%
7 Codes	759	3,26%	81	20,10%
8 Codes	245	1,05%	49	12,16%
9 Codes	68	0,29%	31	7,69%
10 Codes	14	0,06%	5	1,24%
11 Codes	4	0,02%	3	0,74%
12 Codes	0	0,00%	0	0,00%
	23303		403	

Table 36 JS-CoPro Distribution of Coding Frequency

6.2.4.5 Provider Sphere

The Provider Sphere focuses on an area that lies outside the direct experience and perception of the customer. It consists of the two coding categories 'Production' and 'Time'. The idea behind this was that although customers generally cannot directly perceive the technical production process of their visual aid, they can certainly experience its duration and therefore evaluate it. However, only a weak co-occurrence can be derived from the data obtained.

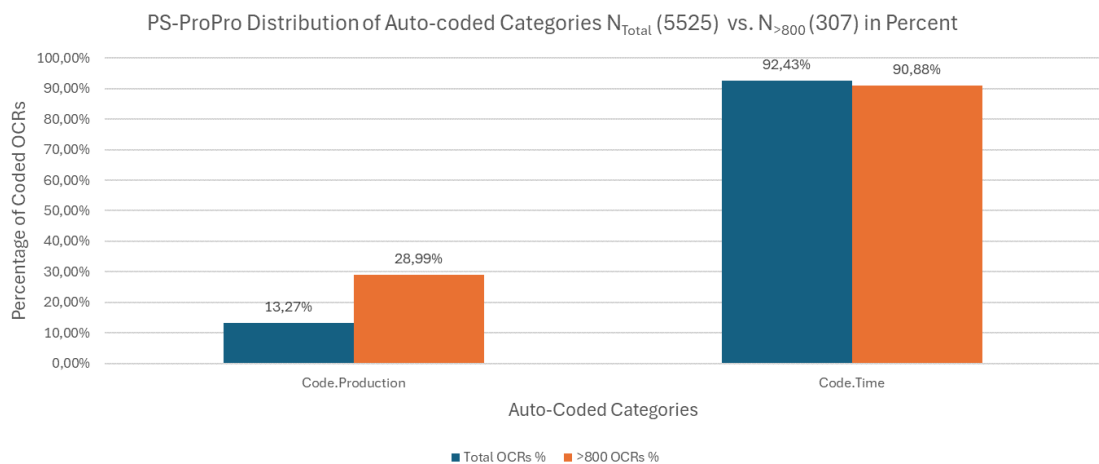


Figure 70 PS-ProPro Distribution of Auto-coded Categories

	Code.Production	Code.Time	OCRs
Total OCRs	733	5107	5525
Total OCRs %	13,27%	92,43%	
>800 OCRs	89	279	307
>800 OCRs %	28,99%	90,88%	

Table 37 PS-ProPro Distribution of Auto-coded Categories

In relation to the number of all coded OCRs for the provider sphere, the frequency of the 'Time' coding is 92.43% and changes only slightly to 90.88% for > 800. Although the relative frequency of the 'Production' coding increases

from 13.27% to 28.99% for OCRs > 800, 'Time' remains by far the dominant coding. This is logically reflected in the distribution of the coding frequency. Here, the number of double codings increases from 5.70% to 19.87%, which, although almost a quadrupling, still indicates a rather low co-occurrence between the terms of the two coding categories.

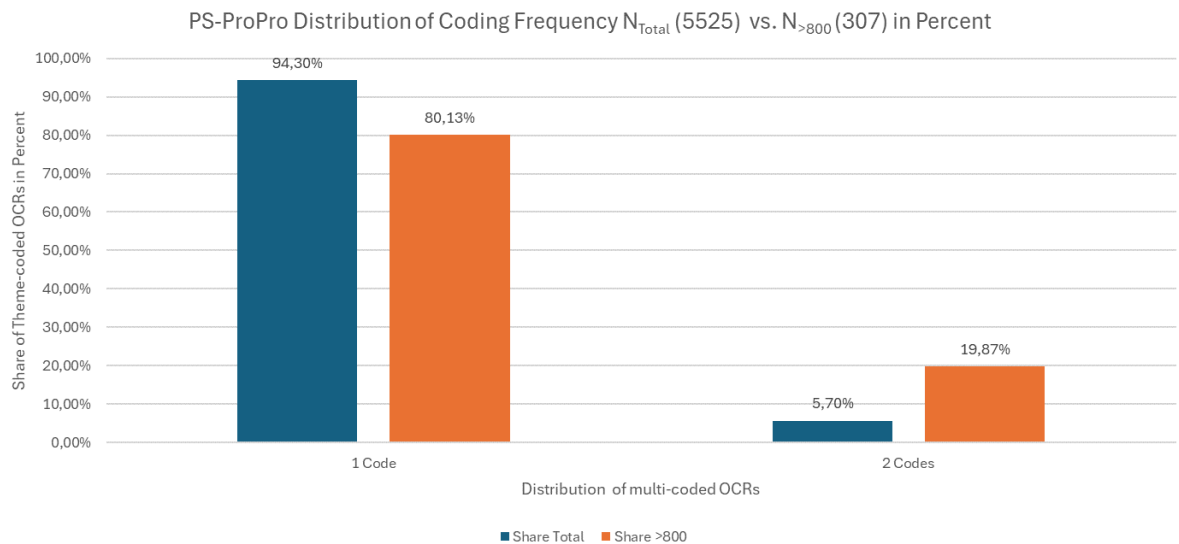


Figure 71 PS-ProPro Distribution of Coding Frequency

1 Code	5210	94,30%	246	80,13%
2 Codes	315	5,70%	61	19,87%
	5525		307	

Table 38 PS-ProPro Distribution of Coding Frequency

6.3 Conclusion

The objective of this chapter is to undertake the requisite empirical investigation to address Research Question 3 (RQ3). This involves the identification and analysis of the tangible and intangible quality-related factors that influence customer satisfaction with hybrid offerings in the German optician industry. As outlined in Chapter 5, this chapter employs a multidimensional analytical approach to provide detailed insights into the patterns, dynamics and determinants of customer satisfaction and value-in-use co-creation. The analysis was firmly anchored in an interpretive and iterative methodological framework, integrating empirical evidence with a data- and context-based coding strategy.

Initially, an examination was conducted to ascertain that the regional distribution and demographic composition of opticians were adequately represented in the dataset. This validation process served to enhance the robustness and credibility of the subsequent findings. The categorical coding analysis refined the understanding of the key tangible and intangible quality attributes present in OCRs, highlighting the most important aspects of the customer experience and identifying the factors that most influence perceptions of value-in-use.

Thematic coding was then employed to synthesise related categories into broader themes, thereby illustrating how different elements interact to influence value-in-use. This approach has enabled a more profound comprehension of the interdependencies within the customer experience, thereby unveiling the intricate and evolving nature of value-in-use co-creation in the optician sector.

The implementation of the Generic Business Process framework furnished a process-based perspective by means of mapping customer feedback onto specific phases of the optician service process. This contextualised the OCRs within the operational structure of optician services and identified the sub-processes that contribute most significantly to, or inhibit, value-in-use co-creation.

In summary, the present chapter provides the empirical findings required to answer RQ3, demonstrating the manner in which tangible and intangible quality attributes function across service stages to co-create – or, in certain cases, co-destroy – value-in-use. The subsequent chapter 7 will undertake a critical interpretation of these findings in the context of the previously introduced theoretical frameworks. This will entail an exploration of their implications for business practice and the broader understanding of value-in-use in co-productive hybrid offerings.

7. Discussion

7.1 Key Findings from Data Analysis

7.2 Revisiting the Concepts

7.3 Revisiting the Frameworks

7.4 Revisiting the Business Practice

7.5 Revisiting the Research Methodology

The principal aim of this chapter is to interpret and contextualise the findings presented in the data analysis, establishing a link between these insights and the research questions, business practice and theoretical frameworks outlined earlier in the thesis. Integration of the empirical results with the conceptual discussions should facilitate a more comprehensive understanding of how value-in-use is co-created.

The chapter opens with an interpretation of the key findings from the data analysis. The ensuing discourse will examine the extent to which the aforementioned findings are in alignment with, or in contrast to, the concepts and theoretical frameworks discussed in Chapters 2 and 3. The discussion subsequently shifts to the insights for business practice, with a particular focus on the German optician industry and the broader sector of the German skilled crafts. In the fifth section, the discussion revisits the applied methodology with a view to reflecting upon how the findings validate, extend or challenge methodological and epistemological assumptions.

7.1 Key Findings from Data Analysis

This section interprets the key findings from the data analysis. Due to the amount of data, the focus is on those outcomes that are relevant for the further discussion and the research questions of this work. This means that some data and results, which are worth a critical evaluation in further research, are not considered for reasons of efficiency and focus.

7.1.1 Key Figures of the Industry

The analysis of optician stores provides valuable insights into customer satisfaction, geographic distribution, and the overall service quality landscape within the German optician industry. The dataset encompasses 370 optician

stores across Germany. The majority (84.32%) of the sample is located in medium-sized towns (population between 20,000 and 100,000), while 15.68% of stores are situated in larger cities (population over 100,000). This reflects the general urban structure of Germany and offers a representative sample of both urban and rural optician businesses. The distribution of the optician stores is indicative of the decentralised nature of optician services in Germany, where access to high-quality opticians is not concentrated in urban areas but spread across smaller towns as well. It is notable that geographic factors, such as city population, exert minimal influence on key performance indicators like the number of reviews or average ratings.

The raw dataset consists of 31,128 OCRs with an average of 84 reviews per store. However, there is considerable variability, with 58.1% of optician stores having 50 or fewer OCRs and only 7.57% exceeding 200 OCRs. The weak correlation between city size and review count ($r = 0.25$) highlights that opticians in smaller towns can attract significant customer engagement, demonstrating the sector's ability to offer widespread service access. These findings align with the broader structure of the German optician market, which remains competitive due to consolidation pressures from larger chains. The weak relationship between city size and customer satisfaction ($r = -0.037$) indicates that optician stores in smaller towns are just as capable of delivering high-quality services as their urban counterparts, underscoring the neutralising effect of service quality over location. The ability of smaller, independent opticians to maintain high customer engagement and satisfaction despite competitive pressures from larger chains and the rise of online alternatives indicates the importance of focusing on personalised service as a differentiating factor.

Customer satisfaction across the optician sector is notably high, with a mean star rating of 4.73 and 95% of stores achieving ratings above 4.2. This reflects a consistently high level of service quality, regardless of business size or location. This high level of customer satisfaction is particularly significant given that, with a few exceptions, customers have not been eligible for state health insurance subsidies since 2004 (Verbraucherzentrale NRW e.V., 2024). As discussed in chapter 5.1, it can be assumed that this increases customer sensitivity to service quality. Therefore, opticians must consistently deliver high levels of

personalised service to retain customer loyalty. As the findings confirm that 'Price' does not occur with above-average frequency in a negative context (20.70% of all OCRs coded, from them only 4.95% negative), it seems that this sensitivity is well-managed within the sector.

7.1.2 Key Figures of Online Customer Reviews

The analysis of the final OCR dataset, comprising 24,321 OCRs, enables a more detailed and sophisticated discussion of customer perceptions of quality in the optician industry. The quantitative analysis of the OCR dataset reveals a significant variation in review length. The majority of reviews are relatively short, with 66.16% falling within the 51–300 character range. Only a small proportion exceed 800 characters, at 1.66%. Only a negligible proportion (0.35%) of the data set consists of extremely brief OCRs, comprising fewer than five characters. This indicates that customer feedback is relatively structured, with the majority of customers leaving short to moderate-length reviews. The high frequency of short to medium-length reviews indicates that customers tend to provide feedback that summarises their experiences. The presence of very long reviews, albeit in the minority, suggests that customers have had particularly positive or negative experiences, which require more detailed elaboration. These longer reviews can provide valuable insights into the extremes of customer satisfaction, reflecting more complex customer-provider interactions and areas where the service provider may have excelled or failed (Filieri, 2016, p. 52).

In terms of valence, the vast majority of reviews (96.44%) are positive, with an average rating of 4 or 5 stars. Conversely, only 2.96% of reviews are negative, with an average rating of 1 or 2 stars. This substantial imbalance is noteworthy and suggests a generally high level of customer satisfaction across the dataset. When discussing these results, it is important to consider their broader implications. The prevalence of highly positive reviews may indicate that customers in the optician industry are generally satisfied with the services they receive. However, this distribution might also suggest a potential bias towards positive feedback, possibly due to customers being more likely to leave reviews following a satisfactory experience. The phenomenon that there are some negative, very few neutral and much more positive reviews is well known as the "J-shaped distribution" of online customer ratings (Hu *et al.*, 2009, p. 145).

One notable finding in the data set is that negative reviews are, on average, significantly longer than positive reviews. The mean length of one-star reviews is 454 characters, while five-star reviews average 166 characters. This indicates that dissatisfied customers are more inclined to provide detailed feedback, whereas satisfied customers tend to leave brief, positive comments.

An exemplary review of this phenomenon for the codings 'Usage' and 'Preprocess' revealed that negative reviews, though few in number, provide a wealth of information about service failures or unmet customer expectations. Conversely, the brevity of positive reviews may indicate that satisfied customers feel less compelled to provide detailed explanations when their expectations are met.

7.1.2.1 Category Coding Insights

In order to gain insight into the structure and distribution of customer perceptions as reflected in the coded OCRs, it is essential to address several key points in the discussion of the category coding analysis. The data analysis shows that the number of codes assigned to the OCRs is closely linked to the length of the reviews themselves. The positive correlations between the number of codes and the length of OCRs (Pearson's $r = 0.67$; Spearman's $r_s = 0.79$) indicate that longer reviews tend to be more detailed and cover a broader range of customer experiences. For instance, reviews exceeding 800 characters constituted merely 1.66% of the total data set but were assigned an average of 9-12 codes, encompassing a comprehensive range of service aspects such as advice, staff competence, and product quality.

The prevalence of multiple codes within longer OCRs indicates that these reviews encompass a range of perceived aspects of the service experience. In particular, reviews exceeding 300 characters frequently encompass six to eight discrete codings, ranging from customer service and staff conduct to product quality and pricing. These reviews demonstrate more intricate customer interactions, encompassing a multitude of facets of the customer journey. On the other hand, 88.79% of reviews included eight or fewer codes, indicating a concentrated yet often multifaceted view of the service provided. The fact that only 11.21% of reviews included more than eight codes demonstrates the infrequency of comprehensive reviews that address all aspects of the service

provided. A notable proportion of OCRs are very brief, with 41.4% of reviews comprising less than 101 characters. These short reviews typically receive only one or two codings, often reflecting a singular aspect of the service experience. In many cases, these brief comments focus on a simple overall sentiment, such as satisfaction or dissatisfaction, without providing much detail on specific touchpoints. While these reviews provide insight into overall satisfaction levels, their brevity limits the scope for in-depth analysis of specific quality attributes. This may result in the omission of crucial details. The comparison of OCR encoding between all OCRs and OCRs with more than 800 characters in the theme, and GBP analysis, further emphasises the value of longer OCRs in obtaining a comprehensive overview.

In total, the coding process yielded a total of 25 categories, with 127,713 'true' codes applied across 24,321 OCRs. The categories that were most frequently coded were:

- **Evaluation:** 79.43% of OCRs included this category, making it the most generic but essential element of the customer feedback process.
- **Advice:** Representing 62.07% of OCRs, this category, together with Staff Behaviour and Staff Competence, underscores the importance of personalised consultation as a core part of the optician service.
- **StaffBehaviour:** 60.55% of OCRs mentioned this category, emphasising the significance of interactions between staff and customers.
- **StaffCompetence:** Appearing in 37.26% of OCRs, this category highlights customers' assessment of expertise in delivering optician services

These significant findings indicate a distinct emphasis on the interpersonal aspects of service provision. The categories directly reflecting customer satisfaction, such as 'Satisfaction' (24.81%) and 'Recommendation' (21.31%), were coded less frequently than those focusing on advice and staff. This suggests that while customers do express satisfaction, their reviews tend to focus more on the process and experience of receiving advice and interacting with staff.

The relatively low incidence of codes related to 'Price' (20.7%), 'Time' (21%) and 'Ambience' (6.06%) indicates that customers place a higher value on the quality of advice and interpersonal interactions than on other factors. The high frequency of staff-related categories, including StaffBehaviour (60.55%), StaffCompetence (37.26%), and StaffRole (35.27%), demonstrates the significant influence of interpersonal dynamics on the optician industry. It is therefore important to ensure that staff behave in a positive manner, as customers place a high value on the professionalism and friendliness of the optician during service delivery. The comparatively low occurrence of price-related feedback is interesting given that the cost of purchasing are increasing for customers during the last years (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 20). This may suggest that customers perceive the services provided by opticians to be of sufficient value to outweigh the importance of price in their overall satisfaction feedback.

The low frequency of coding for the category of 'Equipment' (appearing in only 1.15% of reviews) suggests that while diagnostic tools and technology are important, they may not be a primary consideration for most customers when evaluating service quality. Customers either take the presence of well-functioning and modern equipment for granted or focus more on the interpersonal aspects of service. From a customer quality perception perspective, this indicates that as long as equipment operates smoothly, it does not significantly impact perceived quality. In the words of Kano *et al.* (1984), 'Equipment' might be more a 'dissatisfier' quality attribute.

The relatively low coding of 'Choice' (16.01%) indicates that while product variety is important, it may not be the primary factor in customer evaluations of service quality. For customer quality perception, this suggests that many customers place greater emphasis on other quality attributes of their purchasing experience, such as advice and staff behaviour. Customers likely expect a certain level of product variety but in their reviews, they focus more on how well the optician guides them through the selection process.

The 'Production' category, which encompasses the manufacturing and customisation of tangible components, is relatively infrequent in the dataset, with only 3.01% of reviews coded in this category. This low frequency indicates that the majority of customers do not directly engage with or notice the

production process, as it typically occurs behind the scenes and outside their direct experience.

The 'Usage' category was coded with relatively low frequency, accounting for only 1.94% of the total dataset. This coding reflects customer feedback on their experiences with the long-term use of eyewear post-purchase. The very limited occurrence of 'Usage' indicates that while customers tend to focus on the immediate service and product acquisition phases, their perceptions of how well the glasses meet their needs over time are not often discussed. This low frequency of 'Usage' mentions could imply that most customers assume their eyewear will function as expected. Feedback in this category typically surfaces when customers encounter problems, such as discomfort, durability issues, or incorrect prescriptions. However, with the high amount of positive evaluation, there is not enough evidence in the data to draw any conclusions. Nevertheless, a comprehensive manual review of 'Usage'-coded 66 OCRs with a negative rating revealed several recurring issues. The most common issues were suboptimal visual acuity, such as blurred vision or headaches, affecting 25 cases. Furthermore, customers cited poor craftsmanship or improper fit as a source of dissatisfaction (14 cases). Additionally, durability issues, such as chipping frames or premature wear and tear, were noted in 10 cases. Overall, the higher proportion of negative reviews associated with 'Usage' ($z = 2.65$) compared to other categories indicates that when usage problems occur, they may have a pronounced impact on customer satisfaction.

The 'Preprocess' category, which was coded in 1.57% of OCRs, refers to the initial interactions and activities that customers experience before the core optician service begins. This encompasses activities such as consultations with an ophthalmologist, as well as appointment scheduling, exposure to advertisements, and visits to the optician's website. The relatively low frequency of coding indicates that customers generally focus more on the later stages of their interaction and do not place as much emphasis on the presales phase unless there are notable issues. Nevertheless, the analysis of the 'Preprocess' category reveals a number of recurring themes in customer feedback. It is not uncommon for customers to cite issues involving external providers, such as ophthalmologists, where there has been a failure to coordinate or communicate effectively with the optician. In 24 cases, customers expressed dissatisfaction

due to discrepancies in prescriptions or measurements between the ophthalmologist and optician. Additionally, unmet expectations related to online services, such as booking appointments or failing to meet advertised promises, gave rise to negative feedback. In a smaller number of cases (9 OCRs), aggressive marketing or unfulfilled promotional offers during the preprocess stage were identified as detracting from the customer experience. However, the low frequency of 'Preprocess' coding suggests that customers may not fully recognise the importance of this phase. When problems occur in the preprocess phase, they tend to have a slightly higher negative impact on overall satisfaction.

The category 'Style' was coded in 3.09% of reviews. It reflects customer evaluations of the aesthetic aspects of their eyewear, including design, fashion, and overall appearance. The low occurrence of this category indicates that, while style is relevant to some customers, it is not a dominant factor in most reviews. Once more, customers tend to focus more on the functional aspects of the service, such as advice or staff competence, rather than the stylistic attributes of the visual aid.

The category 'Ambience' was mentioned in 6.06% of reviews and refers to customer perceptions of the physical environment of the optician store, including cleanliness, layout, and overall atmosphere. The low occurrence of 'Ambience' indicates that while the store environment may contribute to the customer experience, it is not a primary concern for most customers when reflecting on their interactions with opticians. They are likely to assume a baseline level of cleanliness and comfort, which seems to be found as only 0.68% of the OCRs had a negative rating for this coding.

The 'Solution' category, which was referenced in 9.21% of reviews, pertains to customers' assessments of the optician's proficiency in effectively addressing and resolving their visual needs. The relatively low occurrence of this category suggests that while customers often have their issues resolved, they may not explicitly highlight this aspect unless they experience significant satisfaction or dissatisfaction with the outcome. Consequently, the successful resolution of their visual problem seems to form the implicit backbone of customer satisfaction – a generally expected outcome.

7.1.2.2 Theme Coding Insights

The coding of customer reviews identified seven themes that reflect the different aspects of the customer experience in the optician industry from which are three prevailing. As the data analysis has shown, the themes T1-CQP (91.25%), T3-SAB (73.09%) and T4-HOC (87.02%) occur most often in the coding. The data analysis of the theme T2-SFA did not deliver any usable insights due to the discrepancies between the two coding categories. The more prominent coding 'Ambience' was discussed in the category chapter. Furthermore, due to the ambivalence of the results and a certain redundancy of the theme T5-PAP, three of the four included category codings were also discussed in the category chapter ('Preprocess', 'Production' and 'Usage'). The 'Process' will be discussed in the next subchapter. The insights on traces of the Covid19-Pandemic, associated with theme T6-HSC, were presented and discussed in the analysis chapter to avoid redundancies. Finally, due to fact that 'Price' is the only category of the coding theme 'Value for Money', relevant insights were presented in the precedent chapter.

By examining the three dominant themes, a clearer understanding can be gained of how customers articulate their experiences and the implications for business practices within the optician industry. Each theme captures a specific dimension of the co-creation of value-in-use in the German Opticians industry, offering insight into how customers evaluate the optician services they receive.

The most frequently occurring theme, T1-CQP, covers how customers structurally assess the quality of both products and services. Categories within this theme, such as Evaluation (87.04% of OCRs), Expectation (24.88% in long reviews), Satisfaction (43.28% in long reviews), and Quality (37.31% in long reviews), demonstrate that customers write a comprehensive assessment of the service provided by the optician. In addition, two industry-specific quality categories have emerged: 'time' and 'style'.

The high importance of the human element in the service is highlighted by T3-SAB, activated in 73.09% of OCRs. This theme reflects how staff competence and professionalism are pivotal to customer satisfaction. The hybrid nature of optician services is captured in T4-HOC, which appears in 28.31% of OCRs. This theme reflects how customers assess not only the physical products (e.g.,

glasses, lenses) but also the advisory services provided (e.g., product selection, consultation).

The analysis of theme co-occurrence revealed that some themes frequently appear together, though they remain relatively independent in terms of customer evaluation. For example, T1-CQP and T4-HOC co-occur in 19,822 OCRs, but the Phi coefficient of only 0.22 suggests that these themes are often addressed independently. Similarly, T3-SAB co-occurs with T1-CQP in 16,009 OCRs, yet the weak association between the two (Phi coefficient of 0.19) indicates that customers not necessarily combine their assessment of interaction with the staff with broader feedback on perceived quality.

Concerning the activation level of the themes, longer reviews tend to activate more themes and provide richer insights into the customer experience as expected. For example, longer reviews (over 800 characters) demonstrate a significant increase in the activation of categories within T1-CQP. The 'Customer' code appears in 49.75% of longer reviews compared to 13.74% in shorter reviews, while the 'Quality' code rises to 37.31% from 8.19%. This suggests that customers who take the time to provide detailed feedback tend to reflect more comprehensively on the perceived quality from their experience. The relevance of time management in shaping customer satisfaction is underscored by the 'Time' code, which jumps from 23.01% theme-related activation in the overall dataset to 69.40% in longer reviews. This significant increase shows that customers who offer detailed feedback are more likely to comment on time-related factors, such as waiting times and service speed. These elements are often overlooked in shorter reviews, where customers may focus on more general impressions, such as staff behaviour or product quality. T3-SAB remains consistently important, independently of the consideration of all or only longer reviews > 800 characters. For instance, the 'Staff Role' code appears in 73.85% of long reviews compared to 48.26% of all reviews, indicating that customers who leave more detailed feedback tend to provide a more comprehensive assessment of staff-related interactions. In T4-HOC, the activation of the 'Solution' code increases five-fold in longer reviews, from 10.58% to 53.23%, indicating that customers providing detailed reviews are more likely to comment on the optician's ability to deliver tailored solutions.

The theme coding provides additional insight into the complexity of customer perceptions in the German optician industry by further reinforcing the special significance of customer interaction during the co-productive joint sphere. Consequently, some of the previous assumptions regarding the structure of topics such as T2-SFA and T5-PAP do not materialise in the practical analysis. Furthermore, it must be accepted that topics anticipated to be more intricate, particularly T6-HSC and T7-VFM, tend to be one-dimensional, at least at the level of coding selected here. This is where the chosen methodology is unable to provide the depth of insight and differentiated thematic structures that other tools of qualitative text analysis would offer. However, the decision has been made to adhere to the chosen theme coding approach and not to 'readjust'. It is also possible to gain insights from what does not work.

7.1.2.3 GBP Coding Insights

The GBP coding provides an additional perspective for understanding how phases of the optician service process affect customer perceptions of value-in-use in hybrid offerings. By mapping coded OCR data onto these phases, the analysis of the dataset has yielded several key insights. The coding followed the GBP structure, with the Co-Production in the Joint Sphere accounting for the highest frequency of codings, totalling 23,304 instances across 12 categories. This reinforces the conclusion drawn from the category and theme coding that customer perceptions of value-in-use are significantly shaped by their interactions during co-production processes. The results of the coding clearly demonstrate that customers attach great importance to this interactive phase, with a significant proportion of feedback concentrated on aspects such as staff competence and the quality of advice provided. It is notable that the most frequently coded category in the Joint Sphere is related to the optician's ability to provide 'Advice' (64,79%). This suggests that the ability to tailor offerings to individual needs is central to the hybrid nature of optician services. The results of the analysis support the insight that value-in-use in hybrid offerings is largely determined by the quality of the co-production process within the Joint Sphere.

The Provider Sphere, which captures backend processes such as production, was coded 5,525 times, indicating that it plays a secondary role in influencing customer satisfaction. It is notable that the production process often occurs concurrently with the joint sphere (5,523 instances), indicating that customers

assess production quality within the context of their overall experience, rather than as an isolated factor. Customer feedback coded under this sphere indicates expectations regarding craftsmanship and timely delivery. The coding data reveal that customers tend to focus on aspects of the Provider Sphere that are experiential to them, such as production time. The analysis also indicates that highly satisfied customers frequently cite the craftsmanship of their glasses as a positive factor. This demonstrates the continued importance of the tangible aspects of the service in shaping customer perceptions.

The Customer Sphere represents another crucial phase of value co-creation, as customers utilise the service or product in their daily lives. This phase is primarily focused on the durability and functionality of the visual aid, as well as the quality of the after-sales experience. As previously discussed in the context of the 'Usage' category, this factor appears to play a secondary role in customers' documented quality evaluations. Customer feedback in this area frequently mentions the long-term satisfaction customers derive from using their glasses, as well as their experiences with follow-up services like adjustments or repairs. However, negative ratings are rare. Nevertheless, customer feedback shows that the co-creation process continues beyond the initial interaction during co-production, with customers frequently assessing the value-in-use over time.

Further patterns emerged from the co-occurrence analysis between the phases of the GBP. For instance, the Co-Production Process displayed a high degree of co-occurrence with the Usage Process (7,319 instances), indicating that customers frequently associate their service experience with subsequent product utilisation. Notably, the PreSales Process exhibited the lowest coding frequency (550 instances), with minimal overlap with other phases. This suggests that customers attach less significance to presales interactions compared to subsequent stages of the business process.

One of the key insights from this analysis is the balance between process-oriented and outcome-oriented feedback. The GBP Coding Analysis shows that customers frequently provide feedback on both the process and the outcomes. The findings reveal that while outcome satisfaction is important, particularly in the Customer Sphere, process satisfaction during the Joint Sphere tends to weigh more heavily on overall customer perceptions.

7.1.3 Conclusion

The findings from the analysis of optician service provision confirm the hybrid nature of these offerings and show that the quality-of-service interactions plays a key role in shaping perceived value in use. This research highlights that the personalisation of services, together with the competence and behaviour of staff, are central to the delivery of value, rather than focusing solely on the final tangible outcome of the provision of visual aids. The high levels of satisfaction confirm the strength of the service element throughout the sector.

Despite these successes, a more detailed analysis of longer OCRs could not be undertaken due to methodological choices and practical resource limitations faced during the project. The approach adopted was designed to uncover broad trends and key themes across a large dataset, which was successful in providing a comprehensive overview of customer satisfaction. However, exploring the deeper, more complex customer experiences described in longer reviews – particularly in relation to critical service components such as refraction and spectacle fitting – would have required more specialised content or discourse analysis. While this method was beyond the scope of the current study, it represents an opportunity for future research to build on these strong foundations. The work carried out has successfully laid a solid foundation and provided valuable insights into the key drivers of customer satisfaction and value co-creation in the optician industry. Going forward, further research focusing on more in-depth reviews could enhance our understanding of specific service interactions and industry-specific quality perceptions.

7.2 Revisiting the Concepts

7.2.1 Concept of Value-in-use

This subchapter assesses the premises set forth in chapter 2.1 in light of the empirical evidence from the German optician industry. The discussion aligns the theoretical premises with customer behaviours and feedback observed in the optician sector. By examining how customers integrate both tangible elements and intangible components, the chapter provides insights into the co-creation and subjective perception of value-in-use. This discussion validates, refines, and expands the theoretical concepts, effectively bridging theory and practice

and laying the groundwork for further exploration of co-creation processes in the following sections.

7.2.1.1 Premise 1

Value-in-use is always influenced by the quality attributes of an offering.

The central premise that value-in-use is invariably influenced by the quality attributes of an offering is strongly validated by the empirical findings presented in this research. As discussed in Chapter 2.1, value component models, such as the Kano model (Kano *et al.*, 1984), emphasise that customer value is determined by the perceived quality attributes of a product or service, whether tangible or intangible. The data analysis provides substantial evidence that the perceived quality attributes of hybrid offerings in the optician industry, both tangible and intangible, are significant determinants of customer satisfaction and value-in-use realisation.

A crucial quality attribute that emerged from the data was the competence of optician staff, which was identified as a significant factor influencing customer perceptions of value. In line with the Service-Dominant Logic perspective (Vargo and Lusch, 2004; Lusch and Vargo, 2014), such intangible attributes – here operationalised as ‘StaffCompetence’ and ‘Advice’ – represent operant resources that enable customers to co-create value-in-use (Vargo and Lusch, 2004, p. 3). The frequency of reviews in which competence and advice are referenced serves to underscore their significance. The quantitative findings on the relevance and positive valence of the often-coded quality attribute ‘Advice’, whose quality evaluation can be interpreted as an outcome of staff competence, provide further substantiation of this claim.

In addition to these dominant intangible quality attributes, the data analysis identified several other tangible and intangible quality attributes that significantly impact customer perceptions of value-in-use in the optician industry. The ‘Choice’ category, which represents the range and variety of products available, is a tangible quality attribute closely related to the “get” side of Zeithaml’s (1988) benefit-sacrifice model. Likewise, the ‘Equipment’ category, which pertains to the tools and technologies employed during the service process, including diagnostic and measurement devices, reflects the tangible resources that contribute to perceived value. As the benefit-sacrifice logic suggests, such

resources are valued when they demonstrably enhance the quality of the service outcome.

The 'Solution' category, which reflects the optician's capacity to resolve specific customer issues (e.g., vision problems or product concerns), is closely aligned with means-ends models (Woodruff, 1997), where attributes are valued insofar as they facilitate the achievement of customer goals (Woodruff, 1997, p. 142). Similarly, the 'Time' category corresponds to the non-monetary sacrifice element of the benefit-sacrifice model (Zeithaml, 1988, p. 18), where waiting times, appointment scheduling and overall service speed influence net perceived value.

These findings indicate that while intangible quality attributes, play a dominant role in shaping customer perceptions of value-in-use, tangible attributes, are also critical in ensuring overall customer satisfaction. From an experiential perspective (Holbrook, 1996, p. 138), value-in-use emerges from integrating these tangible and intangible quality attributes across the service journey experience. The co-occurrence of these attributes reinforces the importance of a holistic approach to quality, as discussed in Chapter 2.1, to maximise customer value-in-use.

7.2.1.2 Premise 2

The configuration of attributes alone does not determine the degree and nature of value-in-use, because a beneficiary integrates the delivered performance of the quality attributes with other internal or external resources to achieve a desired purpose.

The hypothesis that the configuration of attributes does not, by itself, determine the degree and nature of value-in-use is corroborated by the evidence obtained from the data analysis. As set out in Chapter 2.1, means-ends models of customer value (Woodruff, 1997) explain that product or service attributes only gain significance when they are perceived to facilitate the achievement of customer goals. In the SDL framework, value-in-use is always co-created through resource integration between the provider and the beneficiary (Vargo and Lusch, 2016, p. 9). This integration is not a passive process – it is enacted through the co-production process that characterises hybrid offerings, in which

customers actively contribute knowledge, preferences, and contextual information during service delivery (Grönroos and Voima, 2013, p. 141).

The category designated 'Customer' in the dataset captures the way in which customers themselves influence the nature of the services they use. This aligns with the SDL's view of the beneficiary as an active co-creator of value-in-use. The 12.54% occurrence of this category in OCRs demonstrates that customers frequently reflect on their own role – and, in some cases, the role of other beneficiaries such as family members – in shaping the service outcome through participation in the joint sphere of the co-production process.

Furthermore, the 'Solution' category, identified in 9.21% of all OCRs (and particularly prevalent in longer reviews), reflects the optician's responsiveness to the customer's individual requirements. From a means-ends perspective, these solutions are valuable because they directly link attribute performance to the attainment of customer-specific goals. Similarly, the 'Usage' category, although coded in only 1.94% of OCRs, illustrates the integration of external resources (the visual aid) with the customer's internal resources (their eyesight, daily routines, and contextual needs). In the benefit-sacrifice model (Zeithaml, 1988), the effectiveness of this integration determines whether the customer perceives the exchange as delivering net value.

By situating these findings in the context of the co-production process of hybrid offerings, it becomes clear that value-in-use is a dynamic outcome of joint resource integration during service delivery. The configuration of service attributes offered by the provider sets the stage, but the ultimate value is shaped by the customer's ability and willingness to integrate these attributes within the co-production process into their own life and context. As the experiential models presented by Holbrook (1999) indicate, such integration is always contextual, situational and individual. The empirical evidence therefore supports Premise 2: the attributes of the hybrid offering are a necessary but not sufficient condition for value-in-use – the customer's active participation in the co-production process is equally essential.

7.2.1.3 Premise 3

The integrated resources, especially internal ones such as application knowledge or prior experience, are always highly individual and therefore always experience and context specific.

Premise 3 posits that the internal resources that customers contribute to the co-creation process are highly individual and shaped by their specific context. This view aligns with the contextual and experiential logics of customer value described by Gummerus (2013, pp. 31–34), who emphasises that value is embedded in personal circumstances and emerges differently across situations. Experiential models (Holbrook, 1999) similarly stress that value results from the interaction between the customer and the offering, with perceptions varying between individuals and contexts.

In hybrid offerings, these internal resources play a decisive role in the joint sphere of the co-production process (Grönroos and Voima, 2013, p. 141). A considerable proportion of optician customers, for example, are seasoned users of visual aids. Their prior experience constitutes an internal operant resource that directly shapes how they engage with the optician's consultation and fitting process (Gummerus, 2013, p. 24). This reflects the means-ends hierarchy described by Gutman (1982) and Woodruff (1997), in which customers assess attribute performance according to its ability to help them achieve desired goals (Gutman, 1982, p. 68).

One of the most fundamental internal resources is the customer's eyesight – a characteristic that is inherently unique. The optician must adapt advice and solutions to the exact physiological condition of each individual. This illustrates what Kano *et al.* (1984) classify as a 'must be' quality attribute: if it is not addressed, dissatisfaction will result, regardless of other aspects of the service (Shahin *et al.*, 2013, p. 343). Similarly, unique physical features such as facial structure and nasal bridge shape influence the co-production process when selecting and fitting frames. These requirements are actively communicated by the customer during the interactive stages of service delivery, showing how co-production enables the integration of highly personal resources into the offering.

The high satisfaction levels observed in the dataset suggest that opticians are generally effective at accommodating such individuality in their co-production

processes. This supports the benefit-sacrifice logic outlined by Zeithaml (1988), where non-monetary elements such as comfort, fit and convenience form part of perceived value. It also resonates with the multidimensional nature of value described by Sánchez-Fernández and Iniesta-Bonillo (2007, p. 443), where functional, emotional and relational dimensions intertwine in the customer's evaluation.

Thus, Premise 3 is supported: in hybrid offerings, the individuality and context specificity of customer resources are not peripheral considerations – they are central to the successful co-creation of value-in-use. The provider's ability to adapt the co-production process to these unique resources is essential to maximising perceived value.

7.2.1.4 Premise 4

In order to carry out the process of resource integration, the beneficiary must always invest some of his available resources (at least human energy) to integrate external resources into his internal processes, i.e. he must sacrifice some resources in order to receive a benefit through an increase in his viability or well-being.

In the optician industry, customers must invest a variety of personal resources to co-create value-in-use and achieve enhanced well-being through improved vision. This corresponds to the benefit-sacrifice logic described by Zeithaml (1988), where perceived value is the outcome of a trade-off between what is received and what is given (Zeithaml *et al.*, 2020b, p. 417). The GBP framework provides a structure for understanding how standardised service processes guide the customer journey. Within the structured process, customers must sacrifice personal resources to effectively integrate the external resources provided by the optician into their own internal processes – a principle consistent with the Service-Dominant Logic and the co-production perspective of hybrid offerings (Vargo and Lusch, 2008, p. 8).

Time is one of the most significant resources sacrificed, as it is necessary for the customer to fully engage with the process. From activities during the presales phase to follow-up adjustments, time investment is crucial to ensure that the external resources offered by the optician are effectively integrated into the customer's internal needs. OCRs coded in the Time category reflect the structured nature of the optician's service delivery, where customers reference

the time taken during various stages of the GBP, such as consultation and fitting. This reflects Patterson and Spreng's (1997, p. 430) view that both process-related and outcome-related sacrifices contribute to overall value.

Furthermore, the customer's participation in the GBP requires a significant investment of cognitive energy – a form of operant resource in SDL terms (Vargo and Lusch, 2016, p. 11). During measurement, frame selection and the final purchasing decision, customers are presented with various product options that align with their anamneses and preferences. Making informed decisions requires mental effort, as customers need to consider the optician's advice, weigh the benefits of different lenses and frames and align their choices with lifestyle needs and financial constraints. This is consistent with the means-ends hierarchy, in which such mental investment is justified by the expectation of achieving desired end states (Khalifa, 2004, p. 654).

During the Co-Production Phase 1 of the GBP, customers must also make financial decisions to secure the best possible product and service. The financial cost of eyewear and optical services varies, but customers must consistently invest money to obtain quality lenses and frames. The 'Price' category analysis shows that customers frequently discuss the cost of eyewear in relation to the value received. While a few reviews indicate that the expected value-for-money was not achieved, most customers acknowledge – as reflected in positive ratings – that the financial sacrifices made are appropriate for the achieved value-in-use. This matches with the benefit-sacrifice logic, where price interacts with perceived quality attributes to influence satisfaction (Ulaga, 2003, p. 679).

The Usage stage of the GBP is where the customer integrates the chosen product into their daily life. During this stage, the customer must invest emotional and physical energy to adjust to new eyewear, particularly if there is a significant prescription change. This adaptation process involves discomfort and effort, as the customer's visual system adjusts to the new lenses. Although the applied coding procedure did not reveal detailed insights into the customer experience during the adjustment period following the fitting of new glasses, the fact that only a small percentage of 'Usage'-coded OCRs (13.98%) have a negative rating suggests that major quality issues are rare. From an experiential value perspective, such adaptation costs can be offset by the satisfaction

derived from achieving the desired visual improvement (Sánchez-Fernández *et al.*, 2008, p. 99).

The GBP framework thus provides a clear structure through which customers must navigate to co-create value-in-use. At each stage of the process, customers are required to sacrifice personal resources to integrate the optician's external resources into their own internal processes. These sacrifices are essential for successfully achieving the long term benefits of improved vision and enhanced well-being. The coding categories 'Time' and 'Price' offer robust evidence that resource investment is a critical component of value-in-use co-creation within the optician industry. By making these sacrifices, customers are able to achieve sustainable benefits that enhance their viability and overall quality of life, thereby supporting Premise 4 within the structured framework of the GBP.

7.2.1.5 Premise 5

The experience of the increase in well-being or viability can, if at all, only be subjectively perceived and evaluated by the beneficiary himself.

Premise 5 reflects the phenomenological nature of value-in-use. As such, it is defined as unique to the beneficiary and shaped by their personal context (Andreassen *et al.*, 2016, p. 22). In the context of the optician industry, customers experience value-in-use not only through the objective qualities of the product (e.g., optical performance, durability) but also through how well those products meet their unique vision needs and integrate into their daily lives. But the subjective nature of value-in-use means that no external party – whether the optician, another customer, or an independent evaluator – can fully determine the improvement in well-being experienced by an individual. This mirrors the means-ends theory, which holds that the relevance of product and service attributes is mediated by personal goals and desired end states (Macdonald *et al.*, 2011, p. 673). Even where objective technical quality and service efficiency are consistently high, the perception of well-being remains individual and context-specific (Andreassen *et al.*, 2016, p. 24).

Within the structured activities of the GBP, technical procedures such as measurements and adjustments certainly contribute to the customer's perception of well-being. Yet, the findings show that 'Advice' was coded in

62.07% of OCRs, 'StaffBehaviour' in 60.55%, and 'StaffCompetence' in 37.26%, far exceeding purely technical categories such as 'Equipment' (1.15%) or 'Price' (20.7%), making them to critical 'performance' or even 'exciting' needs in sense of value component models (Shahin *et al.*, 2013, p. 343). During Co-Production, customers rely heavily on the optician's advice to inform their choices. While technical precision is essential, the perceived enhancement of well-being appears to be shaped more by the perceived quality of advice and its resonance with the customer's personal situation. The consistently high overall ratings in the dataset (mean 4.73, with 96.44% of OCRs positive) support the inference that, for most customers, these advisory and relational qualities and their process outcomes align closely with their expectations.

Although 'Usage' was coded in only 1.94% of OCRs, the proportion of negative reviews in this category was comparatively higher than average, indicating that adaptation challenges – while relatively rare – can noticeably affect perceived well-being (see chapter 6.2.2.4.1). But overall, the predominance of positive OCR ratings supports the proposition that opticians are able to understand the individual context of their customers (Galvagno and Dalli, 2014, p. 659), as the co-creation process generally meets or exceeds customer expectations, leading to a tangible improvement in perceived quality-of-life. This supports Premise 5: in hybrid offerings, perceived well-being enhancement is a deeply personal, context bound outcome that emerges from the interplay of technical quality, staff competence, relationship and the customer's own subjective evaluation within the co-production and usage processes.

7.2.1.6 Premise 6

A definite external value-in-use assessment is never possible, because a phenomenological experience is by definition always individual, as it happens in the dynamic, ever-changing process context of life itself.

In the optician industry, the value-in-use of hybrid offerings is fundamentally anchored in the improvement of eyesight. This is the primary functional benefit customers seek and all other quality attributes – tangible (lenses, frames) and intangible (advice, competence) – are ultimately valued for how they contribute to achieving and sustaining this improvement in a way that aligns with the customer's comfort, lifestyle and expectations (Lusch and Vargo, 2014, p. 78).

However, the category coding analysis shows that this core benefit is often taken for granted and rarely made explicit in customer feedback. The Usage category appears in only 1.94% of OCRs. At the same time, customers devote far more attention to interpersonal and process factors than to direct comments on technical performance. This pattern confirms that customers' value-in-use judgements are heavily shaped by the quality of human interaction during the co-production process – a dimension that is much more difficult to meaningfully standardise for external measurement (Zeithaml *et al.*, 2020b, p. 426). On the other hand, technical attributes appear only rarely in reviews, indicating that they are treated as a baseline expectation – consistent with Kano *et al.* (1984) classification of such factors as “must-be” quality attributes whose absence causes dissatisfaction but whose presence does not add perceived value.

Adding to the challenge of external assessment is the high variability in how customers articulate their experiences. While 41.4% of OCRs are under 101 characters and usually focus on a single sentiment, reviews over 800 characters (just 1.66% of the dataset) average 9–12 codes and address a broad range of aspects, from staff competence to product quality. This variability in review detail means that even when the functional improvement is similar, customers express and weight their evaluations in vastly different ways.

For these reasons, while aggregate satisfaction levels show that most customers perceive a meaningful improvement in their eyesight and well-being, the specific nature, depth and meaning of that improvement are unique to each customer. The interplay of assumed technical performance, heavily weighted interpersonal experiences and highly variable self-expression ensures that no definitive external value-in-use assessment is possible, even for the core functional benefit at the heart of the offering.

7.2.2 Concept of Hybrid Offerings

In Chapter 2.2.4, hybrid offerings were defined as integrated value propositions that combine tangible and intangible process outcomes through co-production between provider and customer. In the optician industry, this integration is particularly evident, as the delivery of visual aids inherently combines physical products with advisory and service components in a closely interlinked process.

This section explores how the proposed definition of hybrid offerings aligns with the practical experiences of customers in the optician industry, as well as how the varying perceptions of customers reflect the hybrid nature of these offerings.

7.2.2.1 Application of the Proposed Definition

From a theoretical perspective, visual aids align with the definition of hybrid offerings presented in Section 2.2.4, which describes them as co-produced combinations of tangible and intangible process outcomes that cannot be decomposed without a significant reduction in value-in-use for the beneficiary. In this model, the degree of hybridity increases with the integration of customer-provided resources through provider-customer interaction, and co-production inevitably results in at least a temporary relationship between the two parties (Leimeister and Glauner, 2008; Burianek *et al.*, 2007).

In accordance with the argumentation of Schmitz (2008, p. 673), the tangible components of visual aids are inseparably linked with intangible service components. In this sense, hybridity in visual aids is maximised when such customer contributions are fully integrated into the provider's processes and value-in-use would be significantly reduced if either dimension were removed. Nevertheless, customer perceptions concerning 'hybridity' can vary. Some customers might view the visual aid primarily as a tangible product, focusing on its physical quality and immediate performance, particularly when the initial fitting meets expectations and service interactions are minimal. Others experience it as a fully integrated offering, in which both product and service components are essential to satisfaction (Burianek *et al.*, 2007, p. 12).

Concerning the provision of visual aids, the centrality of co-production is confirmed by the findings from 6.2.4. The Joint Sphere of the GBP accounted for 23,304 codings across 12 categories, making it the most richly coded phase of the process. The detailed analysis in 6.2.4.4 shows notable shifts in OCRs longer than 800 characters: 'Advice' declines slightly in relative frequency (64.79% → 60.79%), while 'StaffBehaviour' and 'StaffCompetence' increase markedly (63.19% → 73.45% and 38.89% → 52.61%, respectively). The 'Process' category shows the most substantial rise (22.15% → 85.86%), indicating that more detailed feedback is associated with stronger recognition of the procedural aspects of service delivery. 'Time' also rises to 69.23%, and

'Product' reaches near universality at 97.27%. The median number of codes doubles from three to six for longer OCRs, reflecting the broader range of aspects described when customers provide more elaborate accounts of their experiences.

Findings from 6.2.3.3.4 further illustrate how these components are perceived in practice. The theme T4 HOC Hybrid Offering Components was coded for 87.02% of all OCRs, indicating that hybrid elements are almost universally present in customer accounts. In longer OCRs (> 800 characters), the 'Solution' category increased fivefold (10.58% → 53.23%), while tangible components such as 'Choice' and 'Equipment' also rose in relative frequency. Customers who write longer reviews often describe a broader range of hybrid offering elements, resulting in a more balanced account of their overall experience.

The evidence from the optician industry therefore aligns closely with the definition of hybrid offerings proposed in Section 2.2.4. Visual aids provided by opticians are co-produced combinations of tangible and intangible process outcomes, where the removal of either dimension would result in a significant reduction in value in use. Their delivery depends on the integration of customer-provided resources into the provider's processes, supported by technical expertise, measurement and professional advice.

7.2.2.2 Multiple Coding as a Complexity/Hybridity Indicator

As outlined in Section 2.2.4, hybrid offerings are inherently complex due to the co-production process, which requires continuous interaction and integration of customer provided resources (Burianek *et al.*, 2007, p. 11). In this research, it is assumed that this complexity may be reflected in customer feedback through a higher number of codings in individual OCRs, particularly in longer reviews.

The data offers some support for this assumption. In the theme T4-HOC Hybrid Offering Components, the 'Solution' category shows a marked increase in longer OCRs (> 800 characters), rising from 10.58% to 53.23%. This substantial rise suggests that longer reviews more often address the integration of tangible and intangible components into a complete solution tailored to the customer's needs. In such descriptions, the optician's role is portrayed not merely as delivering a product, but as orchestrating a multi-faceted process that combines technical vision correction with personalised service. This aligns with the

proposed definition of hybrid offerings, where hybridity is linked to the integration of multiple resource types into a unified value-in-use proposition.

Other shifts in coding patterns also reflect this broader articulation. For example, within T4-HOC, 'Product' coding rises from 55.65% to 97.51% and Service coding from 28.16% to 38.31% in longer reviews. This suggests that when customers write at greater length, they more frequently acknowledge both the tangible and intangible components of their experience. Such reviews often cover multiple stages of the GBP, indicating that more aspects of the offering are being considered in the customer's evaluation.

However, these patterns should be interpreted cautiously. A higher number of codings does not necessarily mean that the offering was inherently more complex for that customer. Some customers may simply provide more detailed or reflective accounts, resulting in longer reviews and multiple codings regardless of the actual complexity of their experience (Wang *et al.*, 2023). Review length can also be influenced by communication style, satisfaction or dissatisfaction with specific elements or the number of touchpoints during the service journey (Kim, 2021, p. 166).

Therefore, while multiple codings can be considered a cautious indicator of complexity and hybridity in visual aid offerings, they should not be treated as definitive evidence. The findings suggest that customers who describe solutions are often acknowledging the integration of both product and service elements, consistent with the theoretical view that hybrid offerings are multi-component and require coordinated delivery of tangible and intangible outcomes (Engelhardt *et al.*, 1993, p. 406). Yet, the relationship between multiple codings and inherent offering complexity remains moderated by differences in customer engagement, communication style and personal context.

7.2.3 Conclusion

This discussion reaffirms the theoretical premises of value-in-use and hybrid offerings by demonstrating how empirical evidence can both validate and refine these concepts. The case study confirms that value-in-use is a dynamic, phenomenologically subjective construct shaped by individual customer perceptions and interactions with opticians.

The findings also emphasise that the generation of value-in-use depends on the integration of supplementary resources and the active participation of customers in co-production processes. In this context, hybrid offerings are shown to be more than simple combinations of products and services; they are complex, co-productive processes requiring sustained customer-provider interaction. The empirical evidence supports the theoretical proposition that hybrid offerings involve the formation of relationships and the integration of diverse tangible and intangible resources. Moreover, the data indicates that increasing customer involvement and customisation tends to heighten both the complexity and the perceived value-in-use of an offering, reinforcing the theoretical framework.

By grounding theoretical concepts in empirical observation, this research strengthens the validity and relevance of the value-in-use and hybrid offering frameworks. The study illustrates how these constructs manifest in practice, particularly within the skilled-crafts sector and bridges the gap between abstract theory and real-world application. In doing so, it enhances the robustness of these theoretical models and affirms their applicability beyond the conceptual level.

7.3 Revisiting the Frameworks

The purpose of the following discussion is to re-examine the perspective of the SDL in order to facilitate a deeper understanding of hybrid offerings. To achieve this, the basic premises and axioms of the SDL are related to the findings of the empirical study.

The application of the Sphere Model and IQF to hybrid offerings is then discussed. In order to avoid unnecessary repetition and to maintain the coherence of the consolidated quality framework, the theoretical models of both frameworks are discussed together. The aim is to provide a comprehensive comparison and to critically examine some of the frameworks' assumptions, including the potential for their empirical validation. In addition, the sub-chapters draw on recent findings from optician-related business research to establish links between the theory, the case study and the wider field research.

Finally, the idea of the Consolidated Quality Framework (CQF) is critically analysed, with particular reference to the practical feasibility of such a complex model of social interaction.

7.3.1 Hybrid Offerings and SDL

As explored in Chapter 3.1, Service-Dominant Logic (SDL) provides a theoretical framework that emphasises 'service' as the fundamental basis of all economic exchange and the central role of co-creation of value. In this research, SDL serves as a meta-theoretical lens for understanding the dynamics of value-in-use creation. However, in order to apply the theory in a much narrower and practical context, its abstract nature and broad principles require empirical validation.

To achieve this, each basic premise is revisited and critically examined in the light of the results of the data analysis and the general context of the empirical case study. The aim is to explore whether and how the theoretical assumptions align with the observed processes of value-in-use co-creation as they manifest in hybrid offerings. Through this critical analysis, the researcher seeks to contribute to the ongoing discourse on SDL by offering a nuanced, practice-oriented evaluation of its premises, thereby enhancing its empirical relevance and applicability in the skilled craft sector.

7.3.1.1 Axiom 1: Service as Base of Exchange

The SDL posits that service, defined as the application of resources for the benefit of an entity, is the basis of all exchange (Vargo and Lusch, 2004, p. 2). Hybrid offerings exemplify this premise by combining tangible and intangible resources and their quality attributes in order to deliver beneficial value-in-use through a resource-integrated solution.

As the data analysis shows, visual aids are often perceived as solutions where the co-production process involves expert advice and customisation from a competent service provider and a capable business process to meet individual needs to correct visual impairment. This is consistent with SDL's emphasis on service as the fundamental basis of exchange (Vargo and Lusch, 2004, p. 13).

In many instances, the product as a outcome of a production process is perceived as the central element in a transaction, thereby masking the service

aspect (Vargo and Lusch, 2008, p. 7). In the context of the optical industry, the direct interaction between the customer and the supplier is of paramount importance for the delivery of value in use. The role of the customer goes beyond that of a passive recipient of services; rather, the customer is an active contributor of key resources that are essential for the optician to deliver the service. The customer's eyesight serves as the primary reference point for measuring, adapting, and fitting visual aids, and without this input, the optician would be unable to provide the intended service. In this way, the customer becomes a co-creator of value-in-use, effectively providing a service to the optician by offering their eyesight as a critical resource for the production process (Mazarelo *et al.*, 2024, p. 116).

This empirical insight is corroborated by findings from the coded dataset, which indicate that categories such as 'Solution' and 'StaffCompetence' are often associated with terms related to customisation and individualised solutions. These terms indicate that customers are not merely purchasing a product; rather, they are engaging in a cooperative and co-productive relationship whereby they actively participate in the co-creation of their own value-in-use. Opticians, in turn, modify their services to align with these specific inputs, thereby reinforcing the concept of a direct and reciprocal value-in-use exchange. By focusing on these customer-provider interactions, the empirical evidence shows how the indirect exchange typical of modern economies is reduced or 'demasked' in the context of the optician industry. The reliance on direct customer engagement, where customers provide both operant resources (e.g. their willingness to participate in eye tests) and operand resources (e.g. their vision as a reference), illustrates a transparent service-for-service exchange that SDL proposes is often obscured in broader economic contexts. This automatic integration of resources serves to highlight the true nature of the exchange. This is in line with SDL's recognition that services are always exchanged, even when tangible resources are involved (Vargo and Lusch, 2008, p. 4).

In the context of hybrid offerings, the tangible components serve as delivery mechanisms for service-based value-in-use co-creation, for example, in the case of better eyesight or sun protection. This perspective shifts the focus from a mere production process view to an overall value-in-use co-creation process,

which is grounded in the integration of tangible and intangible resources (Vargo and Lusch, 2008, p. 8). The above rationale can be applied to the empirical evidence from the optical industry. In this context, the final outcome of the process goes beyond the provision of visual aids; it is, in fact, the improvement of vision that represents the core service provided. This is in line with the SDL perspective, which reframes the role of the optician as a facilitator of wellbeing rather than a mere distributor of products (Lusch and Vargo, 2014, 57, 114).

Empirical evidence from the optical industry supports this argument. The relatively infrequent coding of the 'Style' category suggests that, from the customer's perspective, spectacles are seen primarily as functional devices designed to improve visual acuity, rather than as accessories for personal adornment. It seems that customers prioritise the effectiveness of visual aids in delivering their core value-in-use - better eyesight - over their aesthetic appeal. It is worth considering that elements of style may be indirectly included in the coding category labelled 'advice'. During consultations, particularly those involving the GBP activity 'Advice on frame selection', opticians may include style preferences as part of their advice when recommending frames that suit the customer's lifestyle and personal tastes. Although the empirical analysis did not reveal an above-average correlation between 'Advice' and 'Style', it is reasonable to assume that such aspects may play a complementary role within the broader service interaction.

It is also noteworthy that the SDL places significant emphasis on the role of operant resources as the primary source of competitive advantage, as opposed to operand resources (Vargo and Lusch, 2016, p. 7). The evidence presented in the dataset supports this claim. The findings suggest that the expertise of service providers in the field of opticianry is perceived as a critical quality attribute in creating value for customers. The coding categories 'Advice', 'StaffCompetence' and 'Solution' are frequently mentioned in the OCRs analysed, indicating that customers place considerable value on the expertise of the optician, the advice provided and the tailored solutions they receive. For example, the prominence of the 'Advice' category demonstrates that the quality of consultation has a significant impact on customer perceptions of value-in-use, highlighting that customers value the personalised guidance they receive to achieve optimal visual outcomes. Similarly, the high frequency of the 'Staff

Competence' category highlights the importance of professional expertise in co-creating the final service outcome, which in this context is improved visual acuity. The prominence of the 'Solution' category, particularly in longer OCRs, suggests that customers perceive the optician's experience as a comprehensive problem-solving journey, with the outcome extending beyond the mere purchase of spectacles to the resolution of their visual needs. In contrast, categories related to the optician's resources, such as 'ambience' and 'equipment', are less frequently mentioned and appear to play a minor role in how customers evaluate the quality of the service. This finding suggests that customers are more likely to associate their perceptions of quality attributes with the skills and knowledge demonstrated by staff, rather than with the physical environment or technical equipment used during their visit.

These findings highlight the pivotal role of human capital and knowledge in the delivery of superior value-in-use (Lusch *et al.*, 2007, p. 9). From a macroeconomic perspective, the SDL postulates that all economies are inherently service-based ecosystems (Vargo and Lusch, 2017, p. 48). Hybrid offerings, such as the provision of visual aids, exemplify this phenomenon by demonstrating how tangible and intangible resources are seamlessly integrated, thereby transforming the traditional goods-dominant logic into a service-centric exchange. The integrated value-in-use provided by hybrid offerings reflects the service-dominant nature of modern economies.

The findings validate SDL's foundational premise within the empirical context of the optician industry by demonstrating that positioning 'better eyesight' as the true value-in-use of the optician's service is an effective strategy. The findings confirm that services are at the core of economic transactions, supported by tangible goods, and highlight the collaborative role of providers and customers in co-creating value. The optician industry provides a compelling illustration of how the exchange of services is central to the co-creation of value in contemporary economies.

7.3.1.2 Axiom 2: Value is Co-created by Actors

The SDL posits that value-in-use is created through the interactions between providers and customers as well as other potential actors (Vargo and Lusch, 2016, p. 9). This premise underscores that each actor involved in the value co-

creation process integrates both internal resources and external resources to achieve value-in-use. The beneficiary, or customer, plays a central role in this process, integrating these diverse resources while simultaneously influencing the co-creation activities of other actors within the service ecosystem Lusch and Vargo (2014, p. 161).

Hybrid offerings inherently involve the customer in the co-creation and co-production process, from the initial stages of customisation to the ongoing feedback and adjustments that are integral to the co-creation process. This interactive process ensures that the final offering is tailored to the individual needs of the customer, exemplifying SDL's premise of co-creation (Lusch and Vargo, 2006b, p. 413). A service-centred view emphasises the significance of relationships and customer orientation (Vargo and Lusch, 2004, p. 6). As the analysis of the 'Preprocess' coding reveals, the diagnostic services and expertise provided by ophthalmologists sometimes represent a crucial resource that the optician incorporates into his own service delivery process. This interaction exemplifies the SDL premise by demonstrating how the integration of resources from different actors is essential for creating value-in-use. The involvement of these additional stakeholders highlights the interconnected nature of the service ecosystem in the optician industry, emphasising that value-in-use is not created in isolation but rather through collaboration among various actors.

Hybrid offerings are generally conducive to strengthening the relational aspect of exchanges, facilitating co-productive interactions between providers and customers. This relational approach has the potential to increase customer satisfaction and loyalty, reflecting the SDL emphasis on relational exchanges (Vargo and Lusch, 2008, p. 8). In the GBP design, several discrete activities were identified during the co-creation process, many of which involve a series of face-to-face interactions. This includes, but is not limited to, measuring the customer's eyes, selecting the frame and lenses, and fitting the finished spectacles to the wearer's physical characteristics. The provision of visual aids illustrates the centrality of relational and iterative interactions to the value co-creation process. Each of these interactions requires collaboration and communication, enabling the optician to adapt the service offering based on the customer's feedback and preferences. Therefore, in contrast to a transactional

exchange, the role of the optician goes beyond the mere delivery of a product; he must establish and maintain a relationship with the customer that is based, at least temporarily, on the service journey described in the GBP.

There are many other actors involved in the GBP process, including lens manufacturers, accompanying family members and, finally, an ophthalmologist. To illustrate, the categorisation of 'Customer' included terms such as 'Familie (family)' and 'Kinder (children)'. This suggests that customers see themselves as part of a wider social network. The mention of family connections suggests that customers perceive their service experience as extending beyond their individual needs to include their roles and responsibilities within their family unit. This is in accordance with the concept that value-in-use is relational, and that the customer's integration of resources encompasses both personal and social dimensions. Customers' references to family and social systems confirm that value co-creation extends beyond the individual, highlighting the interconnected and social nature of the process.

Consequently, the realisation of value-in-use is never the result of a unilateral act by the provider. Rather, it is an interwoven process in which customers integrate the value-in-use propositions of the provider into their own context in order to achieve a desired outcome. The optician's role is to propose a solution based on his or her professional skills and expertise, and to ensure that the visual aid is configured to meet the customer's needs. However, the realisation of value-in-use is contingent upon the existence of a harmonious alignment between the customer's visual acuity and the configuration of the visual aid, which ultimately leads to an enhancement of visual performance. The optician can propose a bespoke solution and provide expertise, but the desired value-in-use - improved vision - only materialises when the customer perceives an enhancement in their visual experience. This perception is inherently subjective because the optician cannot directly measure the customer's individual experience of improved vision; it can only be assessed by the customer through their own sensory feedback.

However, it must be recognised that the client needs the expertise of the optician as a co-creator. It is not possible for the customer to produce a visual aid on their own or to determine the exact configuration that will best meet their visual needs. The reciprocal collaboration between the optician and the

customer is essential for both actors. This also illustrates the necessity of co-creating value-in-use within hybrid offerings.

7.3.1.3 Axiom 3: All Actors are Resource Integrators

The SDL recognises that all actors, including customers, contribute resources to the co-creation of value-in-use. In hybrid offerings, customers engage in the active integration of their own operant and operand resources with the provider's operant and operand resources to co-create value-in-use. The GBP illustrates the manner in which the two principal actors integrate their respective resources in order to co-create value-in-use, which ultimately results in an enhancement of the customer's eyesight. This collaborative process is consistent with SDL's understanding of resource integration (Vargo and Lusch, 2016, p. 7). For example, the production of suitable spectacles requires the customer to be willing to contribute their physical appearance and subjective visual experience as an indispensable resource to the co-production process as part of a structured, feedback-based measurement process. The optician, in turn, is required to integrate the resources provided into their own processes in such a way that the greatest possible value-in-use is generated for the customer.

Moreover, the data analysis findings highlight the intricate and interwoven nature of the service ecosystem in which the optician operates, including ophthalmologists, manufacturers of glasses and frames, and the customer's broader social network, such as family members.

As indicated in the 'Presales' coding, ophthalmologists provide a vital operant resource, ensuring that the visual aid configuration is tailored to the customer's specific visual requirements, even if this has declined sharply in recent years. In 2000, just under half of vision aids were prescribed by ophthalmologists. In 2023, it was only 13 per cent (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 19). Similarly, the manufacturers of glasses and frames supply the necessary operand resources – tangible materials like lenses and frames – which the optician uses during the 'Production Process' in the Provider Sphere. The relationship between the optician and the manufacturers of glasses exemplifies the broader reciprocal nature of the service ecosystem. Producers also rely on opticians to provide accurate data regarding customers'

visual acuity and other technical specifications, ensuring that the lenses produced meet the quality standards expected by both the optician and the customer (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 31). In this sense, the producers also receive a service from the optician, who acts as a critical intermediary, supplying the technical information needed for the manufacture of the visual aids. There is also an increasing trend towards the expansion of the ecosystem through outsourcing in the manual production of spectacles due to rising cost pressure and a shortage of skilled labour (Zentralverband der Augenoptiker und Optometristen, 2024b, p. 31). This exchange serves to further emphasise the interconnected and collaborative nature of the service ecosystem, where the role of each actor extends beyond its immediate domain in order to support the value co-creation process.

This interconnected structure aligns with SDL's third axiom, thereby reinforcing the premise that the co-creation of value-in-use in hybrid offerings is a dynamic and collaborative process shaped by multiple actors who effectively integrate resources. The service ecosystem perspective thus provides a comprehensive understanding of how value-in-use is realised through these interconnected activities and resource integrations, thereby affirming SDL's assertion that all actors within an economic system are resource integrators engaged in collaborative processes.

7.3.1.4 Axiom 4: Value is determined by the Beneficiary

SDL puts forward the proposition that the value-in-use of a service is subjective and contingent upon the customer's distinctive experience and context. In order to provide potential value-in-use, hybrid offerings as well as the underlying co-production process must be designed with a deep understanding of the customer's context and preferences (Lusch and Vargo, 2006b, p. 415). This is consistent with the SDL perspective that value-in-use is not intrinsic to the tangible or intangible resources of an offering; rather, it is realised through the customer experience and utilisation of the offering (Vargo and Lusch, 2008, p. 9, 2004, p. 11). In the case of the provision of visual aids, it is not possible to objectively measure the central quality attribute, the degree of improvement in the customer's vision. Instead, the optician must rely on the customer's perceptual experience and the quality assessment based on that experience to make a final assessment of the quality of the service provided.

Therefore, value is uniquely and phenomenologically determined by the beneficiary, which is reflected in the GBP usage process in the customer sphere. During the use process, customers evaluate whether the vision aid meets their vision needs and improves their daily life and well-being. A comprehensive review of the OCRs revealed that 25 of the 66 reviews were associated with suboptimal visual acuity following the provision of the service. This took the form of blurred vision and headaches. These findings suggest that despite the expertise and efforts of the optician to configure the visual aid, the realisation of value remains dependent on the subjective experience of the customer. When customers experience discomfort or visual disturbance, the intended value-in-use is not achieved, resulting in a perception of the service as inadequate. Further evidence is provided by 14 cases relating to the quality of the spectacles, specifically issues of workmanship such as poor fit or technical defects. In addition, 12 OCRs cite incorrect measurements by the optician, often identified in subsequent assessments by other opticians or general practitioners. This illustrates that even when an optician provides a bespoke solution, if it does not meet the customer's expectations, the value proposition remains unfulfilled. Although these examples represent only a small proportion of the total data set, they reinforce the point that the optician's professional input alone does not guarantee the realisation of value-in-use. The customer's perception of the product's effectiveness plays a crucial role.

These findings corroborate SDL's assertion that value-in-use is a subjective phenomenon, contingent upon the customer's unique context and experience. Visual aids are, of course, 'phenomenological' in the narrowest sense of the word, due to their direct connection with (visual) perception. The optician's craftsmanship, measurement and expertise serve as potential enablers of value-in-use, but the final assessment is determined by the customer's subjective evaluation of whether the visual aid meets their specific needs. Therefore, the usage phase of the GBP demonstrates the pivotal role of the customer's subjective experience in the co-creation of value-in-use within the optician industry. The case study supports SDL's fourth axiom by illustrating that value-in-use is determined exclusively by the customer's phenomenological evaluation.

7.3.1.5 Axiom 5: Value Co-Creation is Coordinated

The co-creation of value-in-use is facilitated by institutional arrangements and norms (Vargo and Lusch, 2016, p. 7). In the context of this research, the fifth axiom of SDL can be interpreted as indicating that value-in-use co-creation in the optician industry is characterised by both high customisation and a structured framework of quality standards and institutional arrangements. The provision of visual aids often involves the use of standardised processes and frameworks (e.g. service protocols, customisation options) that guide the co-creation activities.

For example, the "Arbeits- und Qualitätsrichtlinien für Augenoptik und Optometrie" established by the Zentralverband der Augenoptiker und Optometristen provide a detailed framework for professional practice (Zentralverband der Augenoptiker und Optometristen, 2024a). These guidelines set explicit standards for the technical and procedural aspects of optician services, ensuring that whilst customisation is an essential element of meeting customer needs, it is carried out within a controlled and quality assured environment. The Generic Business Process (GBP) reflects the application of these guidelines and demonstrates how these institutional rules are operationalised in practice.

Furthermore, the regulatory framework of the German 'Meisterpflicht' guarantees a basic quality standard by requiring opticians to achieve a certain level of certification before practising (Keller and Baumann, 2015, p. 12). This regulation provides a consistent baseline of professional competence, thereby supporting high-quality, personalised service delivery and providing a stable institutional arrangement that underpins the value co-creation process.

The empirical findings from the data analysis of the 370 opticians in the sample show how these quality standards translate into business performance and perceived quality. The consistently high level of positive ratings and customer feedback across Germany illustrates the effective implementation of professional guidelines and quality practices within the industry as a whole. These findings indicate that the application of the institutional framework effectively supports the co-creation of value-in-use for German opticians'

customers, thereby contributing to the high levels of satisfaction observed in customer reviews.

It can be argued that institutional arrangements ensure a structured and efficient co-creation process, in line with SDL's emphasis on the role of institutions (Vargo and Lusch, 2016, p. 11). The perceived quality, achieved through the quality standards set by the institutional actor, confirms SDL's fifth axiom and shows how structured and regulated environments facilitate successful value co-creation processes within a service ecosystem.

7.3.1.6 Conclusion

This chapter has demonstrated how the empirical findings from the German optician industry provide significant insights into the application and development of the Service-Dominant Logic framework, particularly in the context of hybrid offerings. The study serves to validate a number of foundational premises of SDL, including the emphasis on service as the fundamental basis of exchange, the co-creative nature of value-in-use, and the importance of relational dynamics in service ecosystems. The findings demonstrate that hybrid offerings, such as visual aids, exemplify the principles of SDL by integrating both tangible and intangible elements through direct customer interaction and collaboration. Furthermore, this integration demonstrates how the co-creation of value is achieved when customers actively engage in the process, contributing their resources and feedback to achieve optimal service outcomes.

However, while SDL provides a robust theoretical foundation for understanding value co-creation, its abstract nature poses an ongoing challenge for researchers when fully applied to the practical complexities observed in regulated service ecosystems.

7.3.2 Hybrid Offerings and Sphere Model/IQF

This section discusses hybrid offerings by revisiting the two core frameworks of the consolidated quality framework from chapter 3, the Sphere Model and the IQF. The discussion will build upon the findings from the empirical research to explore how these models can provide a structured approach to understanding the co-creation processes of hybrid offerings. By integrating production,

experience, and evaluation processes, the Sphere Model and IQF offer a comprehensive perspective on how hybrid offerings can effectively deliver value-in-use. In addition to findings from the data analysis, recent studies in the field of ophthalmic optics are presented to place the findings of this study in the broader context of current research.

7.3.2.1 Provider Sphere and IQF

For hybrid offerings, the Provider Sphere is defined as encompassing all activities related to the development and delivery of both tangible and intangible resources through the service provider. Standardised procedures ensure that the outcome of the process meets the specific requirements of each customer, thereby promoting a higher level of perceived quality during the IQF Quality Experience Process and consequently higher customer satisfaction as an outcome of the IQF Quality Evaluation Process. In practice, the manufacturing process of visual aids requires a high degree of precision and attention to detail, as any deviation from the desired specifications could result in the destruction of value-in-use, leading to dissatisfaction (Moodley *et al.*, 2011, p. 172). Each component, from the lens material to the frame design, must be crafted with precision in order to ensure optimal performance and aesthetic appeal (Moodley *et al.*, 2011, p. 169). In practice, providers frequently utilise sophisticated technologies, including computer-aided design (CAD), computer-aided manufacturing (CAM) or even 3-D printing technology, in order to attain the desired specifications (Ayyildiz, 2018, p. 747; Montalto *et al.*, 2020, p. 98). However, the data analysis indicates that these production processes, are generally not visible to customers as they fall outside the scope of the Joint Sphere. As a result, technical matters and production in general are not frequently mentioned in customer feedback.

The Integrated Quality Framework (IQF) defines quality production as a systematic process of creating and managing both tangible and intangible quality attributes, leading to the quality state of 'Produced Attribute Quality' (Golder *et al.*, 2012, p. 7). In light of the collaborative nature of hybrid offerings, it is of the utmost importance to adopt a systematic approach in order to guarantee consistency and reliability not by chance but continuous. The role of the provider in the design, delivery, maintenance, and enhancement of tangible quality attributes is directly correlated with the emphasis placed on feedback-

supported quality control by the IQF. As illustrated in the analysis of the 'Usage' category coding, despite their involvement in the co-production process, customers perceive the responsibility for ensuring that all co-produced specifications comply with the necessary standards for functionality and aesthetics to reside with the service provider. This encompasses the selection of suitable tangible resources and the utilisation of sophisticated design methodologies to develop visual aids that are both durable and aesthetically pleasing.

It is therefore essential to maintain quality standards throughout the co-production process, which requires careful monitoring. This requires the periodic review and assessment of interim process results to determine their compliance with the prescribed technical specifications and customer expectations. In particular, the quality attributes of associated intangible resources, such as the precision of eye examinations and the accuracy of prescription validation, must also meet exacting standards (Carpena-Torres *et al.*, 2024, p. 9).

From a more strategic perspective, the pursuit of quality improvement is vital for enhancing the quality attributes delivered and the resulting value-in-use. It is therefore incumbent upon service providers to pursue continuous improvement of their processes and outcomes in order to adapt to market developments and changing customer expectations, as well as to improve value-in-use. This may involve gathering customer feedback, analysing measured data and implementing changes to improve quality and efficiency (Bernstein *et al.*, 2024, p. 1). From the service provider's perspective, it is essential to engage with customers at all stages of the GBP, from initial consultation to post-purchase support, to ensure that needs and expectations are consistently met. As the 21.63% coding of the 'Recommendation' category indicates, at least one in five customers is willing to make a direct recommendation to the optician.

In addition to standardised procedures, technological advances could also play an important role in improving quality assurance. The implementation of technological solutions such as digital imaging, automated inspection systems, artificial intelligence and advanced materials could significantly enhance the quality of both tangible and intangible attributes associated with opticians' hybrid offerings (Freiberg *et al.*, 2023, 2). For example, modern measurement

technology allows opticians to detect signs of eye disease, enabling referral to an ophthalmologist and early diagnosis (Freiberg *et al.*, 2024, p. 81). Furthermore, automated inspection systems facilitate the rapid and precise identification of any defects present in materials or finished products. Such systems guarantee the availability of premium-quality products at a reasonable price (Le *et al.*, 2019, p. 2). The use of advanced materials, such as lightweight and durable polymers, improves the performance and comfort of eyewear. Furthermore, these materials contribute to the product's aesthetic appeal as well as to mass-customisation (Montalto *et al.*, 2020, p. 89). However, at least at the time of data scraping in 2021, there was not as much evidence in the data that sophisticated measurement technology was being perceived by customers on a larger scale.

7.3.2.2 Joint Sphere and IQF

For Hybrid Offerings, the Joint Sphere is where processes of co-production and of value-in-use co-creation meet. As illustrated in the GBP, this includes measuring activities as well as selecting the appropriate frames and lenses based on the customer's style preferences and vision requirements, which necessitate close interaction and the collaboration of the customer (Due *et al.*, 2020, p. 109). From an IQF perspective, co-production in the Joint Sphere can be understood as the real-time realisation of the IQF Quality Experience Process, where the delivered attributes shape the perception of quality already during the IQF Quality (Co-)Production Process, leading to the quality state of 'Experienced Attribute Quality' (Golder *et al.*, 2012, p. 5).

The Joint Sphere also opens up the possibility of an immediate evaluation of perceived quality by the co-producing customer, which leads to the activation of the Quality Evaluation Process and a kind of interim quality state of 'Evaluated Aggregate Quality' (Golder *et al.*, 2012, p. 6). In the case of hybrid offerings, this interim evaluation of perceived quality can be expected to have an impact on the quality evaluation process during the consumption or use phase of an offering. Unfortunately, the analysis of the OCRs does not provide any specific insight into at what point in the GBP customers evaluated their quality experience with the optician. However, based on the service journey described, at least the long reviews allow us to conclude that the entire GBP was experienced.

The 'Adjustment' activity represents a typical component of the overall value-in-use proposition. By ensuring that the visual aid fits the customer comfortably and correctly, providers can significantly enhance the customer experience (Moodley *et al.*, 2011, p. 173). This aspect of service integration demonstrates the provider's commitment to offering a comprehensive solution rather than just a product. As the data analysis shows, German opticians appear to have an exceptional understanding of the quality parameters associated with this process, as evidenced by the lack of negative feedback in this regard.

Depending on the complexity of the co-production process in the Joint Sphere, the perceived quality attributes are subject to one or more dynamic feedback loops between the provider, the customer, and maybe additional stakeholders. This has already been discussed with the second axiom of SDL. In general, interaction is necessary for tailoring a hybrid offering to specific customer needs and thereby enhancing the value-in-use proposition. Each activity during co-production provides an opportunity for customer feedback, which can be used by the optician during the ongoing process to refine and improve his final offering. Research findings show that this can demonstrably enhance the customer experience during the co-productive process of opticians (Mayers *et al.*, 2019, p. 408). If a customer finds that the subjective visual acuity is not yet optimal during a refraction, they can provide feedback to the optician, who can then make direct adjustments to improve the result (Elliott, 2017, p. 115). It can be assumed that especially this iterative process design of optician GBP ensures that their hybrid offerings meet or exceed customer expectations, explaining at least partly the high customer satisfaction found in the study.

Technological advances might also play a role in enhancing the co-production process within the Joint Sphere. For example, in the context of e-health, online-based tools are increasingly being discussed and tested to replace direct interaction between a customer and an optician with purely technical solutions to improve eye health and reduce visual impairment (Rooth *et al.*, 2024, p. 2). Not only does this change the customer experience, but it could also alleviate the potential shortage of eye care professionals in rural areas. However, as such technologies are at a very early stage of development, at least in Germany, there is no evidence in the data that this approach was being used at the time of data collection.

Finally, it can be posited that the co-production process during the Joint Sphere may not only enhance the functional process outcomes but may also influence the emotional perception of quality held by the customer. When customers perceive that their input is valued and that the product has been tailored specifically for them, their satisfaction and perception of product quality may be enhanced (Chi *et al.*, 2013, p. 56). The high number of codings for 'StaffBehaviour', also not investigated in detail, can be seen here as an indication that the emotional experience of direct contact during co-production plays an important role in customer satisfaction.

7.3.2.3 Customer Sphere and IQF

In the Customer Sphere, customers incorporate the hybrid offering into their own processes and contextual frameworks, thereby deriving value-in-use from it which they evaluate, leading to the IQF quality state of 'Evaluated Aggregate Quality' (Golder *et al.*, 2012, p. 6).

In the case of visual aids, customers experience value-in-use from the hybrid offering in terms of enhanced visual acuity and comfort as they use the eyeglasses or lenses in their daily activities (Mazarelo *et al.*, 2024, p. 116). As the research findings indicate, value-in-use is derived not only from the tangible resources of the service, but also from the intangible resources and interactions that shape and enhance the overall experience during co-production, especially the often-mentioned competence of the service provider. In an interesting UK study among optometrist customers, Downie *et al.* (2017) showed that two-thirds of respondents expected their optometrist to ask not only eye-care-related questions, but also to feel comfortable answering more general health questions, such as about smoking habits.

Concerning a durable hybrid offering such as visual aids, it must be considered that the IQF Quality Evaluation Process is at least twofold. During the co-production process, Evaluated Aggregate Quality emerges almost synchronous from the active participation of the Customer in the Joint Sphere. During the ongoing usage of the Hybrid Offering in the Customer Sphere, Evaluated Aggregate Quality is continuously shaped, as the experience of perceived quality attributes is initiated iteratively. This makes the perception of quality

attributes a dynamic phenomenon, as it is co-created by each interaction between the customer and the hybrid offering, often on a daily basis.

In addition, it should be recognised that the complexity of the IQF Quality Evaluation Process may increase as a customer may re-access the Joint Sphere after entering the Usage Process. As described by the GBP for the Co-Production Process 2, even after a provider has delivered the hybrid offering, customers may demand significant after-sales services. Although these were not analysed in detail, several 'Price' coded OCRs show that customers are happy to receive a small repair as a goodwill gesture. In the case of visual aids, such services ensure that the hybrid offer remains aligned with the customer's evolving needs, adapting to changes in vision or wear and tear (Sinclair *et al.*, 2006, p. 29). Regular adjustments during the early stage of usage ensure that the visual aid fits comfortably. The industry's high level of goodwill may be another driver for the high level of customer satisfaction, as it might offer customers peace of mind in case of more expensive buying decisions such as visual aids. For example, the large German optician chain Fielmann, whose stores were not included in this study, offers an unconditional satisfaction guarantee. This guarantee assures customers that they may return their glasses at any time for a full refund if they are not satisfied (Fielmann AG & Co. Service KG, 2024). According to the IQF, if the perceived attribute quality during the after-sales process meets customer expectations or even has a positive quality disconfirmation, perceived quality and value-in-use can change and increase.

From a longer-term perspective, asynchronous customer feedback mechanisms such as the post-purchase surveys or Google Maps reviews studied here can provide the supplier with valuable insights into customer preferences and areas for attribute and process improvement. Suppliers can use such information to improve the design of their business processes to ensure that they remain aligned with evolving customer needs and expectations, e.g. an environmentally friendly production process for optical lenses (Liu *et al.*, 2022, p. 848).

According to IQF, such a feedback loop would take place between the results of the quality evaluation process (evaluated aggregate quality and customer satisfaction) and the attribute design sub-process in the quality production process.

7.3.2.4 Conclusion

The application of both the Sphere Model and the IQF to the empirical findings from the German optician industry offers significant insights into the co-creation of value-in-use through hybrid offerings. The Sphere Model elucidates the dynamic and iterative interactions between customers and providers, emphasising the significance of co-production within the Joint Sphere. In this shared space, the ability to provide real-time feedback, adapt to changing circumstances and personalise offerings is of paramount importance. This is particularly pertinent in the context of hybrid offerings such as visual aids, where the intangible service elements, including consultations and fittings, are as crucial as the tangible products themselves, such as spectacles.

The IQF provides a complementary framework to the Sphere Model. The Quality Production Process emphasises the responsibility of the provider to maintain high standards in the creation of the final offering, ensuring that the technical precision and customisation meet customer expectations. This is corroborated by the empirical findings, which underscore the necessity for excellence in both craftsmanship and competence. The Quality Experience Process emphasises the significance of interactive and case-specific service delivery, whereby customer involvement in consultations and fittings is of paramount importance in influencing the quality of their experience, as evidenced by the data analysis. This is in accordance with the feedback mechanisms within the Joint Sphere, which serves to reinforce the position that customers are co-creators of value-in-use. The Quality Evaluation Process illustrates how customers' assessments evolve over time, shaped by co-production and their ongoing use of the hybrid offering. As will be discussed in a subsequent chapter, the two frameworks serve not only as operational guides but also as an analytical framework that reveals potential risks of value co-destruction when misalignments occur between customer expectations and service delivery.

The empirical findings demonstrate that the Sphere Model and IQF are not only applicable to real-world settings but also provide valuable insights into the process of hybrid offering provision. The effective co-creation of value-in-use in the optician industry is contingent upon the management of resource-integrating interactions. Understanding this framework provides practitioners with valuable

strategies for improving customer satisfaction and maintaining competitive advantage. However, it also highlights the challenges of managing diverse customer expectations and the complexity of hybrid offerings. This requires a proactive approach to anticipate potential misalignments and address the risks of value co-destruction.

From a researcher's perspective, it has also become clear that the application of theoretical models poses significant challenges when they are viewed not only as general interpretative schemes, but also as concrete descriptive models of real-world processes. This is discussed in the following chapter.

7.3.3 Consolidated Quality Framework

In Chapter 3.4 a consolidated quality framework (CQF) was presented to facilitate a comprehensive understanding of the processes by which value-in-use is co-created and co-destructed. At the end of the review of theories from the literature review, this section aims to provide a critical discussion of the advantages, disadvantages and general limitations of applying the CQF for providers of hybrid offerings as well as for researchers. However, it must be stressed that the aim is by no means to validate all the assumptions and premises of IQF/CQF. As explained in section 3.4, at least the empirical part of this research project only considers parts of the overall model.

7.3.3.1 Advantages of the CQF

The CQF's integration of distinct but interrelated processes of quality and its linkage to perceived quality aligns with SDL's view that value-in-use is co-created through the integration of resources and interactions between multiple actors (Vargo and Lusch, 2008, p. 3). For providers, the holistic approach can facilitate the development of a comprehensive quality management strategy that encompasses all aspects of the value-in-use co-creation process. Furthermore, it allows organisations to consider all touchpoints and interactions that contribute to customer value-in-use, thus leading to a more comprehensive and effective process design (Payne *et al.*, 2008, p. 86).

The CQF acknowledges the significance of customer expectations and perceptions in understanding the concept of 'quality'. This focus is consistent with SDL's premise that value-in-use is determined by the beneficiary and that

standards for quality must be evaluated from the customer's perspective (Vargo and Lusch, 2004, p. 12). From a researcher as well as a provider perspective it is therefore crucial to gain insights in the customer perception process of delivered quality attributes, as it directly influences quality disconfirmation and customer satisfaction (Parasuraman *et al.*, 1988, p. 16).

Also, the structure of the IQF reflects continuous feedback and adaptive management, which is essential in for the co-creation process (Vargo *et al.*, 2008, p. 149). The incorporation of real-time processes during the Joint Sphere and time-delayed feedback mechanisms from the Customer to the Provider Sphere enables the consideration of evolving customer needs and expectations, thereby fostering a dynamic value-in-use co-creation environment. In the context of today's fast-paced market environments, characterised by accelerated innovation as well as rapid changes in customer needs and preferences (Teece *et al.*, 2016, p. 16), linking process design with learning opportunities and adaptability can enhance value-in-use co-creation both on the customer and the provider side (Mitra and Golder, 2006, p. 240).

Another strength is that the CQF emphasizes coordination across various processes, ensuring that quality management is not compartmentalised but integrated throughout the phases of the GBP. This can engender a company-internal culture of shared responsibility for quality, including the customer during co-production processes (Bendapudi and Leone, 2003, p. 22). Cross-functional integration enhances communication and collaboration which can lead to more comprehensive and cohesive quality management practices (Turkulainen and Ketokivi, 2012, p. 460).

Finally, the implementation of feedback loops within the CQF framework facilitates the continuous improvement of processes, in alignment with SDL's emphasis on ongoing value-in-use co-creation (Vargo and Lusch, 2008, p. 8). This focus enables organisations to remain competitive by constantly enhancing their processes based on customer feedback and market changes (Lusch *et al.*, 2007, p. 15). As research shows, continuous improvement is essential for increasing process performance, maintaining high standards of quality and therefore ensuring and adding value (Snee, 2010, p. 13).

7.3.3.2 Drawbacks of the CQF

One of the principal shortcomings of the CQF is its intrinsic complexity, which can present significant challenges in practical implementation as well as in business research. The framework necessitates the collection, analysis, and continuous monitoring of extensive data from several sources, which is highly resource-intensive for organisations and research as well (Golder *et al.*, 2023, p. 322). Furthermore, high complexity can lead to considerable resource allocation issues, making it challenging for smaller organisations to effectively understand and apply the formalized CQF on their often more informal business process design (Terziovski, 2010, 893).

Although the CQF is comprehensive in nature, it may not fully address potential misalignments between service providers and customers during the Quality Experience Process, as this is a complex and contextual interplay of different actors, quality attributes and perception filters (McColl-Kennedy *et al.*, 2015, p. 268). Furthermore, as the case study has shown and as the SDL emphasises, there is a high impact on quality perception from the relational processes and the impact of continuous social interaction between providers and beneficiaries (Grönroos and Ravald, 2011, p. 10), which is not a core element of the CQF. Although the CQF incorporates customer feedback mechanisms, it may not adequately emphasise the relational dynamics that are pivotal for effective value-in-use co-creation (Ballantyne and Varey, 2006, p. 346), especially during joint co-production. This is particularly pertinent when the customers perception of quality is not focused on more or less objective Universal Attributes, but on subjective Idiosyncratic Attributes, e.g. the quality of the social interaction between the provider and the customer (Golder *et al.*, 2012, p. 8). But at least for the data analysed here, it can be said that 'Relationship' plays a central role in customers' perception of quality. Additionally, the quality perception might be influenced and filtered by emotions, as shown often deriving from staff behaviour, which makes it even more difficult to analyse and measure (Mattila and Enz, 2002, p. 273). With this in mind, emphasis of the IQF on data collection and analysis for the measurement of delivered quality attributes and their perception may result in an overemphasis on quantitative metrics, potentially leading to the neglect of qualitative aspects of customer experience and satisfaction. While quantitative data is undoubtedly important, it may not

fully capture the nuances of customer experiences as a “*multidimensional construct focusing on a customer’s cognitive, emotional, behavioral, sensorial, and social responses to a firm’s offerings during the customer’s entire purchase journey*” (Lemon and Verhoef, 2016, p. 71).

It is also noteworthy that the quality attribute ‘improvement of vision’ provides an excellent illustration of the fact that, contrary to the assumption of Golder *et al.* (2012, p. 8), there are indeed quality attributes that are homogeneous from the customer perspective and are also ambiguous in that they cannot be decomposed and can only be measured by the human senses (see chapter 3.3.2).

7.3.3.3 The Problem of Measuring ‘Ideal’ Expectations

In the opinion of the researcher, a central point of criticism regarding the original IQF is of a more conceptual nature. The authors have devised a sophisticated framework that is predicated on a multitude of underlying assumptions (Golder *et al.*, 2012, p. 4). However, they provide only a limited range of sources and empirical evidence to support the validity of their assumptions (Golder *et al.*, 2012, p. 18). These include, among others, the complex interplay of the three types of expectations, including the uncertainty factor, and their specific effects on some sub-processes of the model, e.g. specifically of ‘ideal’ expectations on experienced attribute quality (Golder *et al.*, 2012, p. 10). Furthermore, many of the articles cited in the work are themselves rather theoretical-oriented works. Empirical sources that prove the premises, mechanisms and dynamics of the model are almost completely absent.

Golder *et al.* themselves address this issue by making a wide range of suggestions for further empirical research (Golder *et al.*, 2012, pp. 19–20). But it is noteworthy that the authors’ recommendations for further research tend to focus only on specific elements of the framework, which questions the scope of insights gained into the interrelated processes and their dynamics. This issue is briefly discussed here using the example of ‘ideal’ expectations.

The IQF provides an explanatory framework for classifying the interplay between three types of customer-internal expectation (Golder *et al.*, 2012, p. 10). However, despite their central role in the framework, due to the inherent complexity of human mental processes, they cannot be studied in their complex

design with a justifiable use of resources (or at all). The extensive empirical study presented in this thesis took several months just to collect and prepare the data. Despite an extended period of analysis involving 24,321 data sets, the researcher was unable to identify a viable approach to elucidate the putative relationship between 'will', 'should' and 'ideal' expectations to a degree that would allow the transition from speculative hypothesis to grounded theory. In particular, the integration of 'ideal' expectations into the quality evaluation process of the customer, as proposed by Golder et al., presents a challenge rather than a solution to the problem of measuring objective quality.

In many cases, objective quality is assessed by experts (Lichtenstein and Burton, 1989, p. 429; Mitra and Golder, 2006, p. 231). This is often done through extensive product testing and the use of rating scales and rankings (Golder *et al.*, 2012, p. 18). However, it is important to note that these more technical judgements may not necessarily align with the 'ideal' expectations of customers. Furthermore, in business practice there may also be uncertainty about the 'ideal' expectations of producer (Zeithaml, 1988, p. 4). It is therefore questionable whether absolute objectivity about 'ideal' product quality exists at any given time (Zeithaml, 1988, p. 5).

The dynamic state of quality perception is not a new concept in quality management. Indeed, it is widely recognised that the actual perception of quality changes over time. In their classic and often cited model of product development and customer satisfaction, Kano *et al.* (1984, pp. 46–47) state that the quality perception of a product attribute shifts from 'attractive' to 'basic' over time, driven by evolving customer expectations and the performance of competing products. As shown by the longitudinal analyses of the frequency of 'time' coding, the 'prevailing quality expectations' (Kano *et al.*, 1984, p. 40) of German optician customers might shift over a longer period. Understanding perceived quality attributes and their evaluation by customers in the context of their individual needs and expectations (Kano *et al.*, 1984, p. 39) is consistent with Axiom 4 of the SDL.

Therefore, the quality of an hybrid offering and the value-in-use it delivers might be more accurately described as an ongoing dynamic negotiation between providers and their customers than as a static label (Zeithaml, 1988, p. 18). In the context of IQF, it is challenging to objectively determine the state of

'Evaluated Aggregate Quality' in an 'ideal'-grounded objective manner, given the ambiguity surrounding the concept of 'ideal' expectations and the inherent subjectivity in defining short-term outcomes. As a result, the postulated benefits to businesses of attempting to measure it (Golder *et al.*, 2012, p. 5) may be difficult to achieve. For this reason, and to reduce complexity, it has been suggested that the adapted CQF should not differentiate between the three types of customer expectations.

7.3.3.4 Conclusion

The proposal of the CQF was an attempt to counter the challenges of the IQF framework to some extent, by establishing a link between the IQF and the SDL, as well as the Sphere Model. The aim was to provide at least partial support for the assumptions made by referring to other relevant frameworks, without neglecting the relevance and applicability of the IQF for further research. As the discussion shows, references to individual components of the model can be made in a meaningful way. However, even within the framework of this extensive research project, it has not been possible to demonstrate the assumed interactions of the model, even in a basic way, using empirical data. Nevertheless, the work carried out here is seen as a valuable contribution to the discussion and a means of linking the theoretical models of marketing and quality management with practice-oriented research and operational business practice.

It must be acknowledged that the mismatch between theoretical models and empirical research is not a unique challenge associated with the IQF. There is a continued call for mid-range theories that are more accessible to empirical research (Vargo and Lusch, 2017, p. 51). Personally, it makes the researcher smile at the end of a long research journey when even Golder *et al.* in one of their recent publications join the call for an inductive 'empirics first' stance rather than deductive theorising, an approach suggested by grounded theory from the outset (Golder *et al.*, 2023, p. 320).

Notwithstanding these constraints, it is imperative to understand and operationalise dynamic quality management practices to address the evolving nature of customer expectations and interactions. It is necessary to engage in continuous monitoring and adaptive management to maintain the alignment of

business processes with the customer's need to enhance their well-being (Vargo *et al.*, 2008, p. 149). The development of customer-centred metrics that capture the performance of quality attributes and their perception could facilitate proactive adjustments to service delivery, ensuring that the co-creation process remains effective during execution and allowing improvements to be made to the process design afterwards. In addition, systematic quality management enables the mitigation of factors that contribute to value co-destruction. This includes identifying potential mismatched expectations, resource integration issues and communication breakdowns.

7.4 Revisiting the Business Practice

In this discussion, the interrelationships and processes in the German optical industry have already been comprehensively reflected upon. The question arises as to which aspects have not yet been addressed. This is particularly true in the case of a research project that is confronted with an industry that is somewhat thankless in the sense that it has extremely satisfied customers. From the researcher's point of view, the analysis of the OCR data should have 'better' revealed a significant quality problem, which could then have been discussed and optimised using quality management tools. However, as only 96.44% of the OCRs were positive and only 2.96% negative, only indications and traces remain. Nevertheless, the topic of value-in-use deconstruction should at least be discussed in terms of a potential issue for the German optician industry.

As outlined in Chapter 3.2.2, not only can hybrid offerings provide significant value-in-use, they also present unique opportunities for co-destruction of value-in-use. One cause is that the dual nature of hybrid offerings as a composition of tangible and intangible resources during both production and co-production introduces an additional layer of complexity to process design and value-in-use provision. As a result, service providers are challenged to effectively integrate and manage both standardised and customised service processes (Kohtamäki *et al.*, 2020, p. 13). This often requires the implementation of different strategies and the use of specialised expertise, increasingly combined with the application of digital technologies, e.g. in the context of digital 'servitisation' processes. (Bustinza *et al.*, 2018, p. 112). The management of this complexity within the

Provider and the Joint Sphere requires the coordination of the various processes responsible for the tangible and intangible resources of a service to be as seamless as possible (Kohtamäki *et al.*, 2020, p. 2). As shown, the optical industry provides a good case study for examining the relationship between standardisation and customisation. The challenge is to maintain high levels of service quality and customer satisfaction while managing operations and costs efficiently (Jørgensen *et al.*, 2024, p. 2). In the context of the optical industry, standardisation may include, for example, the implementation of uniform eye examination procedures by qualified and trained personnel (Carpena-Torres *et al.*, 2024, p. 1). These standardised practices ensure that every customer receives a basic level of quality and service, regardless of which optician serves them. In contrast, customisation can involve personalised eye care, bespoke lenses and frames, and tailored customer interactions (Fylan *et al.*, 2005, p. 23). Customisation in the optical industry can lead to increased customer satisfaction by addressing specific needs and preferences, providing a more personalised and valued experience (Fylan *et al.*, 2005, p. 24). From an IQF perspective, the challenge of balancing standardisation and customisation in the optical industry is to implement consistent and quality-controlled core production processes in the Customer Sphere, while allowing flexibility in customer-facing interactions during co-production in the Joint Sphere. This approach ensures operational efficiency and cost control without compromising the personalised service that increases value-in-use.

But the intricate relationship between standardisation and customisation in hybrid offerings gives rise to an inherent risk of co-destruction of value-in-use (Storbacka, 2011, p. 703). This can happen, for example, if a provider's resources, skills and commitment are not aligned with the pursuit service strategy (Bustinza *et al.*, 2018, p. 116). Moreover, the mere effect of increased customer engagement during the co-production process may also result in co-destruction of value-in-use: the value-in-use lifecycle of many durable hybrid offerings frequently necessitates ongoing or at least regularly repeated interaction with customers in the Joint Sphere. For example, research shows that older customers tend to have long-term, trusting relationships with their eye care providers (Shickle and Griffin, 2014, p. 42). But co-destruction of value-in-use can occur when trust is eroded by negative experiences, which brings older

customers to the decision not to visit their optician even when this leads to reduced value-in-use for their well-being (Keeling *et al.*, 2021, p. 253).

Furthermore, excessive customisation may result in increased costs and complexity, while excessive standardisation may not effectively consider specific customer needs (Storbacka, 2011, pp. 709–710). In this context, the Joint Sphere is again of particular relevance, as it represents the domain in which the potential for successful value-in-use delivery by service customisation is co-created through direct communication and interaction between the actors. Rising awareness and training of the employees can enhance their ability to reduce the risk of co-destruction (Echeverri and Skålén, 2011, p. 365).

Additionally, co-destruction of value-in-use may result from an elevated risk of discrepancies between delivered and perceived quality attributes and customer expectations in the sense of the IQF, which can be attributed to emotional filters that influence the quality experience and evaluation process. To illustrate, research by Shickle and Griffin (2014, p. 41) shows that older customers are deterred from visiting opticians because they are concerned that they will not be able to successfully complete the complex and sometimes opaque optical assessments. Therefore, avoiding the co-destruction of value-in-use requires the implementation of customer-centric processes as well as the active management of the customer experience (Becker and Jaakkola, 2020, p. 643).

The implementation of robust feedback mechanisms enables continuous monitoring of the co-creation process and early detection of potential problems that could lead to co-destruction. In the context of visual aids, instances of co-destruction may arise when there is a lack of clear communication during consultation. In the event that a customer is not adequately informed about the limitations of certain lens types and selects an inappropriate option for the desired usage, the resulting discomfort and dissatisfaction can lead to the co-destruction of value-in-use (Plé and Chumpitaz Cáceres, 2010, p. 435; Laamanen and Skålén, 2015, p. 395). To prevent this, standardised feedback procedures enable the optician to make necessary adjustments during co-production and address customer concerns promptly (Gremyr *et al.*, 2022, p. 233).

In conclusion, designing services that are flexible and adaptable to customers' individual needs and contexts help to prevent co-destruction. This requires customer centricity and understanding the specific needs of different customer segments and tailoring services accordingly (Chowdhury *et al.*, 2016, p. 106).

7.5 Revisiting the Research Methodology

7.5.1 Methodological Challenges

Although the analysis of OCRs has revealed significant insights, their utilisation in the investigation of co-production processes is not without its own set of challenges. One challenge is the variability in the quality and reliability of the reviews, which may be influenced by a number of factors such as information accuracy, information completeness or information quantity (Filiari and McLeay, 2014, p. 47). As explained in chapter 4.4 and handled during the data preprocessing, it is not the case that all OCRs provide detailed or accurate accounts of customer experiences. Indeed, some contain no or very short textual information, others may be biased or influenced by factors unrelated to the service quality, such as marketing efforts of an optician (Pooja and Upadhyaya, 2024, p. 651). As applied during the coding procedures, CGT's meticulous methodology for data coding and analysis can assist in addressing these challenges by concentrating on patterns and commonalities across a multitude of reviews (Charmaz, 2017b, 2).

A further point for consideration is that of the representativeness of the reviews. It is important to note that not all customers leave OCRs, and those who do may not be representative of the broader customer base, as customers tend to write reviews only when their satisfaction is extremely high or low (Hu *et al.*, 2009, p. 145). Therefore, it was essential to acknowledge and address this potential bias in the analysis and interpretation of the data (Schoenmueller *et al.*, 2020, p. 874), which was done in chapter 4.4 concerning the sampling method.

One of the most significant challenges in this research was to deal with the vast quantity of data present in the large OCR dataset. In its pure form, CGT necessitates a comprehensive and iterative engagement with documented data (Charmaz, 2014, p. 53). The considerable volume of scraped OCRs introduced complexities that had an impact on the efficacy and efficiency of the analysis.

As it has been discussed in chapter 4.3, 4.4 and 4.5 and applied in chapter 5, the researcher had to invest a lot of effort to develop a research strategy and methodological design which allowed to deal with the large data set while staying grounded in the context of the field of research and within the approach of CGT.

The following discussion reflects on some of the data-related challenges of the chosen research method:

Data saturation and overload: The CGT approach necessitates that researchers engage with the data until no new themes or insights emerge, thereby achieving data saturation (Charmaz, 2014, p. 213). However, the continuous influx of new reviews may prevent researchers from reaching saturation, as new and relevant data may continually arise (Saunders *et al.*, 2018, p. 1901). This can result in data overload, which presents a significant challenge to the comprehensive processing and management of the information (Fusch and Ness, 2015, p. 1409). The approach taken in this research project was to select a large dataset from the period going back as far as possible. The challenge in pre-processing and developing the coding categories was therefore to reduce the number of OCRs and to condense their content. From the CGT's point of view concerning theoretical sampling (Charmaz, 2014, p. 205), it would certainly be interesting to compare the research findings with data from other sources, such as direct surveys of opticians or their customers, in order to gain deeper insights into the social processes involved in co-production. However, this must be left to further research.

Time and resource intensity: The meticulous nature of CGT, which involves detailed coding and constant comparison, requires a significant investment of time (Saldaña, 2021, p. 20). The considerable quantity of OCRs intensifies this necessity, rendering it challenging for researchers to analyse the data in a comprehensive manner within the confines of practical time and resource limitations (Devonald and Jones, 2023, p. 2). This is particularly problematic for smaller research teams or individual researchers with limited resources (Devonald and Jones, 2023, p. 11). From a researcher's point of view, there is nothing to sugarcoat here. Despite the software tools used, the chosen methodology required many hundreds of hours of manual research work, e.g. for data scraping, data preparation, pre-processing, development, and

implementation of the coding method, as well as the analyses and their visualisation. In the absence of any funding for this research, such a project can only be carried out by the sheer enthusiasm of a part-time PhD student, who has nevertheless more than once reached the limits of his resources.

Complexity in identifying core categories: The process of identifying core categories or themes is a central aspect of CGT (Charmaz, 2014, p. 188). But the diversity and unstructured nature of OCRs as well as the occurrence of slang and colloquial language render this task increasingly complex (Sundaram *et al.*, 2023, p. 132468). The extensive range of topics, tones, and details present in the reviews can make it challenging to distil this information into coherent core categories, thereby hindering the ability to maintain focus and clarity in the analysis (Charmaz, 2014, p. 190). Furthermore, the presence of irrelevant information, such as off-topic comments or promotional content, has the potential to distort the auto-coding procedure. The distinction between genuine, useful feedback and noise represents a significant challenge, necessitating careful data pre-processing (Barik and Misra, 2024, p. 9). In order to solve this problem in a way that was comprehensible to external recipients of this research, word frequencies were first chosen as a point of orientation for the coding categories. However, in contrast to a fully automated text mining process, CGT was then used in many iterative rounds to work out categories and themes that made sense from the researcher's point of view. By no means all of them proved to be useful for further interpretation and discussion in the subsequent data analysis. Nevertheless, at some of the categories provided interesting insights into customers' perceptions of quality.

Potential for bias and inconsistencies: Variability in the quality and content of reviews introduces additional complexity, which can lead to bias and inconsistencies in the data (Shan *et al.*, 2021, p. 10). The potential issue of inconsistent coding was addressed through the initial quantitative approach, which focused on word frequency. It should be noted, however, that the formation of the categories and the assignment of the terms to them, is ultimately based on the researcher's linguistic competence and knowledge of the subject matter. In light of the aforementioned considerations, it is inevitable that other researchers may form alternative categories or modify their composition. This is an inherent limitation of qualitative research. However, the

researcher has endeavoured to provide a comprehensive and transparent account of the coding structures, ensuring the integrity and reproducibility of the process.

Sentiment and Context: The accurate capture of the sentiment behind OCRs and the comprehension of the context in which comments are made necessitates the utilisation of sophisticated analytical methods (see Appendix D). Sentiment is often nuanced, requiring more than just positive or negative classifications to accurately reflect customer feelings and attitudes (Kim, 2021, p. 164). The analysis of sentiment scores in conjunction with star ratings revealed that there was no consistent correlation between the two sets of data. In several instances, the sentiment analysis of the OCRs yielded a divergent interpretation of the customer evaluation. This indicates that although star ratings offer an overall assessment, they may not fully encompass the intricacies of customer perceptions. However, despite the appeal of including AI-generated sentiment analyses in the discussion, this study refrained from doing so, as the focus was on the topics themselves rather than their actual evaluation. Nevertheless, given the rapid developments in this field of research, it can be assumed that future research will utilise the advantages of AI analysis to a much greater extent. Consequently, the following subchapter will adopt a future-oriented perspective in examining alternative research approaches.

7.5.2 Advancements and Improvements

This section builds upon the methodological challenges previously outlined and puts forward six strategies with the aim of overcoming at least some of the obstacles while presenting potential avenues for advancing future online customer research. The strategies have been designed to address the issues encountered when working with online customer reviews, particularly in relation to managing data volume, ensuring analytical consistency and balancing the depth of insight with time and resource constraints.

Natural language processing (NLP) and machine learning: One of the primary challenges identified is the variability in the quality and reliability of OCRs, which often results in incomplete or biased data. The application of NLP techniques, including sentiment analysis and topic modelling, can facilitate the effective management and analysis of substantial quantities of unstructured text

(Minaee *et al.*, 2022, p. 27). Such tools are capable of identifying key themes, sentiments, and trends, thereby facilitating the initial stages of data analysis (Minaee *et al.*, 2022, p. 3). In this manner, NLP ensures greater consistency in the treatment of OCRs, enhancing the reliability of the data.

Automated text analysis tools: As highlighted, time and resource constraints present significant challenges when coding large datasets manually. Automated text analysis tools are capable of rapidly processing large volumes of unstructured data, detecting key themes and recurring patterns with minimal manual intervention. Tools such as TextBlob, VADER, and platforms including IBM Watson, ChatGPT 4o and Google Cloud's Natural Language API facilitate the automation of sentiment analysis and key phrase extraction (Hoti and Ajdari, 2023, p. 21). These tools facilitate greater efficiency, enabling researchers to devote their attention to more intricate analytical pursuits (Kowsari *et al.*, 2019, pp. 48–49).

Data cleaning and preprocessing: The need for thorough data cleaning and preprocessing is critical when working with large OCR datasets. In the absence of suitable preprocessing, unstructured data can impede the effectiveness of subsequent coding efforts, overwhelming the analysis (Duong and Nguyen-Thi, 2021, p. 4). It is therefore imperative that effective data preprocessing techniques are implemented in order to remove noise and irrelevant data, as well as to standardise textual content. This process comprises the elimination of duplicates, the standardisation of spelling and grammatical variations, and the removal of non-informative content (Woo *et al.*, 2020, p. 2).

Use of metadata: The role of metadata in enhancing the depth and accuracy of OCR analysis is of crucial importance, as it provides additional contextual information. As illustrated by the 'Corona' Coding, temporal data enables the identification of trends over time, whereas geographic metadata such as the location of the optician store can reveal patterns specific to particular customer segments. Moreover, the examination of metadata, encompassing review timestamps, reviewer demographics, and review length, can offer supplementary contextual data that may be employed to evaluate the credibility of reviews (Akbarabadi and Hosseini, 2020, p. 275). For example, purchases that have been verified or contributions from frequent contributors may be regarded as more credible (Ghose and Ipeirotis, 2011, p. 1501).

Sentiment and contextual analysis: The analysis of sentiment, particularly when augmented with deep learning models, allows for the detection of subtle emotional cues that may not be immediately apparent through manual coding (Sharma *et al.*, 2024a, p. 30). Contextual analysis further enhances this by considering the broader context in which the review was written, thereby enabling a more comprehensive interpretation of the customer's feedback (Nguyen and Tull, 2022, p. 2). To illustrate, a negative comment about pricing may be interpreted differently when considered alongside positive feedback about service quality. By integrating both sentiment and contextual analysis, researchers can gain a more nuanced understanding of the themes present within the OCRs, addressing the challenge of unstructured data complexity.

Augmented human-AI approach: The time and complexity challenges outlined in the preceding chapter can be addressed by combining AI with human oversight. This augmented approach leverages the efficiency of AI for large-scale analysis while ensuring that human analysts provide the necessary context and interpretive depth (Hitch, 2024, p. 595). Although AI is capable of rapidly processing large datasets and identifying key themes and patterns, human analysts are indispensable for interpreting the nuances and subtleties that AI might overlook (Hitch, 2024, p. 604). This collaborative approach ensures that the analysis remains both comprehensive and contextually relevant, enabling deeper insights into customer experiences while maintaining the efficiency needed to handle large datasets.

The incorporation of these strategies, either partially or in their entirety, into the research process will equip future researchers with the ability to effectively navigate the challenges associated with large datasets of OCRs. When combined with the adaptation of CGT methods, this extended approach facilitates the extraction of more detailed insights, contributing to a deeper understanding of consumer behaviour and satisfaction. Ultimately, this knowledge can inform service development, process design improvements and strategic business decisions.

7.5.3 A final Note on Symbolic Interactionism

The incorporation of Symbolic Interactionism into the methodology of this study, as detailed in chapter 4.2.2, has furnished a social-philosophical basis for

comprehending the processes by which customers and providers jointly create and, on occasion, jointly deconstruct value-in-use within the context of hybrid offerings (Hewitt *et al.*, 2022, p. 13; Blumer, 1969). The four central conceptions – Meaningful Objects, Interactional Interpretation, Meaning Processing Processes and Dynamic Complexity (Blumer, 1969, pp. 50–60) – were used to guide the exploration of how meanings are negotiated and reinterpreted through interactions between customers and service providers. It is therefore beneficial to reflect briefly on how the findings of the case study can be situated in relation to the principles of SI.

From the perspective of SI, the analysed OCRs can be considered as artefacts of the meanings that customers derive from their interactions with service providers (Hewitt *et al.*, 2022, p. 3). The tenets of SI posit that meanings are created, negotiated and re-evaluated through interactions (Blumer, 1969, p. 42). Consequently, OCRs reflect the subjective interpretations that customers assign to their social experiences with opticians. These reviews are not merely evaluations of objectively perceived service components; rather, they are the outcome of the social process through which customers interpret and ascribe symbolic meaning to the various elements of the service journey they experienced (Töpfer and Behrmann, 2021, p. 16).

The evaluation of quality attributes such as ‘StaffCompetence’, ‘StaffBehaviour’ and ‘Advice’ is not conducted in isolation. Rather, these attributes are understood through the lens of the customer's interaction with the optician, shaped by prior experiences, social norms and group affiliations (Salvini, 2010, p. 374), as indicated by the ‘Preprocess’ and ‘Customers’ categories. Moreover, the act of composing a review can be elucidated through the lens of SI's concept of meaning processing: By reflecting on their quality perceptions, customers articulate and share the meanings – or, in our notion, ‘value in use’ – they have derived from the symbolic interaction with the optician (Carter and Fuller, 2016, p. 950).

The tangible and intangible elements of the hybrid offering, such as the technical quality of the spectacles and the advice provided, become meaningful objects through the customer's experience in the joint sphere of co-production as well as in the customer sphere of usage (Flint, 2006, p. 355). During these processes, the meaning of perceived quality attributes is continuously

interpreted by customers based on the cues they receive during the interaction with the components of hybrid offerings. The continuous process of meaning-making is of critical importance for the comprehension of both value-in-use co-creation and co-destruction (Flint, 2006, p. 357). As illustrated in the preceding discussion, co-creation and co-destruction are not static processes; rather, they are continuously shaped by interactions between the customer and the service provider (Töpfer and Behrmann, 2021, p. 19). Each interaction introduces new meanings, which may either reinforce or challenge the customer's perception of the quality of the provided hybrid offering (Golder *et al.*, 2012, p. 14).

As the case study shows, value-in-use is not a fixed attribute of a hybrid offering but is continuously constructed and reconstructed, especially through social interaction during the co-productive Joint Sphere. However, this construction is not arbitrary. Standardised procedures on the part of the provider, as well as considerations of wellbeing and improving vision, guide the construction of meaning (Becker and Jaakkola, 2020, p. 644). The research findings indicate that, in terms of their satisfaction, the manner in which this meaning (or value-in-use) was achieved through interactive participation in the GBP appears to have been just as important for customers as the outcome itself.

8. Conclusion and Recommendations

8.1 Summary of Key Findings

8.2 Recommendations for Business Management

8.3 Recommendations for Future Research

8.4 Recommendations for Quality Management

8.5 Limitations of the Study

8.6 Concluding Remarks

The primary aim of this research was to deepen the understanding of hybrid offerings, with a particular focus on the co-creation of value-in-use. This aim was pursued through an empirical case study conducted within the German skilled crafts sector, focusing specifically on the optician industry. The research sought to bridge the gap between theoretical models and practical business processes by examining how value-in-use is co-created through the integration of tangible and intangible components that constitute hybrid offerings.

The first objective was to explore how value-in-use is co-created in hybrid offerings through inherently co-productive business processes and to present this process as a conceptual framework. This required a critical analysis of existing theoretical models and literature on customer value, followed by the integration of co-production processes into established theoretical frameworks such as Service-dominant Logic, the Sphere Model and the Integrated Quality Framework. The outcome was a conceptual model that elucidates the cooperative processes and dynamic interactions between providers and customers that influence both quality perception and the evaluation of value-in-use.

The second objective was to develop a context-sensitive research approach that integrates the principles of Constructivist Grounded Theory with systematic procedures for data collection, enrichment and analysis. This methodology was designed to enable the structured investigation of large-scale online customer review datasets. The study combined CGT with advanced auto-coding techniques to produce a rigorous, iterative analytical process, ensuring both theoretical sensitivity and empirical robustness.

The third objective was to identify and analyse the quality related factors that influence customer satisfaction within hybrid offerings, using customer experiences in the German optician industry as the empirical context. These factors were systematically mapped onto the sub-processes of a Generic Business Process, thereby revealing how tangible and intangible attributes interact across different service stages to co-create – or, in some cases, co-destroy – value-in-use. This process-based perspective provides insights into the business process components that significantly impact customer quality perception and satisfaction.

Building on the findings, the remainder of this chapter evaluates the theoretical, methodological and managerial implications of the research in line with the three objectives. This evaluation begins in section 8.1 with a summary of the key findings, before turning in sections 8.2-8.4 to targeted recommendations for business management, future research and quality management. Section 8.5 reflects on the study's limitations. Finally, section 8.6 presents the concluding remarks. Together, these sections aim to guide both scholarly and practical efforts to enhance the co-creation of value-in-use through more effective management of hybrid offerings and their most influential quality attributes.

8.1 Summary of Key Findings

At its core, this research is about uncovering the mechanisms through which hybrid offerings generate value-in-use – not in abstract theory alone, but as lived and evaluated by customers. By integrating theoretical reasoning, a novel methodological approach and empirical evidence from the German optician industry, the study reveals how value-in-use emerges from the intricate weaving together of tangible products, intangible services, and the co-productive interactions that connect them. The following synthesis distils these findings through the lens of the three research objectives, demonstrating the scope and significance of the study's theoretical, methodological and empirical contributions.

Objective 1 – Theoretical Contribution

The study confirms that hybrid offerings in the optician industry are inseparable combinations of tangible and intangible components whose integration during

co-production is essential for creating value-in-use. Customers consistently perceive visual aids not simply as physical products but as holistic solutions to their vision needs, where the service interaction is as critical as the end product.

The Joint Sphere of co-production emerges as the primary locus of value formation. Interpersonal attributes – such as the quality of advice, professional competence, and positive staff behaviour – consistently outweigh purely technical or product factors in shaping value-in-use. Customers attach high importance to tailored consultation, empathetic engagement and professional expertise, all of which are core to co-productive business processes.

The findings validate and refine Service-dominant Logic by illustrating in detail how customers and providers integrate their respective resources to co-create value-in-use. They also support the Sphere Model's depiction of dynamic interaction across provider, joint and customer spheres, while exposing limitations in the Integrated Quality Framework in fully capturing relational quality aspects. The evidence confirms that quality perception is individual and context-specific, shaped by personal circumstances, prior experiences and social context.

From a conceptual standpoint, the research delivers a framework in which value-in-use emerges from the iterative, relational and context dependent integration of tangible and intangible quality attributes within co-productive processes. This framework explains why process quality and interpersonal engagement often exert a stronger influence on customer satisfaction than product features alone and clarifies how these drivers can also contribute to value co-destruction if misaligned with expectations.

Objective 2 – Methodological Contribution

The research demonstrates the effectiveness of a customised Constructivist Grounded Theory approach for analysing large-scale online customer review datasets in the context of value-in-use co-creation. The methodology successfully integrated iterative, theory driven coding with semi-automated and automated coding tools to manage a large and diverse dataset while preserving theoretical sensitivity and interpretive depth.

The design combined multi-phase coding – from initial open coding to thematic grouping and Generic Business Process mapping – with systematic data enrichment. This allowed the analysis to move between granular service attributes and process level patterns. Longer and more detailed reviews, although a minority, were particularly valuable for revealing the integration of tangible and intangible components and for showing how customers narrate their experiences across multiple stages of the process.

The approach addressed common OCR research challenges – such as bias in review distribution, variability in detail and representativeness – through rigorous preprocessing, careful category development and constant comparison analysis. Integration of Symbolic Interactionism provided an interpretive lens, positioning OCRs as artefacts of meaning making within customer-provider interactions.

Methodologically, the study contributes a scalable and replicable model for qualitative service research using large scale, user generated data. The approach shows that OCRs, when analysed through a CGT lens, can yield insights that are both empirically robust and theoretically rich, while also identifying clear opportunities for future enhancement through AI-driven natural language processing and augmented human-AI workflows.

Objective 3 – Empirical Contribution

The empirical findings from the German optician industry reveal a consistently high level of customer satisfaction across a geographically diverse sample, with little variation between urban and rural contexts. Mapping the findings onto the Generic Business Process shows that the Joint Sphere of co-production is the primary locus of value-in-use co-creation. Interpersonal factors dominate customer evaluations, consistently proving more influential than purely technical or product attributes.

Tangible elements such as craftsmanship, fit and timely delivery contribute positively but are discussed less frequently unless they fail to meet expectations. In the Provider Sphere, these aspects are linked to reliable and precise production processes. In the Customer Sphere, feedback on long-term use is relatively limited, but when negative, it has a strong impact on overall satisfaction.

Price and time are generally regarded as fair and seldom act as major sources of dissatisfaction. Instead, dissatisfaction typically arises from misaligned prescriptions, communication gaps, and occasional coordination failures with external providers. Although the Preprocess phase is mentioned less often, problems at this stage – such as booking issues or unmet promotional promises – can still affect perceptions.

Longer, more detailed reviews tend to address a wider range of factors across multiple GBP stages, offering richer insight into the hybrid nature of the offering and the interplay between tangible outcomes and service experiences. Overall, the findings show that customer satisfaction is driven foremost by the quality of co-productive service interaction, supported by dependable tangible product quality and reliable after-sales processes.

8.2 Recommendations for Business Management

The findings of this research have provided significant insight into the co-creation of value-in-use within the optician industry. As a result, a number of key recommendations for practitioners can be derived. These recommendations are designed to improve service delivery processes, enhance customer satisfaction, and ensure the sustainable success of opticians operating in an increasingly competitive marketplace.

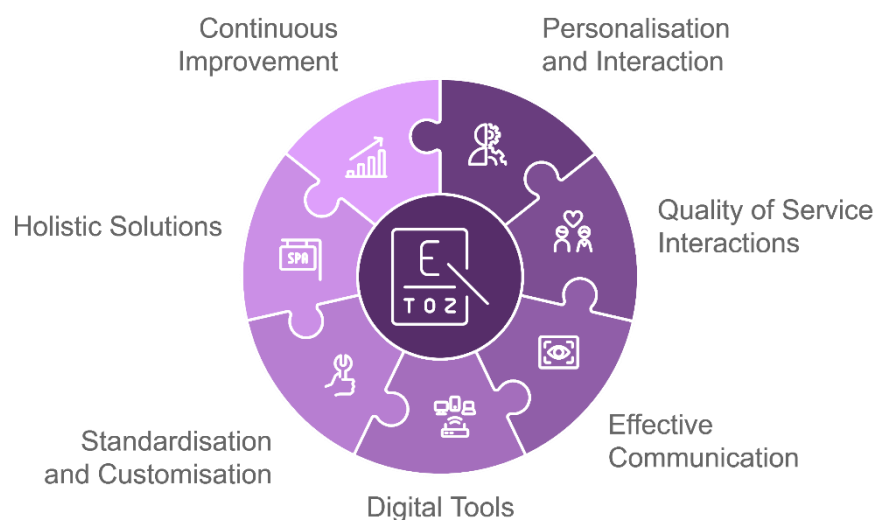


Figure 72 Recommendations for Business Practitioners

1. **Focus on personalisation and customer interaction:** The data analysis indicates that customers place a high value on personalised

service, particularly in terms of the quality of advice and the competence of staff. In order to optimise value-in-use, opticians should prioritise personalised consultations and ensure that employees are well-trained not only in technical skills but also in empathy and communication. Staff training programmes should be designed with the objective of fostering stronger customer relationships, ensuring that every customer feels understood and valued throughout the service process.

2. **Invest in quality of service interactions:** The research further demonstrates that the technical aspects of visual aids, such as lenses and frames, represent only a portion of the value-in-use that customers seek. The manner in which the service is provided is of great consequence in determining the customer's overall impression. Opticians must ensure that customers are fully involved at each stage of the service journey, from the initial consultation to the final adjustment of eyewear. It is incumbent upon businesses to create an environment in which customers are engaged in decision-making processes and are provided with clear, relevant information, thereby enhancing the co-creation of value-in-use.
3. **Mitigate value co-destruction through effective communication:** Although the overall sentiment of the OCR data was positive, instances of value co-destruction were identified due to miscommunication or unmet expectations. In order to mitigate these risks, it is imperative that opticians prioritise clear and transparent communication with customers. This should include setting realistic expectations from the outset, especially in terms of diagnostic outcomes, product delivery timelines, and potential limitations of the chosen solutions. The provision of follow-up services and regular updates can help to maintain customer satisfaction and prevent dissatisfaction caused by perceived lapses in service.
4. **Leverage digital tools for efficiency and engagement:** The discussion emphasised the prospective benefits of digital tools in optimising the efficiency of service delivery and enhancing customer engagement. Technologies such as AI-driven diagnostics and tele-optometry have the potential to streamline the consultation process, reduce waiting times,

and provide customers with more accurate and detailed diagnostic results. Independent opticians may benefit from integrating such innovations to compete with larger chains by offering high-quality, customised services that appeal to customers seeking both technological innovation and personalised care. Rather than replacing the human element in customer service, digitalisation should be seen as a way to enhance it.

5. **Standardise key processes while maintaining customisation:** The balance between standardisation and customisation is a major challenge for opticians. While standardising routine processes, such as basic consultations and eye tests, can ensure a consistent level of service quality, customisation remains essential in areas where customers expect tailored solutions, such as the selection and fitting of lenses and frames. It is therefore up to businesses to identify which aspects of the service process can be streamlined without losing the flexibility needed to meet individual customer needs. This balance will allow opticians to provide an efficient service process without sacrificing the personal touch that customers value.
6. **Emphasise value-in-use from solution, not just from product:** The notion that visual aids represent a comprehensive solution to customers' visual problems was a recurring theme throughout the analysis. It can be argued that the customer views the entire service process, from the initial anamnesis to the final delivery of eyewear, as a journey that addresses their specific needs. In order for opticians to build on this perception, it would be prudent for them to frame their offerings as holistic 'solutions', rather than simply 'products'. By marketing their services as a comprehensive package that includes personalised advice, high-quality tangible components, and aftercare, it would enable opticians to differentiate themselves within a competitive marketplace and foster a stronger customer loyalty base.
7. **Continuous monitor and improve service:** To remain aligned with evolving customer expectations, businesses should adopt a proactive approach to customer feedback and service improvement. The regular monitoring of OCRs enables opticians to respond expeditiously to

emerging issues and adjust their services accordingly. The establishment of robust feedback loops ensures that customer concerns are addressed in a timely manner, thereby preventing dissatisfaction and reinforcing the value-in-use created through service interactions. Furthermore, the integration of feedback into quality management systems facilitates ongoing service improvements, ensuring that businesses remain competitive and responsive to customer needs.

8.3 Recommendations for Future Research

The findings of this study serve to further the understanding of how value-in-use emerges in hybrid offerings, thereby revealing the intricate interdependencies between tangible outcomes, intangible service qualities and the dynamics of co-production. These insights necessitate a paradigm shift in the manner in which hybrid-offering research is conceptualised. Rather than perceiving it as the study of discrete components, it should be regarded as an examination of intricate, interwoven processes that unfold over time and across diverse contexts. The subsequent recommendations are founded on this perspective, translating empirical patterns into targeted directions for future inquiry.

- 1. Investigation of co-creation across hybrid offering contexts with varying personalisation intensity:** This research examined a high personalisation hybrid offering context in which interpersonal quality attributes dominated customer evaluations. In such settings, the Joint Sphere is pivotal to value-in-use co-creation. However, the extent to which this pattern holds in lower personalisation contexts, where tangible attributes may weigh more heavily, remains uncertain (Ding and Keh, 2017). Future research should examine how the balance between tangible and intangible value-in-use drivers shifts along a personalisation-intensity continuum. Comparative, cross sector studies could reveal whether interpersonal processes retain primacy or are supplanted by efficiency, technical precision or other tangible factors in less personalised settings (Martínez-Tur *et al.*, 2023).
- 2. Examination of micro-interaction patterns in the Joint Sphere:** The Joint Sphere emerged as the critical locus of value-in-use formation, yet it is often treated in research as an undifferentiated phase of service

delivery. The present findings suggest it is composed of discrete micro interactions – from diagnostic procedures to product consultations – each capable of influencing value-in-use positively or negatively (Hardyman *et al.*, 2015). Future research could employ fine-grained methods such as ethnographic observation, conversation analysis and video-based interaction analysis to map how verbal and non-verbal behaviours, sequencing of activities and negotiation of meaning contribute to perceived quality. Such analysis could reveal whether effective micro-interaction patterns are transferable across hybrid offering contexts or contingent on service complexity, cultural norms and customer expertise (Hong *et al.*, 2020).

3. **Exploration of longitudinal trajectories of value-in-use:** The limited evidence of usage-phase reflections in this study underscores the need to view value-in-use as a dynamic trajectory rather than a static outcome (Ojasalo, 2019). Durable hybrid offerings such as visual aids deliver value over extended periods, with potential for both reinforcement and erosion as they are integrated into customers' daily lives. Future research should trace these trajectories using longitudinal panel designs, diary or experience-sampling methods and sequential qualitative interviews (Keeling *et al.*, 2021). Such approaches could clarify how early co-production quality interacts with adaptation phases, after-sales support and evolving needs to shape long-term satisfaction.
4. **Modelling the influence of customer-provided resources:** Value-in-use in hybrid offerings is co-created through the integration of both provider- and customer-supplied resources. This study highlights how customer provided resources – such as prior knowledge, functional requirements, lifestyle constraints and aesthetic preferences – influence solution configuration and perceived fit. Future studies should explicitly model such resources as structured variables, analysing when and how they are mobilised and how they interact with provider-side resources during co-production (Plé, 2016). Combining qualitative process mapping with quantitative modelling could reveal interaction effects and identify which customer-side resources are most consequential in different hybrid-offering contexts. This reframing positions the customer as a co-

designer of value propositions and enables the development of anticipatory, resource-based personalisation strategies in practice (Cheng *et al.*, 2023).

5. **Analysing triggers and prevention mechanisms for value-in-use co-destruction:** Negative cases, though rare in this dataset, offered concentrated insight into co-destruction mechanisms such as expectation-delivery misalignment, incomplete communication, operational lapses and interpersonal dissonance (Järvi *et al.*, 2020). Future research should systematically classify these triggers (Laud *et al.*, 2019). Longitudinal follow-up could determine whether perceptions recover naturally or require targeted intervention. Furthermore, preventive strategies should be tested across sectors to assess transferability (Järvi *et al.*, 2018).
6. **Assessing the role of digital augmentation in co-production quality:** Technology featured only peripherally in customer narratives but may function as a silent enabler of perceived quality in hybrid offerings. Future research should investigate how digital augmentation – such as AI assisted diagnostics, tele-consultations, and automated measurement tools – shapes both the relational and technical dimensions of co-production (Yang, 2023). Key questions include whether technology enhances perceived competence, alters conversational dynamics or risks depersonalising the service experience (Yang *et al.*, 2025).
7. **Advancing hybrid analytical approaches for large-scale qualitative datasets:** This study illustrates both the opportunities and constraints of analysing large volumes of online customer reviews. While automated coding enables scale, it can obscure the nuance of complex, context dependent narratives (Lennon *et al.*, 2022). Future research should develop hybrid methods that combine algorithmic pattern detection with targeted human interpretation. Augmented human-AI coding, layered analysis designs and the application of LLM-based approaches could capture both macro-level regularities and micro-level contingencies in value-in-use expression. Such methodological innovation would equip practitioners with richer, more actionable insight from customer-experience data (Dunivin, 2025).

8.4 Recommendations for Quality Management

The findings of this research can also offer some insights for researchers engaged in the development or refinement of theoretical frameworks in the field of quality management. While the suggestions are grounded in empirical data and in the theoretical reflections of this study, it is recognised that other considerations may apply in different research contexts.

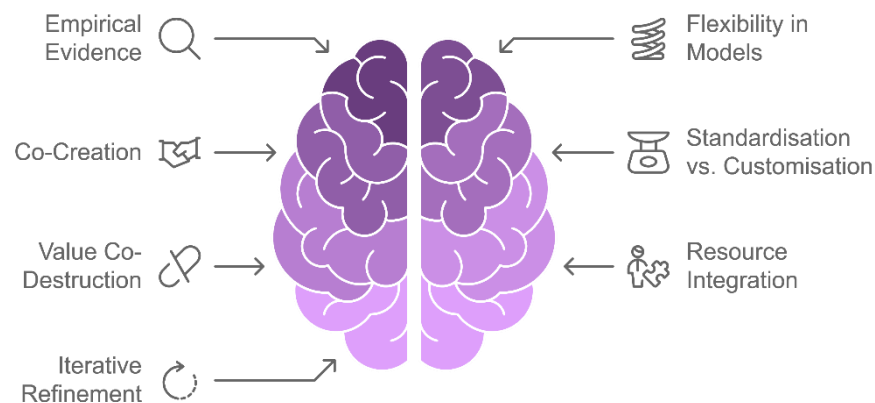


Figure 73 Recommendations for Quality Management

One area of interest to researchers is the value of basing quality management frameworks on empirical evidence. In this study, OCRs proved invaluable in elucidating customer perceptions of service quality, thereby offering a nuanced account of value-in-use. It may be beneficial for researchers engaged in the development of theoretical frameworks to ensure that empirical data is closely aligned with the construction of models, thereby enhancing their practical relevance. However, it is important to exercise caution when generalising findings, as the applicability of empirical evidence can vary significantly depending on the specific context of the research.

It would also be advantageous to allow for flexibility within theoretical models, particularly when addressing the complexities of hybrid offerings that involve both tangible and intangible components. This research highlighted the necessity to consider the multifaceted dimensions of service provision, encompassing staff competence and relational aspects such as customer interaction. Those engaged in the development of quality management frameworks may find it beneficial to construct models that are capable of adaptation to a range of service environments.

A further point for consideration is the role of co-creation in quality assessment. While traditional quality management models tend to focus on processes led by the service provider, this research suggests that integrating customer input and interaction into assessments of service quality may offer potential benefits. It may be helpful for researchers to investigate the potential integration of co-creation into their frameworks, thereby facilitating a more comprehensive understanding of quality.

Another key issue is the balance between standardisation and customisation. In industries such as optician services, this research has shown that while standardisation is essential to ensure consistent service provision, there is a significant need for customisation to meet the specific preferences of individual customers. It would be beneficial for researchers to consider how to incorporate mechanisms that allow for both standardised processes and the flexibility needed to nurture relationships.

Addressing the potential for value co-destruction is also a point that may be of interest. This research identified instances where there was a discrepancy between the expectations of the service delivery and the actual needs of the customer, which resulted in a perceived reduction in value-in-use. Researchers developing quality management frameworks might find it useful to include elements that account for and mitigate the risk of value co-destruction. By acknowledging where service breakdowns can occur, frameworks may offer a more resilient approach to managing quality.

The integration of resources and the roles of different actors in the quality management process is another aspect that emerged as significant in this research. Understanding how both the provider's and the customer's resources contribute to the co-creation of quality attributes and value-in-use might be worth considering in the development of quality frameworks. By focusing on resource integration, researchers could enrich their frameworks' ability to explain how quality is co-created across different contexts.

Lastly, the iterative refinement of theoretical models proved beneficial in this study. Researchers developing quality management frameworks may wish to consider an iterative approach, allowing for continuous testing and improvement based on emerging data and insights. However, it is important to be mindful of

when to achieve theoretical saturation, ensuring that the framework is robust and applicable in its final form. The iterative process should complement, rather than overshadow, the need for a coherent and well-defined theoretical structure.

8.5 Limitations of the Study

The limitations of this research are intrinsic to the scope, methodology, and data sources employed. The study is geographically limited to the German optician industry, with a particular focus on small and medium-sized enterprises (SMEs). This narrow focus permits an exhaustive examination of hybrid offerings within this specific sector; however, it also constrains the extent to which the findings can be applied more generally. It is possible that industries with different structural, cultural or regulatory contexts may not exhibit the same dynamics of value-in-use co-creation. Although the optician industry provides an ideal setting for studying the integration of tangible and intangible components in hybrid offerings, the results may not directly translate to industries where the service component is less crucial or where the co-creation process follows different patterns. It would therefore be beneficial for future research to expand the scope to include other sectors, both within Germany and internationally, in order to validate the findings across a broader range of contexts.

The generalisability of the findings to other crafts is also limited. Optician businesses are characterised by a high degree of personalisation in both product offering and customer service, which may not be as prevalent in other crafts. The technical nature of the product and the need for face-to-face interaction for eye examinations make opticians an ideal subject for the study of hybrid offers. However, it should be noted that these characteristics may limit the transferability of the theoretical framework and empirical findings to skilled crafts that rely less on face-to-face interaction or have a less pronounced service component. Further research could examine other crafts to see if analogous patterns of co-creation of hybrid offerings are discernible.

The use of OCRs as the primary data source presents both opportunities and challenges. On the one hand, OCRs offer a comprehensive and publicly accessible data set that captures genuine customer feedback, enabling researchers to analyse large volumes of information. However, the self-selecting nature of customer reviews means that only a subset of customers –

those with particularly positive or negative experiences – tend to post reviews. This introduces the potential for bias, as the OCRs may not fully represent the full spectrum of customer experiences. Furthermore, it is possible that certain customer segments are underrepresented, particularly those who are less inclined to engage with online platforms e.g. because of their age. The data may also be biased towards more positive or negative experiences, limiting the study's ability to capture more moderate perspectives.

In addition to the representativeness issue, the use of secondary data from OCRs also presents challenges related to the subjectivity of the data. The content of customer reviews is subject to a number of external influences, including the emotional state of the reviewer, their expectations and personal biases at the time of writing. Such factors have the potential to distort the feedback, thereby rendering it challenging to ascertain the true drivers of customer satisfaction or dissatisfaction. Furthermore, OCRs frequently lack the requisite depth to fully elucidate the reasons behind customer sentiment, particularly in instances where reviews are concise or ambiguous. This limitation impairs the research's capacity to investigate the fundamental causes of customer feedback, particularly in the case of negative or critical reviews where contextual information may be pivotal. Although CGT was employed to iteratively code and identify patterns within the data, future research could be enhanced by complementing this approach with the incorporation of primary data sources, such as interviews or surveys, in order to provide a more comprehensive understanding of customer perspectives.

From a methodological standpoint, the utilisation of automated coding tools, such as NVivo and Power BI, while efficient, also presents certain limitations. Such tools facilitate the examination of extensive datasets and enhance scalability; however, they may not consistently discern the nuances of language that human coders would. The classification of nuanced customer feedback, particularly when it encompasses complex or ambiguous statements, may prove to be erroneous or overly simplistic. Although the research design included manual cross-checks and quality assurance processes to mitigate these risks, some degree of subjectivity inevitably remains in the interpretation of the data. Furthermore, the use of automated tools raises questions about the optimal balance between scalability and depth. It would be beneficial for future

studies to investigate methods of integrating automated coding with more comprehensive manual analysis. This approach could ensure the full capture of customer feedback richness while maintaining the efficiency of large-scale data processing.

In conclusion, while this research provides valuable insights into the co-creation of value-in-use through hybrid offerings in the German optician industry, several limitations must be acknowledged. These include the geographical and sectoral focus, the potential biases introduced by the reliance on OCR, and the limitations of automated coding tools. However, these limitations are offset by the depth and focus of the study, which provides a structured framework for understanding value-in-use co-creation in similar contexts. Future research should aim to address these limitations by broadening the scope of the study, incorporating additional data sources, and refining the balance between automated and manual analysis.

8.6 Concluding Remarks

As this research project draws to a close, it is an opportune moment to reflect on the path taken, the challenges faced, and the contributions made. This study set out to explore the co-creation of value-in-use through hybrid offerings. In the course of this research, significant insights have been uncovered into the dynamics of service quality and customer interaction. What began as an effort to comprehend how tangible and intangible components converge in service provision has evolved into a more profound inquiry into the relational and co-creative aspects that underpin value-in-use generation in service industries such as the German optician skilled crafts. This journey has demonstrated the value of empirical evidence in supporting theoretical frameworks and has shown the potential benefits of integrating customer feedback into the study of service quality. The findings have made a significant contribution to both theoretical understanding and practical application, offering valuable recommendations for businesses and opening new avenues for future research. The frameworks applied throughout this research have provided valuable insights into the complexities of hybrid offerings, offering a clearer understanding of how value is co-created between providers and customers.

In addition, this journey has been one of personal growth and learning. It has involved navigating complex theoretical landscapes and has been rewarded by seeing how these frameworks resonate with real-world business practices. The iterative process of refining ideas, engaging with data, and drawing meaningful conclusions has been both challenging and rewarding. As with any research project, there have been moments of doubt and discovery, but ultimately, it has led to a deeper understanding of the subject and an appreciation of the role that service quality plays in shaping customer experiences.

In the future, this research will provide a foundation for further exploration. The ever-changing nature of hybrid offerings and evolving customer expectations indicate that there is still much to learn in this area. Further research may build on these findings, exploring new industries, integrating emerging technologies or developing further refinements to the theoretical models presented here.

In conclusion, this research marks not just the end of a personal academic journey, but a contribution to the broader understanding of value-in-use co-creation in service ecosystems. It is my hope that the insights gained here will inspire continued inquiry and innovation in the field of quality management and beyond. While the journey may have reached its conclusion, the insights gained along the way will continue to influence future research and business practice, at least in the context of the researcher's own work.

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10. Appendix

10.1 Appendix A: Data Extraction Procedure

The following procedure outlines the steps to extract data from an individual business's OCR dataset record from Google Reviews using a systematic and repeatable approach. The methodology places great emphasis on accuracy, consistency and data integrity, while ensuring that relevant review content and metadata are captured in an efficient manner.

1. **Identification of the Store:** The procedure begins by extracting the name and address of the business from the pre-compiled Excel sample list. The required information is then entered into the Google Maps search box via the Google Chrome browser to determine the exact location of the business in question.
2. **Retrieving the Google Maps URL:** Once the correct business profile is displayed, the URL is copied from the address bar, which links directly to the store's Google Maps profile. This URL is used as the input query for the automated data extraction process.
3. **Setting Up the Data Extraction Task:** The URL is then pasted into the query field of a pre-defined task within the Google Maps Scraper application on the Apify platform. The scraping task is configured to focus on data relevant to the review in question, excluding any identifiable personal information such as the names, IDs or responses of the reviewers themselves, as well as any information provided by the business owner.
4. **Executing the Scraping Task:** The data extraction task is initiated, automatically collecting the relevant review data for the specified company. The resulting data is automatically stored in a JSON file that includes the key review content, ratings and timestamps.
5. **Storing and Organizing the Extracted Data:** The resulting JSON file is also automatically given a name that includes the date and time of extraction, ensuring traceability. The filename is then added to the corresponding entry in the sample Excel spreadsheet, linking the extracted data to the correct company.

6. **Validation of Extracted Data:** An initial examination of the JSON file is performed using a text editor. The accuracy of the extraction is confirmed by checking key fields such as 'totalScore' (average rating) and 'reviewsCount' (number of reviews). In the event of discrepancies or missing data, the extraction process is repeated until the data is confirmed as correct.
7. **Post-Extraction Processing:** Once validated, the JSON file is parsed and prepared for integration into further analysis tools, such as Power Query and Excel, where the data can be structured, cleaned and analysed according to the research requirements.

Example for an extracted JSON dataset	
Object (name – value pair)	
Name	Value
{	
title :	"aktivoptik",
subTitle :	null,
categoryName :	"Optician",
address :	"Hambrücker Landstraße 4, 68753 Waghäusel, Germany",
locatedIn :	"Globus Waghäusel-Wiesental",
plusCode :	"6G6G+MJ Waghäusel, Germany",
website :	"aktivoptik.de",
phone :	" +49 7254 950286",
temporarilyClosed :	false,
permanentlyClosed :	false,
totalScore :	3.9,
placeId :	"https://49.2117301,8.5244278,17z/data=!3m1!4b1!4m5!3m4!1s0x4797a5335078e601:0x3749620b0c000cb2!8m2!3d49.2117266!4d8.5266165",
url :	"https://www.google.de/maps/place/aktivoptik/@49.2117266,8.5244278,17z/data=!3m1!4b1!4m5!3m4!1s0x4797a5335078e601:0x3749620b0c000cb2!8m2!3d49.2117266!4d8.5266165?hl=en",
searchString :	null,
location :	{ "lat": 49.2117266, "lng": 8.5266165 },
scrapedAt :	"2021-06-07T15:57:50.027Z",
reviewsCount :	78,
reviewsDistribution :	{ "oneStar": 11, "twoStar": 3, "threeStar": 7, "fourStar": 19,

reviews":	[
	{
	"name": null,
	"text": "(Translated by Google) Large company, with few staff, overwhelmed with work! Large selection of promising offers and inferior frames, to praise the good quality of glasses and good and quick advice!\n\n(Original)\nGroße Firma, mit wenigen Personal, ubervordert mit Beschäftigung! Große Auswahl von viel versprechenden Angeboten und minderwertige Fassungen, zum Lob gutes Qualität von Gläser und gute und schnelle Beratung!",
	"publishAt": "4 weeks ago",
	"publishedAtDate": "2021-05-09T02:36:12.490Z",
	"likesCount": null,
	"reviewId": null,
	"reviewUrl": null,
	"reviewerId": null,
	"reviewerUrl": null,
	"reviewerNumberOfReviews": 7,
	"isLocalGuide": false,
	"stars": 1,
	"rating": null,
	"responseFromOwnerDate": "2021-05-10T05:56:10.774Z",
	"responseFromOwnerText": null
	},
	]
orderBy :	[
	{
	"name": "aktivoptik.de",
	"url":
	"https://www.aktivoptik.de/appointments/new?store_id=28"
	}
	]
}}	

In the review array, the value for the objects 'name', 'reviewId', 'reviewUrl', 'reviewerId', 'reviewerUrl' and 'responseFromOwnerText' is set to 'null' by default in each extracted dataset to protect personal data. This is always the case, regardless of whether Google Maps is able to provide the required data. Only the values of the 'text', 'publishedAtDate', 'stars' and 'responseFromOwnerDate' JSON objects are used in the analysis of reviews.

10.2 Appendix B: Theme Coding

Theme 1: Customer Quality Perception (T1-CQP)

Description: This theme encapsulates the perceptions customers have of the quality they receive from the hybrid offering. It has a strong relation to the elements of the CQF, as it contains categories related to ‘Customer’, ‘Expectation’, ‘Evaluation’, ‘Satisfaction’, ‘Recommendation’ and ‘Quality’ in general. Furthermore, it contains the two distinct quality attributes of ‘Style’ and ‘Time’, which had been mentioned quite often by customers in the OCRs.

Rationale: Customer quality perception is a crucial element in comprehending value-in-use co-creation. It influences how customers assess the value-in-use of the services provided and offers insight into the extent to which the co-created hybrid offerings align with their expectations. By examining OCRs within this context, the research illuminates some primary drivers of customer satisfaction and dissatisfaction, contributing to the overarching objective of mapping value-in-use.

Coding Categories of Theme 1		Example OCR Terms
Customer	Includes terms which self-reflect the different types of customers, including their peers, who interact with the service provider.	<i>Kunde (customer)</i> <i>Familie (family)</i> <i>Kinder (children)</i>
Evaluation	Includes terms which capture how customers assess and evaluate their experience, usually in positive terms.	<i>Super (great)</i> <i>Perfekt (perfect)</i> <i>Toll (fantastic)</i>
Expectation	Includes terms which reflect the customer’s initial expectations before interacting with the service.	<i>Wünsch (wish)</i> <i>Erwartung (expectation)</i> <i>Bedürfnisse (needs)</i>
Quality	Includes terms which capture the overall perceived quality of products, services, and processes.	<i>Qualität (quality)</i> <i>Hochwertig (high-quality)</i> <i>Best (best)</i>

Recommendation	Includes terms which describes whether customers would recommend the service to others.	<i>Empfehlung (recommendation)</i> <i>Empfehlenswert (recommendable)</i> <i>Weiterempfehlung (recommendation to others)</i>
Satisfaction	Includes terms which reflect customer satisfaction levels regarding their overall quality evaluation.	<i>Zufrieden (satisfied)</i> <i>Kundenzufriedenheit (customer satisfaction)</i> <i>Hochzufrieden (highly satisfied)</i>
Style	Includes terms which capture the aesthetics of the tangible process outcome, an optician-specific attribute of perceived quality.	<i>Schön (beautiful)</i> <i>Modisch (fashionable)</i> <i>Design (design)</i>
Time	Includes terms which reflect the time-related aspects of the business process, such as speed or waiting times.	<i>Wartezeit (waiting time)</i> <i>Schnell (fast)</i> <i>Termin (appointment)</i>

Table 39 Coding Categories of Theme 1

Theme 2: Store Environment and Ambience (T2-SFA)

Description: This theme relates to the physical environment and atmosphere of the optician's store, including aspects such as cleanliness, lighting and general aesthetics. In their reviews, customers often emphasise the importance of a welcoming and professional environment and describe how the layout and comfort of the store affects their experience.

Rationale: The store environment and ambience have the potential to influence customer perceptions of quality, particularly in the context of co-production. A comfortable and appealing store atmosphere has the capacity to enhance the customer experience, thereby adding value-in-use that extends beyond the hybrid offerings themselves. An understanding of how the physical environment affects customer perceptions provides insights into the co-creation of value-in-use.

Coding Categories of Theme 2		Example OCR Terms
Ambience	Includes terms which describes the store's atmosphere and how it feels to customers.	<i>Atmosphäre (atmosphere)</i> <i>Modern (modern)</i> <i>Ruhe (calm)</i>
Location	Includes terms which refer to how customers perceive the geographical location and convenience of the store.	<i>Lage (location)</i> <i>Nähe (proximity)</i> <i>Erreichbarkeit (accessibility)</i>

Table 40 Coding Categories of Theme 2

Theme 3: Staff Attributes and Behaviour (T3- SAB)

Description: This theme includes customer feedback on the behaviour, professionalism and friendliness of staff. Reviews often cite the helpfulness, competence and courtesy of optician staff as key factors influencing customer satisfaction. In addition, comments often highlight positive experiences, such as attentive service, as well as negative instances of perceived rudeness or lack of professionalism.

Rationale: The quality of staff interaction represents another crucial aspect of the customer experience, particularly within service-oriented industries. The influence of staff attributes on the co-production of value-in-use is clearly demonstrated by the manner in which customers evaluate their experience based on interpersonal interactions. By concentrating on this theme, the research can deliver insights concerning the impact of interaction on quality evaluation and customer satisfaction.

Coding Categories of Theme 3		Example OCR Terms
Staff Behaviour	Includes terms which refer to how staff members interact with customers, including friendliness and professionalism.	<i>Freundlich (friendly)</i> <i>Ehrlich (honest)</i> <i>Geduldig (patient)</i>
Staff Competence	Captures the perceived skill, knowledge, and expertise of the staff.	<i>Kompetent (competent)</i> <i>Fachlich (technical)</i> <i>Professionell (professional)</i>

Staff Role	Includes terms which describe the roles of different staff members and their responsibilities in the service process.	<i>Mitarbeit (staff member)</i> <i>Verkäufer (salesperson)</i> <i>Team (team)</i>

Table 41 Coding Categories of Theme 3

Theme 4: Hybrid Offering Components (T4-HOC)

Description: This theme covers the tangible and intangible elements of hybrid offerings, including the advice provided, the range of frames available, the technical equipment offered and the solutions to specific problems. Customer feedback highlighted their perceptions of the service provided and the outcomes they experienced.

Rationale: The extent to which customers perceive the hybrid offering as meeting their needs is a key factor influencing their perception of value-in-use. This emphasises the vital role played by operational excellence in driving customer satisfaction and value-in-use perceptions.

Coding Categories of Theme 4		Example OCR Terms
Advice	Includes terms which refer to the guidance and recommendations provided by staff to help customers make decisions.	<i>Beratung (advice)</i> <i>Kundenberatung (customer consultation)</i> <i>Tipps (tips)</i>
Choice	Includes terms which refer to the range and variety of products and services available to customers.	<i>Auswahl (selection)</i> <i>Brillenauswahl (glasses selection)</i> <i>Sortiment (assortment)</i>
Equipment	Includes terms which refer to the tools and technologies used during the service, such as diagnostic or measurement devices.	<i>Messgerät (measuring device)</i> <i>Technologie (technology)</i> <i>Gerät (device)</i>
Product	Includes terms which represent the tangible components of the hybrid offering offered by the optician, such as glasses, lenses, or frames.	<i>Brille (glasses)</i> <i>Fassungen (frames)</i> <i>Linsen (lenses)</i>

Service	Includes terms which refer to the quality and nature of the intangible components of the hybrid offerings provided by the optician.	<i>Serviceleistung (service)</i> <i>Kundenservice (customer service)</i> <i>Dienstleistung (service)</i>
Solution	Includes terms which reflect how well the optician helps solve customer problems, such as vision issues or product concerns.	<i>Problem (problem)</i> <i>Ergebnis (result)</i> <i>Lösung (solution)</i>

Table 42 Coding Categories of Theme 4

Theme 5: Process and Production (T5-PAP)

Description: This theme concerns the generic process stages involved in the production and customisation of hybrid offerings. It has been observed that customers often refer to elements of the perceived business process. Consequently, this theme is directly linked to the GBP.

Rationale: In the context of value-in-use co-creation, the business processes which lead to value-in-use play a pivotal role in shaping the customer experiences and perceptions. It is also evident that the customer's perception of quality during utilisation plays a significant role.

Coding Categories of Theme 5		Example OCR Terms
Preprocess	Includes terms which capture all preparatory steps taken before the actual service, such as setting up equipment or preparing customer profiles.	<i>Vorbereitung (preparation)</i> <i>Einstellung (setup)</i> <i>Planung (planning)</i>
Process	Includes terms which refer to elements of the processes involved in co-producing the hybrid offering, from initial consultation to product delivery.	<i>Vorgang (process)</i> <i>Ablauf (procedure)</i> <i>Schritt (step)</i>
Production	Includes terms which refer to the production or customisation of products, particularly glasses or lenses.	<i>Anfertigung (manufacturing)</i> <i>Produktion (production)</i> <i>Maßanfertigung (customisation)</i>

Usage	Includes terms which capture how customers use the products provided by the optician and whether they meet their practical needs.	<i>Lesen (reading)</i> <i>Nutz (use)</i> <i>Einsatz (application).</i>

Table 43 Coding Categories of Theme 5

Theme 6: Health and Safety Concerns (T6-HSC)

Description: The current theme is customer concerns about health and safety, particularly in the context of the recent pandemic. An analysis of the reviews shows that customers consider compliance with health protocols, such as the use of disinfectants, social distancing and staff wearing protective clothing, as factors that influence their decision to visit certain opticians.

Rationale: During the Covid19-pandemic, health and safety measures have become increasingly important, particularly in environments where close personal interaction is required. The implementation of safety protocols can either increase customer confidence or create negative perceptions if not addressed properly. Since the term 'corona' is used much more frequently in Germany than 'Covid19', the coding category was named accordingly.

Coding Categories of Theme 6		Example OCR Terms
Corona	Includes terms which refer to the health and safety protocols in place, particularly those related to COVID-19.	<i>Hygiene (hygiene)</i> <i>Maske (mask)</i> <i>Hygienekonzept (hygiene concept)</i>

Table 44 Coding Categories of Theme 6

Theme 7: Value for Money (T7-VFM)

Description: This theme includes customer feedback on the cost of hybrid offerings. Customers often expressed whether they felt prices were reasonable or excessive, often in relation to the quality received. Analysis of the OCRs showed that comments about value for money were common, reflecting how customers weigh financial considerations against quality of service.

Rationale: The price of a product or service is an important factor in the customer's decision-making process, influencing perceptions of value-in-use and willingness to return for future purchases.

Coding Categories of Theme 7		Example OCR Terms
Price	Includes terms which refer to customer perceptions regarding the cost of hybrid offerings.	<i>Preis (price)</i> <i>Kosten (costs)</i> <i>Preis-Leistungs-Verhältnis (value-for-money)</i>

Table 45 Coding Categories of Theme 7

10.3 Appendix C: Example for Auto-Coding Errors

The following examples illustrate instances of 'false positive' and 'false negative' coding, respectively:

OCR Text	False Coding
Ich frage mich ernsthaft wie diese vorhergegangenen Bewertungen zu Stande kommen. Service ist zwar freundlich solange man was kauft reklamiert man allerdings oder möchte sein Geld zurück hört die Freundlichkeit sehr <u>schnell</u> auf. <i>I seriously wonder how these previous reviews come about. Service is friendly as long as you buy something, but if you complain or want your money back, the friendliness stops very <u>quickly</u>.</i>	False positiv: „schnell“ triggers coding categorie 'Time'
Sehr freundliche und nette Beratung Super Preise toller Service Immer wieder gerne Kann diesen Optiker nur empfehlen <u>Innerhalb weniger Tage</u> ist meine Brille <u>fertig gewesen</u> 5sterne gerne. <i>Very friendly and nice advice Super prices great service Always happy to return Can only recommend this optician My glasses were <u>ready within a few days</u> 5 stars with pleasure</i>	False negative: „innerhalb weniger Tage ... fertig gewesen“ does not trigger coding categorie 'Time'

Table 46 Examples of False Coding

10.4 Appendix D: Stars Rating vs. Sentiment Analysis

During the process of analysing the data set, it became evident that the results of the automated sentiment analysis by Power BI/Azure Cognitive Services exhibited a notable discrepancy from the star ratings provided by customers. Despite the limited relevance of this discrepancy due to the selected methodology and research objectives, it did pique the researcher's interest, particularly given the availability of the data.

While star ratings serve as a direct, customer-generated indicator of satisfaction, sentiment analysis aims to extract underlying sentiment from the review text, providing a more nuanced view of customer experiences. The objective is to evaluate how effectively sentiment scores align with star ratings and, crucially, to highlight where and why discrepancies occur. Such discrepancies offer insight into the limitations of automated sentiment analysis and the complexity of customer feedback. As previously outlined, the sentiment analysis score was initially calculated using the unprocessed data set. Consequently, the assigned score consistently pertains to the original text material of the OCR. Both PBI Sentiment scores and Star Ratings were categorised as follows to facilitate comparison.

PBI Sentiment Categories		Star Rating Categories
Positive	Sentiment scores > 0.80	4-5 stars
Neutral	Sentiment scores between 0.50 and 0.80	3 stars
Negative	Sentiment scores < 0.50	1-2 stars

Table 47 Sentiment/Star Rating Categorisation

The comparison involved a crosstab analysis to identify instances where the automated sentiment analysis aligned or conflicted with the customer-provided star ratings.

The comparison between PBI Sentiment and star ratings revealed significant discrepancies in several cases:

- **Positive Sentiment:** Of the OCRs classified as having positive sentiment, 99.8% also had a 4-5 star ratings. However, 15 reviews (0.1%) with positive sentiment were accompanied by 1-2 star ratings,

indicating a mismatch where the text sentiment was positive, but the star rating reflected dissatisfaction.

- **Neutral Sentiment:** For OCRs with neutral sentiment scores, the majority (97.3%) received a 4-5 stars. However, 215 OCRs with neutral sentiment were paired with 1-2 star ratings, raising questions about the reliability of sentiment analysis in these cases. Neutral sentiment might reflect mixed or ambivalent feelings that do not capture the dissatisfaction reflected in the low ratings.
- **Negative Sentiment:** OCRs with negative sentiment scores should theoretically align with low ratings, but 459 OCRs (46%) with negative sentiment still received 4-5 star ratings, suggesting a significant disconnect between the customer’s star rating and the sentiment derived by the AI from their review text.

The revealed inconsistencies call into question the reliability of automated sentiment analysis in certain contexts. While positive sentiment is typically aligned with high star ratings, neutral and negative sentiment categories frequently diverge from the customer-provided ratings. This divergence may be attributed to the inherent limitations of sentiment analysis in capturing the full emotional range and complexity of customer feedback, as well as the subjective nature of star ratings.

Comparison between Stars and Sentiment Categories

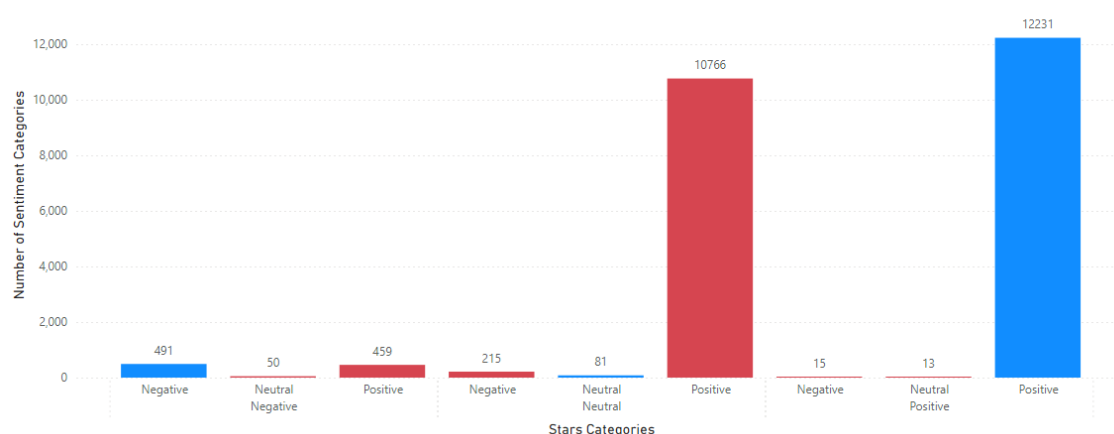


Figure 74 Comparison of categorised Stars Rating vs. Sentiment Category

The findings highlight the necessity for caution when utilising automated sentiment analysis as a sole indicator of customer satisfaction, particularly in the absence of additional refinements. The discrepancies indicate that

sentiment analysis should be employed in conjunction with other qualitative and quantitative methods to obtain a more comprehensive view of customer feedback (Sharma *et al.*, 2024b, p. 28). Further refinement of sentiment models, with greater emphasis on context and mixed emotions, may facilitate a more accurate alignment between text-based sentiment and star ratings. The pervasive accessibility of large language models (LLMs) as well as their rapid development have the potential to markedly advance sentiment analysis, enabling a more comprehensive grasp of context, adeptness in discerning sarcasm, and the capacity to detect mixed emotions (Praveen *et al.*, 2024, p. 9). They are capable of adapting to domain-specific language, providing multidimensional sentiment scores, and performing multilingual analysis. Consequently, LLMs transcend the constraints of conventional models, offering more precise and sophisticated sentiment detection in a spectrum of reviews and intricate customer feedback.