

**An Investigation of Current Rural Household Furniture in
East Hebei (Jidong) Province, China**

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Submitted in partial fulfilment for the award of the degree of Professional Doctorate
(Art and Design)

University of Wales Trinity Saint David

2025

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Abstract

This study presents a multifaceted original contribution to knowledge by employing a unique methodological framework, comprehensive data collection, and the innovative application of lifestyle theory to the study of rural household furniture in Jidong Province, China. Departing from conventional mixed-method and purely ethnographic approaches, this research integrates qualitative methods, including open-ended interviews, participatory observations, and photographic analyses, with quantitative structured questionnaires. This methodological innovation facilitates a holistic exploration of both the historical evolution and contemporary realities of rural furniture, addressing gaps in prior research.

A key contribution is the systematic documentation and classification of traditional rural furniture, identifying nine distinct types based on size, usage, decorative features, and manufacturing techniques. This archival effort preserves cultural heritage while establishing a foundation for future comparative studies. Additionally, the application of lifestyle theory provides novel insights into how shifts in rural lifestyles influence furniture usage and preferences, broadening the scope of previous research that often focused on individual furniture pieces without considering socio-cultural dynamics.

Another significant finding is the classification of rural household yard layouts, including pre-earthquake yards, contemporary residential yards, and a newly identified functional-type yard, which reflects adaptive responses to socio-economic transformations. This classification enhances the understanding of spatial arrangements in rural households. Moreover, the study proposes practical design principles for improving rural furniture, offering specific, empirically informed recommendations tailored to the actual needs of rural residents.

In summary, this research advances academic discourse on rural household furniture in Jidong Province through methodological innovation, extensive documentation, application of lifestyle theory, novel yard classifications, and practical design principles. These contributions not only enhance scholarly understanding but also provide tangible solutions for improving rural living conditions.

Acknowledgements

I would like to express my gratitude to the many individuals who have contributed to this research in various ways. First and foremost, I wish to thank my supervisors, Prof. Ian Walsh, Dr Fatma Layas, Dr Sean Jenkins, and Dr Yajie Zhang for their guidance, encouragement, patience, and thought-provoking discussions. Secondly, I am grateful to my research participants, who willingly dedicated their time to assist me. Their commitment and enthusiasm for my objectives have deeply moved me. Additionally, I would like to thank my family for their unconditional support, both financially and emotionally. Lastly, I appreciate my doctoral colleagues, who provided the valuable criticism and suggestions I needed.

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Glossary

Term	Definition
Bedroom Seating	Refers to a chair or sofa that is placed in a bedroom in a Type A or Type B house (has a fixed position and generally cannot be moved).
Chief	The highest-ranking leader of a village. For example, “The village chief of Fangpao” means the highest-ranking leader in the Fangpao village.
CIKN	China National Knowledge Infrastructure (CNKI) is the most authoritative and comprehensive academic literature database in China. Available at: https://www.cnki.net/
Common Furniture	Types of furniture commonly found in both types of houses. For example, a kang table is used in both - Type A Houses and Type B Houses.
EVA (Foam Cushion)	A material made from ethylene-vinyl acetate copolymer, known for its softness, lightweight properties, and cushioning capabilities, often used in furniture cushions to enhance comfort.
HEPA Filters	High-efficiency air filtration devices capable of capturing particles as small as 0.3 microns with 99.97% efficiency, improving air quality.
Household Production; Home-Based Production	Refers to commercial, tradable production activities conducted by villagers at home or in their yards. In this research, it includes village shops, mahjong parlours, and processing factories.
Kang	Kang is constructed of bricks and stones, positioned in the inner room, serving a functioning similarly to a modern bed.
MDF	Medium-Density Fibreboard - A board material made by compressing wood fibres and resin, featuring a smooth and flat surface, suitable for furniture manufacturing and decoration.
New Cupboard	A kitchen cupboard made by local carpenters is used for storing kitchenware.
Old Cupboard (Traditional Cupboard)	A detachable cupboard purchased by villagers from the market, made from ordinary board materials and used for storing kitchenware.
PE	Polyethylene - Non-toxic and environmentally friendly plastic material commonly used in furniture such as chairs are characterised by good strength, durability, and corrosion resistance.
Plain Villages	Villages are located in plain areas, characterised by flat and relatively low-lying land with minimal undulations. Other types of villages include mountainous villages, hilly

	villages, river valley villages, lake region villages, coastal villages, plateau villages, forest villages, desert villages, and island villages.
PRISMA	PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) is a standardized framework designed to enhance the transparency, consistency, and quality of systematic literature reviews and meta-analyses.
SCIELO	A platform that primarily indexes academic journals from Latin America, the Caribbean, Portugal, and Spain.
Sitting Furniture	This refers to small stools in the home that are not fixed in position, are easy to move, and are generally placed in the halls of Type A houses and in the living rooms of Type B houses, such as plastic stools, iron ring stools, and square wooden stools (wooden benches).
Stove	Stove is located in the hall and is used for cooking and also heats the kang.
Tableware	Tableware refers to the utensils and appliances used to ingest food, including knives, forks, bowls, plates, and pots.
Type A Houses	The main living areas of Type A Yards, include the main hall and two inner rooms.
Type A Yards	Single-story, single-entry yards constructed immediately after an earthquake.
Type B Houses	The main living areas of Type B Yards, include bedrooms, living rooms, kitchens, and other spaces.
Type B Yards	Single-story, multi-entry yards renovated or rebuilt in the past 10 to 15 years.
The altar table ("Heaven and Earth table", "Offering tables")	The altar table is centrally located in the hall for dining or placing items, and it is used during weddings as the Heaven and Earth table.
The kang cabinet	The kang cabinet is used for storage and is placed on the kang.
The VIP database	The VIP database is a Chinese literature database developed by Chongqing VIP Information Company. Some of its contents are different from those of CNKI and they are complementary to each other. Available at: https://www.cqvip.com/
Wanfang Database	Wanfang Database is a comprehensive academic database in China, operated by Wanfang Data Company. Available at: https://www.wanfangdata.com.cn/
Square wooden stools (wooden benches)	Square wooden stools also known as wooden benches, are the favourite sitting furniture of Jidong villagers and can be placed in every space of the house.
Yard	The entire rural residential courtyard, including the main house, side rooms, toilets, planting areas, and other sections, all enclosed by walls to form a single compound.
Master	In this study, the term "Master" refers to the head of the household who owns or holds primary responsibility for the dwelling. the term "male master" refers to the male head of the household, while the term "female master" denotes the female head of the

	household. Both terms are used to indicate the primary owners and decision-makers of the house.
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1 Introduction and Background

1.1 Introduction

With the trend of new rural construction, the living standards in rural areas of China continue to improve, and the demand for furniture from Chinese rural residents increases (National Development and Reform Commission, 2023). However, for a long time, the Chinese furniture market has focused on the needs of cities and disregarded the countryside (Sun, 2022). There is therefore a lack of provision which meets the particular requirements of rural residents. This raises a number of areas worthy of consideration and study.

Firstly, a mismatch exists between the available furniture and the needs of rural families (Wang and Tang, 2023). Much of the household furniture supplied to villagers in the rural market is the same as that in the city, and some furniture is even sold directly to the villagers at a discount price from obsolete furniture stocks in the city (Sun, 2022).

Secondly, rural areas possess unique lifestyles; however, the influence of these distinctive lifestyles on furniture has not been recognised by designers (Sun, 2022). In daily life, unlike the perceived privacy and loneliness of Chinese urban families, rural communities attach great importance to holding traditional festivals at home and maintaining their customs, and the relationship between neighbours is very close (Nong, 2022). While urban residents increasingly celebrate festivals in restaurants, or may even neglect traditional celebrations due to high work and life pressures, rural residents typically celebrate such events at home (e.g., weddings and funerals), host relatives and friends, visit neighbours regularly, and engage in daily conversations

about family matters. In addition, the rural economy, driven by national policies, has transitioned from communities primarily relying on agriculture to become semi-agricultural or non-agricultural modern villages, and home-based production (e.g., village shops, village processing factories) has also become prevalent in rural areas (Yin *et al.*, 2020). However, the problems and needs that arise when household furniture is used in these specific rural living scenarios have not been fully studied.

Finally, in rural China, traditional furniture can be easily found (Appiah-Kubi *et al.*, 2021). Ma (1995) stated that rural furniture in China is the prototype of all furniture, and Gao Yiqiang, the founder of the 'Ri Yong Zhi Dao' brand, mentioned that studying rural furniture can reveal historical changes in Chinese furniture since the 1970s (Wenzhou Fashion Intelligent Manufacturing Design Company, 2020).

Compared to urban residents in China, rural areas, due to their inherent closed and traditional nature, are less affected by globalization. Many villages still maintain a simple way of life, with lifestyles that are relatively outdated lifestyles and a slow rate of furniture replacement, which allows for the preservation of some traditional furniture. Therefore, in this research, attention is also paid to the traditional furniture present in rural areas of East Hebei.

1.2 Type and Scope of Research

1.2.1 Type of Research

Scholars studying Chinese rural furniture typically classify and investigate it based on regional styles, as regional characteristics have been the most significant factors in the historical development of rural furniture in China. With a total land area of 9.44 million square kilometres, rural areas constitute 94.7% of the country, each with distinct geological and geographical features (National Bureau of Statistics of China, 2021; Ju, 2023). Variances in terrain result in diverse climatic conditions, ranging

from the cold Northeast to the warm North China Plain, the subtropical Southwest, and the tropical South, impacting factors such as rainfall, rivers, and vegetation. These diverse factors contribute to significant variations in the customs and lifestyles of rural villagers across China, indirectly influencing the furniture styles in different regions.

Ma (1995), in his work, classified Chinese rural furniture based on the Yangtze River Basin into southern styles such as "Su-made" furniture (centred around Suzhou), "Yong-made" furniture (in the Ningbo region), "Guang-made" furniture (in Guangdong and Guangxi), "Chuan-made" furniture (in the Sichuan hinterland), and northern styles including "Jin-made" furniture (in Shanxi), "Ji-made" furniture (in Hebei, including Beijing and Tianjin), "Lu-made" furniture (in Shandong), "Shan-made" furniture (in Shaanxi). These styles, based on regional cultural characteristics, have developed distinct furniture styles under the principle of craftsmanship, identifiable independently.

Subsequently, Liu *et al.* (2022) not only highlighted the north-south differences, inland-coastal differences, and variations between economically developed and remote areas of Chinese rural furniture but also used analogies to compare Ming Dynasty furniture styles like "Su-made," "Jin-made," "Guang-made" with "American rural furniture," demonstrating the regional characteristics and local sourcing of rural furniture.

Moreover, scholars such as Gao (2021), Shi (2023), and Chen (2022) also continued the regional classification of furniture, providing design and historical discussions on styles like "Jin-made," "Su-made," and "Guang-made." Therefore, this thesis selects

regional rural furniture as its research type, with a focus on the "Ji-made " furniture style from the eastern region of Hebei Province.

1.2.2 Scope of Research

The scope of this study can be described in terms of the following four aspects.

Firstly, this research emphasises the investigation of the current status of furniture. With the continuous evolution of society, people's needs are changing, leading to the constant evolution of furniture. For rural residents, the furniture commonly used in urban areas is often unsuitable for their lifestyle, and traditional rural furniture may also not meet their needs. Therefore, it is essential for designers to understand the issues arising with current rural furniture and address the furniture needs of residents living in rural areas.

The concept of “current status” in this study is defined along two temporal dimensions. First, the period from 2019 to the present, all 62 designated poverty-stricken counties in Hebei Province were officially lifted out of poverty, eliminating regional poverty for the first time in the province’s history (Ministry of Agriculture and Rural Affairs of the People's Republic of China, 2021). Rural residents have acquired the financial means to replace furniture that was previously tolerated out of necessity. As a result, this study primarily investigates the furniture currently used by villagers in Jidong from 2019 to the present, documenting the issues and needs associated with these furniture items. Second, the Tangshan earthquake on July 28, 1976, which measured 7.8 on the Richter scale, caused the near-total collapse of residential buildings and resulted in the large-scale destruction of traditional furniture (Gang, 1983). This event marks a critical rupture in the material history of Jidong rural furniture (Qian, 1986). Therefore, this study documents and analyses examples

of traditional furniture that have survived from 1976 to the present day to supplement existing records of traditional furniture.

Secondly, the geographic scope of this research centres on the "Jidong" region, which is located in North China Plain (Peng, 2020). Bounded by the Bohai Sea to the south and the Yanshan Mountains to the north. The scope covers 21 counties and two cities, Tangshan and Qinhuangdao, as well as parts of Chengde (Figure 1.1). The core topographic feature of Jidong region is the plain (Wang, 2018). Located within this plain terrain, Lunan County in Tangshan has developed a village pattern predominantly characterised by plain-type rural settlements (Plain Village) (Ren *et al.*, 2017). On this basis, the area was selected as the subject of this study.

Positioned within the mid-latitude zone, Jidong experiences a warm temperate continental monsoon climate, characterised by distinct seasons, ample sunlight, and abundant water sources, fostering favourable conditions for plant growth. The region's rich timber resources facilitate easy sourcing for rural artisans. Moreover, the Luan River, the second-largest river in North China, traverses the Jidong region, forming the Luan River water system, which boasts abundant water resources. Since the Palaeolithic Age, this region has nurtured agricultural civilisations along its riverbanks, with a longstanding history of furniture craftsmanship.



Figure 1.1 Jidong region (Adapted from SlideTeam, 2022; Britannica, 2022).

Thirdly, in terms of the household furniture itself, this study limits the research space to the home. The core research objects fall into two main categories: first, currently used furniture such as bedrooms (e.g., beds, wardrobes), living rooms (e.g., offering tables), and kitchens (e.g., stoves, cupboard); and second, traditional furniture, such as offering tables used for festive rituals, heated brick beds (kang) in inner rooms, and stoves in main halls.

In this study, for the first category: currently used furniture, it is necessary to relate this type of furniture to rural lifestyles, examining the use of furniture under different rural lifestyle scenarios (Rural daily lifestyles include: household composition, income and consumption, and socialising and entertainment. Rural special lifestyles include: folk activities and home-based production.). Under these two lifestyles, the researcher needs to collect the problems of household furniture in household space (inner room, hall, bedroom, living room, kitchen) and production space (village shop, village mahjong house and village processing factory), summarise and analyse the common problems, and come up with the design principles suitable for Jidong villages.

For the second category: traditional furniture, the researcher needs to collect and analyse items of traditional furniture from villages included in the fieldwork, dating from the Ming Dynasty to the Republic of China era. The analysis of each category or individual item focused on: historical background, function, materials, decorative features, usage, dimensions, and manufacturing techniques.

For the purpose of this study, the following categories are operationally defined and applied consistently throughout Chapters 4 -7: Sitting Furniture: any movable object primarily designed for sitting or reclining, including stools, benches, and chairs used in living areas, kitchens, or courtyards. Bedroom Seating: seating items located within or directly associated with sleeping areas, typically for dressing or resting, such as low stools or kang-edge benches. Common Furniture: shared or multifunctional pieces used by all household members across spaces, including storage cabinets, tables, and platforms integrated into daily activities. (See Glossary for full definitions and translations.)

Fourthly, in this research, villagers who hold Jidong rural household Hukou are selected as the primary research participants (In China, each citizen was classified in an agricultural or non-agricultural hukou, commonly referred to as rural or urban) (Wikipedia, 2025). Differences in behavioural patterns between urban and rural residents in daily life and special lifestyles directly result in divergent household furniture requirements. For instance, in daily life, rural areas predominantly feature three-generation households residing in yard dwellings, with open-plan layouts facilitating neighbourly interaction; whereas urban dwellings are chiefly high-rise flats occupied by nuclear families, characterised by enclosed living spaces and limited neighbourly engagement. Under special lifestyles, urban residents often host

traditional ceremonies such as weddings and funerals in hotels or parks, whilst rural communities primarily utilise their own domestic spaces for such occasions.

1.3 Why Study the Rural Furniture in Jidong?

Rural residents in the Jidong region have a growing demand for household furniture, driven by economic development and improved living standards (Shao, 2023).

Located near Beijing and Tianjin, this area is experiencing rapid economic development. Influenced by these two cities, the living standards of rural villagers have continuously improved, leading to an increasing demand for rural furniture. Furthermore, the North China Plain is predominantly composed of plain villages, with the Jidong countryside located in the northeastern part of the plain, primarily consisting of such villages (Wei, 2020). Therefore, studying the furniture needs of villagers in Eastern Hebei provides valuable insight into the broader demands of rural residents across the North China Plain.

There is a lack of data on traditional household furniture in rural Jidong areas. Located in the eastern part of Hebei Province, the area is susceptible to frequent seismic activity due to its position within a continental fault zone, resulting in widespread damage to historical artifacts and paper-based documents (Gang, 1983). In 1983, Jiang noted in his article that the Beijing area, adjacent to Jidong, experienced over 222 earthquakes, greatly affecting the rural villages in the region as well. Qian (1986) explicitly recorded in his report literature the damage to libraries during the 7.8 magnitude Tangshan earthquake on July 28, 1976, at 3:42 AM: "*The three-story reinforced concrete structure of the Tangshan Mining Institute Library slid westward, as if the ground swallowed a layer, reducing the original three-story building by one floor.*" This earthquake caused substantial destruction of precious cultural relics in the Jidong region, leaving little materials related to local furniture.

Consequently, it is essential to analyse and classify the existing traditional and modern furniture in the sample villages for this research.

The researcher's hometown is located in Jidong city, making it convenient for fieldwork in the rural areas. Wu (1982) noted that language barriers can hinder communication between researchers and participants, potentially affecting the research outcomes. In this research, the researcher is a city dweller from Jidong; even without long-term residence in rural villages, the language used in urban and rural contexts is similar, which does not impact the investigation's outcomes. Furthermore, some scholars have long believed that only fieldwork involving representative ethnic groups or regions can uncover cultural differences (Gupta *et al.*, 1998). However, some scholars, like Huang (2011), proposed a spatial rethinking of the concept of fieldwork, suggesting that fieldwork in one's hometown or urban setting can be equally valuable. This notion is echoed by the renowned Chinese sociologist Fei (1998), who stated that 'everywhere is the field' in the human world. Similarly, Brazilian anthropologist Peirano (1998) contends that wherever there are differences or alterity, there exists the field of anthropology. Therefore, the researcher is keen to study their hometown and contribute to the development of rural areas in Jidong.

1.4 Professional Background and Practice-Informed Research Position

Much of my academic career has been dedicated to industrial design research, and I have maintained a keen interest in furniture design. During my master's programme, I conducted field research on cooking utensils used in rural areas of eastern Hebei Province (Jidong region). During this process, it was evident that there were numerous mismatches between the design of everyday items and the daily lifestyles of residents. Many design solutions failed to meet the specific cultural, spatial, and

functional needs of rural communities. For example, furniture often failed to adapt to limited living spaces, lacked flexibility, and ignored deeply rooted local customs and lifestyle patterns. These insights strongly influenced my decision to focus this doctoral research on household furniture design in Jidong villages.

Despite growing up in an urban area in eastern Hebei Province, I have long-standing emotional ties and a deep understanding of the rural areas in the region. As a ‘local outsider,’ my identity provides cultural insight while maintaining the necessary critical distance. This in turn has shaped the approach to design problems in this context.

My professional practice played a central role throughout all stages of the research. The project originated from a design practitioner's insight into neglected user needs. This professionalism, rooted in design practice, became a core driving force throughout the research. Firstly, based on the design experience of long-term users, the research recognises the disconnect between the experience of rural furniture users and existing products. Therefore, the aim of this study is to bridge the gap between the two. Secondly, my professional practice emphasises field observation and user participation. This focus determined the choice of research methodology. Instead of adopting a detached pure literature analysis, a Mixed-method ethnographic field research approach was chosen as the core academic methodology of this study, based on the ‘user research methodology’ commonly used in the design field. Thirdly, my design expertise served as a key bridge to translate the research findings into feasible solutions. I therefore applied design experience to conclude actionable principles for the future development of rural furniture in eastern Hebei Province.

The socio-cultural context of the research required empathy and situational sensitivity which influenced the overall conduct of fieldwork. This empathic approach pushed me to go beyond the 'outsider' perspective and to build a trusting connection with the research subjects. For example, the interview outline was designed to avoid the use of rigid academic jargon. Questions were designed and asked in a dialect familiar to the villagers.

1.5 Research Questions

This research adopts an anthropological field study to examine the current state of household furniture in Jidong's rural areas. Through a literature review, two areas of exploration have been identified. The first focus is on documenting and categorizing traditional furniture found in the surveyed villages. Therefore, the first question is:

What traditional furniture was discovered in the villages surveyed?

Secondly, regarding the currently used furniture in rural Jidong, a review of the literature indicates that existing furniture in this region exhibits various design limitations and functional demands, yet these issues have not received sufficient attention. Furthermore, investigating these issues requires the use of lifestyle theory (Lifestyle theory examines how an individual's or group's pattern of living is expressed through daily behaviours, consumption choices and social interactions.) to consider how different lifestyles in Jidong affect furniture use. Thus, the second question is: **What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?** After understanding these problems and demands, it is essential to propose corresponding design principles. Therefore, the third question focuses on **What improvement principles can be proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?**

1.6 Aims and Objectives

This research aims to comprehensively understand the current situation of household furniture in Jidong rural areas, to explore the issues related to the currently used furniture in these villages, and to propose corresponding solutions. Additionally, it seeks to conduct an in-depth study of the traditional furniture found in the selected villages, contributing to the protection and transmission of traditional furniture culture.

The specific objectives are as follows:

Objective One: To expand existing research on traditional furniture in rural Eastern Hebei (physical artefacts and oral accounts from villagers): This aims to compensate for the loss of traditional furniture caused by natural disasters by both replacing lost items where possible and documenting them for future reference.

Objective Two: To establish a current demand profile for the currently used furniture in rural Eastern Hebei: To analyse its spatial context (including yard layout and spatial arrangement); Identifying furniture types and layouts; And based on the different types of lifestyles (rural daily lifestyle and rural special lifestyle), assess patterns of use and document existing problems and needs.

Objective Three: To develop design principles for addressing issues with furniture use improving furniture usability in rural Eastern Hebei: To propose solutions to the identified problems, considering factors such as price, form, function, materials, and sustainability. Design principles are formulated based on design theories such as Ergonomics, Participatory Design, User-Centred Design, and Sustainability.

1.7 Thesis Layout

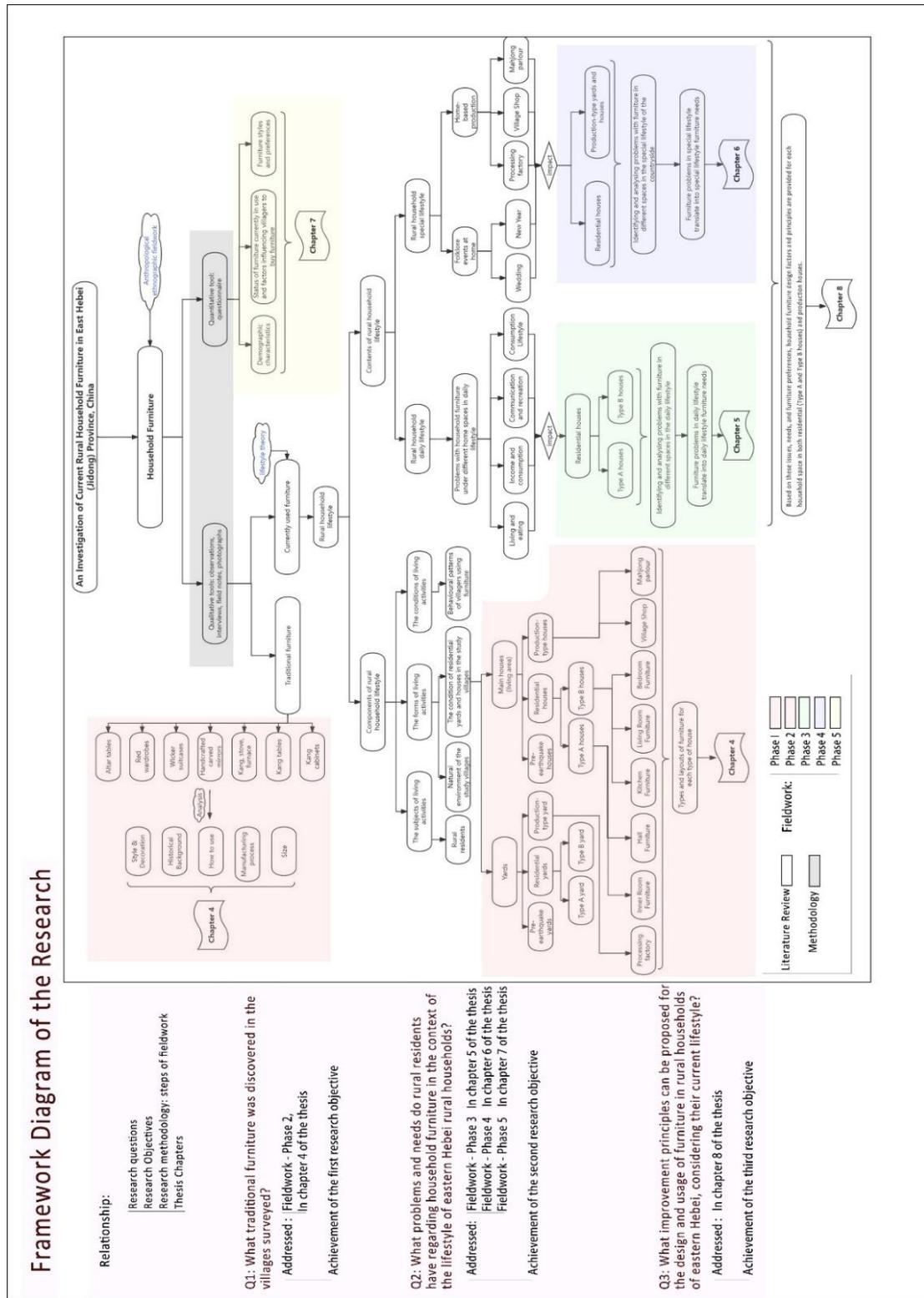


Figure 1.2 Framework Diagram of the Research

This thesis is divided into nine chapters. Figure 1.2 presents a framework diagram illustrating the relationships among the research questions, research objectives, research methodology (including steps of fieldwork), and thesis chapters. The first chapter introduces the background, type, and scope of this research, as well as the reasons for studying this topic, the research questions, objectives, and aims.

The second chapter consists of a literature review. The first part discusses the conceptual definitions of the keywords related to the topic. The second part provides a literature review on the type of regional rural household furniture, focusing on the directions, methods, and classification approaches relevant to this research. The third part outlines the theoretical framework of lifestyle in the context of current rural furniture. The fourth part summarises the research framework for studying regional rural household furniture. The fifth part organises the literature concerning the Jidong region, including aspects of the environment, traditional furniture, and usage furniture.

The third chapter outlines the methodological framework, which is based on the interpretivist research paradigm and employs a mixed-methods approach in anthropological fieldwork. Additionally, this chapter introduces the five phases of data collection designed to address the research questions. The research utilised four primary data collection methods: field notes, interviews, observations, and questionnaires.

Chapters four through seven report the findings and analysis of these five phases. The eighth chapter organises design strategies based on the findings and analyses. The ninth chapter consists of the discussion and conclusion.

2 Literature Review

2.1 Introduction

In this chapter, the researcher aims to explore the literature related to rural household furniture, examining how other researchers have studied the current state of regional rural household furniture and organizing the relevant literature about Jidong rural furniture.

Section 2.2 reviews several concepts related to household furniture, including the concept of household furniture itself, the differences between urban and rural household furniture in China, as well as traditional and currently used furniture in rural China.

Section 2.3 presents the current state of literature research on regional rural household furniture according to the type of this thesis, primarily analysing it from three aspects: research direction, research methods, and classification.

Section 2.4 outlines the theoretical framework of lifestyle in the context of current rural furniture, redefining the concept, components, and content of rural household lifestyles. This provides a theoretical foundation for constructing the research framework of the current state of regional rural household furniture in Section 2.5.

Section 2.5 constructs the research framework for the current state of regional rural household furniture, guiding the overall research of the study.

Section 2.6 reviews the relevant literature on Jidong rural furniture, identifying shortcomings in the research related to the environment, traditional furniture, and currently used furniture.

Section 2.7 highlights the gaps in the literature, refining the research questions of this research and providing guidance for subsequent research design.

2.2 Household Furniture

2.2.1 Household Furniture

Furniture serves as a medium through which people engage with their living spaces under various lifestyles (Guan *et al.*, 2024). Household furniture is a subclass of furniture that defines a spatial context, referring to furniture used in different functional areas of domestic life, such as the living room, bedroom, dining room, and kitchen (Chen, 2014). In this research, household furniture refers specifically to furniture currently in use or traditionally preserved within various domestic spaces in the studied rural households. This includes, household furniture in household space (inner room, hall, bedroom, living room, kitchen) and commercial (production) space (village shop, village mahjong house and village processing factory).

Furthermore, in rural areas where research data is limited, a thorough investigation of household furniture across different spaces first requires an understanding of both the spatial layout of the house and the placement of furniture. Wang Tong (2020) began by examining the overall layout of rural households in Yuncheng, and then used the kitchen as a case to analyse furniture-related problems and needs. Similarly, Wang *et al.* (2023), in a study of a village in Yuanling County, first explored the layout of the living room and the types of furniture used, followed by a needs analysis of living

room furniture. Therefore, in the data-scarce context of Jidong, a detailed investigation into the furniture used in rural households must begin with an analysis of the surrounding environment, including the spatial layout of both the houses and their furniture.

2.2.2 Chinese Urban and Rural Household Furniture

China's unique economic policies have fostered the development of two distinct lifestyles: the urban lifestyle and the rural lifestyle, which in turn have given rise to two corresponding categories of household furniture: urban household furniture and rural household furniture (Tang, 2021). Early policies such as "*let some people get rich first*" supported rapid urban economic growth, while rural areas experienced comparatively slower development (Chen *et al.*, 2023). This has led to significant disparities in lifestyles between urban and rural residents.

Table 2.1 Comparative Characteristics of Rural and Urban Lifestyles (Adapted from Tang, 2021; Nong, 2022; Shao, 2023).

Dimension	Rural Lifestyle (Jidong Region)	Urban Lifestyle
Household Composition	Predominantly multi-generational households with larger family sizes and stable structures; furniture designed for shared use by multiple occupants.	Primarily nuclear or small households with fewer members and higher structural mobility; furniture tailored to compact living spaces.
Income and Consumption	Income largely derived from agriculture and related industries, with high variability; furniture prioritises durability and multifunctionality.	Income mainly from stable salaried or business sources; furniture purchases emphasise style and personalisation.
Socialising and Entertainment	Centred on family and neighbours, with gatherings often held at home; furniture supports group interaction.	Based on interests and professions, with activities mostly in public spaces; furniture oriented towards individual comfort.
Folk Activities	Major folk events hosted within the home, with furniture integral to ceremonial processes.	Folk activities held in public venues; minimal connection between furniture and rituals.

Home-based Production	Residential and production spaces integrated; furniture adapted for production-related use.	Residential and production spaces entirely separated; furniture serves only domestic functions.
Housing Characteristics	Self-built yard-style houses with open layouts and mixed functions; furniture adaptable across multiple settings.	Commercial housing with enclosed layouts and clear functional divisions; furniture fitted to fixed room configurations.
Dimension	Rural Lifestyle Characteristics (Jidong Region)	Urban Lifestyle Characteristics

Chinese Urban lifestyles tend to emphasise efficiency, functionality, personal expression, and flexible use of space, whereas rural lifestyles are typically grounded in agricultural or manual labour, emphasising practicality, durability, and adaptation to the local environment (Tang, 2021). The comparison in Table 2.1 highlights marked distinctions between rural and urban lifestyles in China, particularly in the context of furniture use and design requirements. Rural households in the Jidong region are typically larger, multi-generational, and integrate living with agricultural or small-scale production activities, leading to a preference for durable, multifunctional furniture adaptable to diverse spatial settings. In contrast, urban households are generally smaller, more mobile, and separated from production spaces, prioritising furniture that reflects individual tastes, compactness, and stylistic coherence. Social and cultural practices further shape these differences: rural communities often host social gatherings and folk rituals within the home, embedding furniture in collective and ceremonial life, whereas urban lifestyles centre on public venues and private leisure, with furniture primarily serving personal comfort. Housing forms also diverge, with self-built, open-layout rural dwellings demanding versatile furnishings, while standardised urban apartments require space-specific, often custom-fitted designs.

Table 2.2 Comparative Characteristics of Urban and Rural Household Furniture (Adapted from Liu, 2022; Nong, 2022; Guo, 2023).

Category	Urban Household Furniture	Rural Household Furniture	Gaps in Rural Household Furniture
Furniture	Modular furniture, integrated	Traditional furniture (e.g.,	Lack of systematic analysis of

Types/ Archetypes	systems, smart furniture; focus on style and brand consistency	kang, kang tables, wooden chests), self-made or modified items, adapted to local needs	traditional rural furniture, especially in relation to lifestyle-based archetypes
Furniture Characteristics	Standardized, highly industrialized, aesthetically refined, with clearly defined functions	Readily sourced materials, rough but durable structures, multifunctional, adapted to household habits	Few studies explore the "non-standardized" nature of rural furniture, its handcrafted qualities, and regional adaptability
Spatial Layout and Usage	Clearly divided functional spaces such as living room, dining room, and bedroom	Overlapping multifunctional spaces (e.g., one room used for sleeping, dining, and guest reception)	Very limited research on the interaction logic between rural dwellings and furniture layout, especially regarding spatial flexibility and furniture adaptation
Standards and Norms	Furniture produced according to national/industry standards (e.g., GB/T series standards)	No formal standards; dimensions based on experience, often tied to traditional architecture	Lack of research on the design standards of rural furniture, particularly in relation to cultural and climatic adaptability

Chinese urban household furniture is defined as furniture used in urban residential spaces, often incorporating new materials, technologies, and smart systems, with a strong emphasis on modern design features (Baidu Baike, 2019). In contrast, Chinese rural household furniture refers to furniture that serves the daily life of residents in rural areas. It tends to be more traditional, less intelligent, and exhibits strong regional characteristics (Nong, 2022; Guo, 2023).

Table 2.2 summarises the differences in research findings by Liu (2022), Nong (2022), and Guo (2023) on the characteristics of household furniture in urban and rural areas of China. Urban furniture is typically modular, standardised, and style-driven, designed for clearly defined functional spaces and produced in accordance with national or industry standards. In contrast, rural furniture often consists of traditional pieces such as kang, wooden chests, or self-made items, characterised by multifunctionality, local material use, and adaptation to overlapping living-production spaces with no formal standards. Also, Table 2.1 indirectly demonstrates that academic research on urban household furniture and living behaviours is relatively

well-developed, whereas studies on rural household furniture and behavioural habits are significantly lacking.

This research does not aim to compensate for this gap at the national level, but rather to address the specific lack of systematic research on rural furniture in the Jidong region. This is mainly due to the fact that rural furniture in China has regional characteristics (Liu, 2022; Nong, 2022; Guo, 2023). Differences in geographical conditions and local customs have led to distinct functional and formal variations in rural furniture across regions (Ying & Tong, 2022). For example, rural households in Shaanxi Province, located in the northern temperate monsoon climate zone, experience cold, dry winters and typically organise their daily life around the heated “kang” (Li *et al.*, 2020). Furniture in this region emphasises warmth retention, load-bearing capacity, and storage, and often uses hardwood materials such as elm or poplar (SIMIN, 2022). By contrast, rural households in Suzhou, located in the southern subtropical monsoon zone, live in a humid climate where daily life extends into yards (Liu *et al.*, 2021). Their furniture tends to focus on ventilation, lightness, and spatial flexibility, often using lightweight materials such as fir or bamboo. Therefore, this research focuses on the rural Jidong areas to explore local furniture, lifestyles, and their interrelation, in order to identify the problems and needs of rural furniture.

2.2.3 Chinese Rural Traditional Furniture

There are various definitions of Chinese rural traditional furniture. Scholars from the Chinese Classical Furniture Culture Research Centre (2019) argued that furniture produced before the establishment of the People's Republic of China (1949) is referred to as traditional furniture. Zhang (2016), Hu (2002), and Huang (2014) suggested that distinguishing traditional furniture from modern furniture requires consideration of two aspects: first, whether the furniture exhibits characteristics of its

era, and second, whether it reflects the lifestyle and customs of a particular time while maintaining its historical appearance. Furniture produced today that retains an old appearance can only be classified as "antique-style furniture," "replica furniture," or "neoclassical furniture," rather than "Chinese traditional furniture." This research aligns with Zhang *et al.*'s perspective and has focused on collecting or defining traditional furniture as being from the Ming Dynasty to the Republic of China era that reflects the social and lifestyle characteristics of rural Jidong.

2.2.4 Current Chinese Rural Furniture

The concept of current Chinese rural furniture refers to the furniture that is used in rural households. In recent years, many scholars have conducted in-depth discussions on the existing problems related to rural furniture usage (Nong, 2022; Wang Tong ,2020; Wang *et al.*, 2017). For instance, Nong (2022) pointed out that rural residents are purchasing modern urban furniture that is unsuitable for rural living needs, resulting in the loss of the unique character of Chinese villages. This trend is detrimental to the transmission of traditional customs and the advancement of new rural cultural construction policies.

Although these studies summarize issues related to rural furniture in China, their scope is relatively broad, and the depth of analysis is insufficient. The cultural and lifestyle characteristics of rural areas vary across different regions, leading to different types of problems with household furniture, and consequently, the corresponding solutions should also differ. Therefore, it is necessary to further deepen the analysis of furniture issues in a specific rural area and explore methods to address these problems, thereby avoiding the pitfalls of uniform design. Taking the selected Jidong rural area as an example, households in this region possess unique lifestyles (For example, holding folk activities and engaging in production activities at home.) and

traditional cultures. Thus, it is essential to focus on exploring the needs of household furniture users in Jidong to better serve the daily lives of rural residents.

2.3 Regional Rural Household Furniture

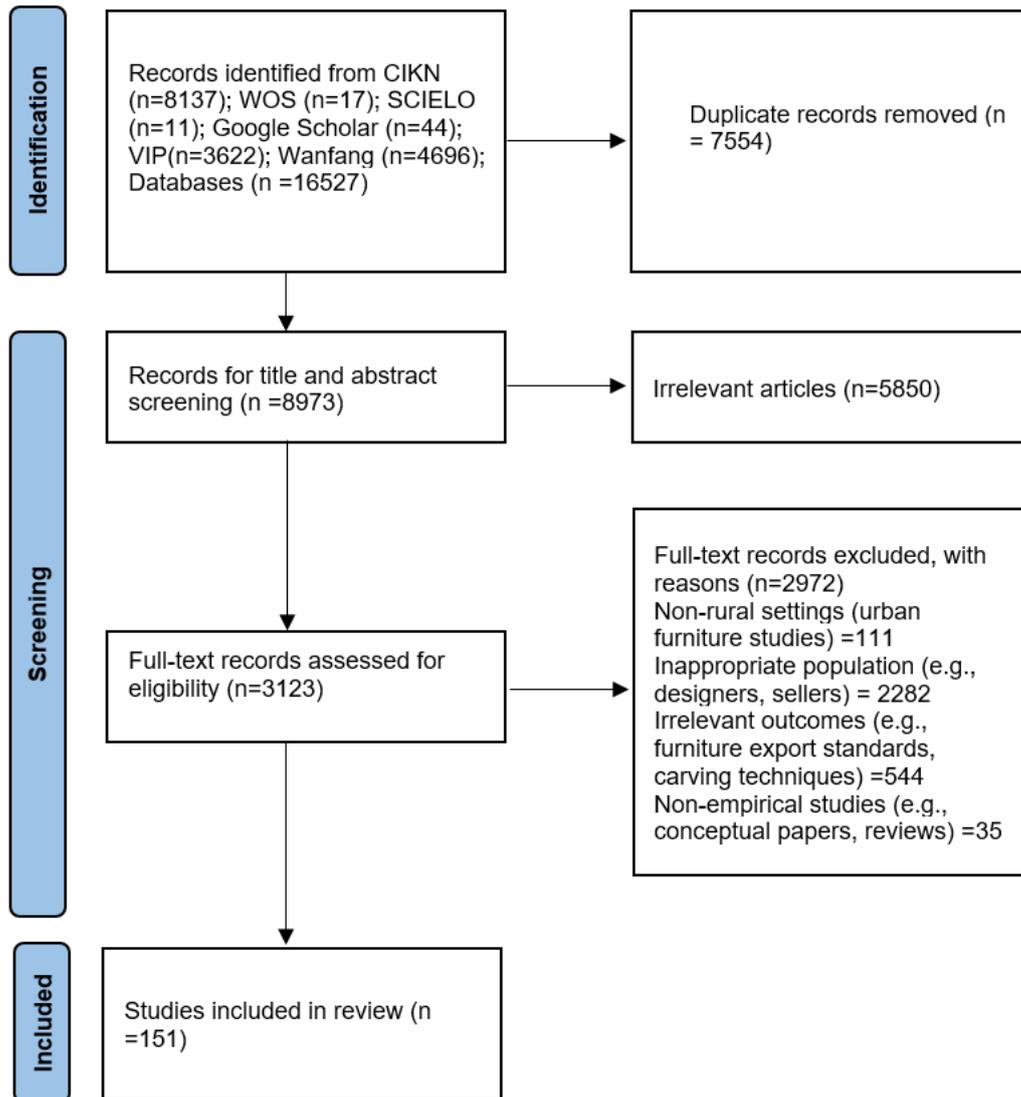


Figure 2.1 Flow Diagram of the Systematic Literature Review on Regional Rural Household Furniture

Due to the limited research on home furniture in the Jidong region, this study needed to draw on existing literature on regional rural household furniture from other parts of China to study rural household furniture in Jidong. The search keywords include, but

are not limited to: "country furniture," "rural furniture," "Hebei furniture," "Jidong furniture," "regional furniture," "China rural furniture," "Shanxi rural furniture," "traditional furniture," "folk furniture," "rural lifestyle," and "civilian furniture."

A systematic literature review was conducted using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, as illustrated in Figure 2.1. A total of 16,527 records were retrieved from databases including CNKI (China National Knowledge Infrastructure), VIP (A Chinese literature database developed by Chongqing VIP Information Company), Wanfang (A comprehensive academic database in China), WOS, and Google Scholar. After removing 7,554 duplicates, 8,973 articles remained for title and abstract screening. Subsequently, 3,123 full-text articles were assessed, and based on inclusion and exclusion criteria, 151 studies were included in the final analysis.

Exclusion criteria included: (1) studies focused on urban furniture, (2) inappropriate populations (e.g., designers, sellers), (3) irrelevant outcomes (e.g., export standards, carving techniques), and (4) non-empirical studies (e.g., reviews, conceptual papers). Approximately 90% of the included literature was in Chinese.

Among the included studies, 11 were particularly relevant and are summarised in Table 2.3. Next, the researcher analyses the research directions, research methods, classification systems, data analysis methods and findings of these studies to provide a reference for this study on the rural furniture survey in Jidong.

Table 2.3 Important articles on the study of regional household furniture in rural China

Title, author(s) and year	Research Methods, Findings, and Evaluation
'Exploration of modern rural furniture design strategies from the perspective of value rationality', Guo, C. and Tang, L. H. (2023).	Grasp the real needs of rural villagers and return to the design of daily life.
'Chapter 9: Basic Issues in Contemporary Rural Furniture Design in China', Nong, X.W. (2022)	<p>The fundamental issues in rural furniture design</p> <p>The concept of rural furniture</p> <p>It is believed that rural household furniture design needs to embody cultural significance, economic feasibility, and practicality.</p>
Research on the Design of New Rural Living Room Furniture Based on Lifestyle, Jin, J. (2010).	<p>Qualitative Research</p> <p>Establish a model framework for studying the lifestyle of new rural areas and the design of living room furniture in new rural areas.</p> <p>Analyse the trends in lifestyle changes in Zhejiang's new rural areas and the design of living room furniture in Zhejiang's new rural areas.</p> <p>Develop living room furniture products for new rural areas based on general furniture design processes, applying theory to practice.</p>
'Research on Rural Living Room Furniture Design Based on Lifestyle', Wang, S. Y. and Tang, L.H (2023)	<p>In rural living habits: Residential space, storage behaviour, and hygiene practices create specific demands for rural living room furniture.</p> <p>In rural social habits: Social customs, consumption behaviour, and aesthetic characteristics shape the requirements for rural living room furniture.</p> <p>Design Strategies Based on Needs: Market positioning strategy;</p> <p>Cultural adaptation strategy; Local material sourcing strategy; Environmental adaptation strategy (for family space).</p> <p>Shortcoming: The process of data collection and data analysis is not described in detail.</p>
Research on the Design of New Rural Residential Layouts Based on Production and Lifestyle, Li, F.C. (2015)	<p>Field investigation method, Literature research method (case analysis method, multidisciplinary cross-research, inductive summarization method)</p> <p>Summarize the types of rural industries and home-based production methods in rural Chengdu.</p> <p>Categorize rural lifestyles based on the content of rural living activities in Chengdu.</p>

	<p>Identify the evolution patterns of housing layouts under the transformation of production and living models in the suburban areas of Chengdu.</p> <p>Summarize the different influencing factors of production and lifestyle on the layouts of new rural housing.</p> <p>Develop design strategies and an evaluation index system for new rural housing layouts in suburban Chengdu, based on the perspective of production and lifestyle.</p>
<p>Research on Furniture Design for Rural Residents in Central Hunan, Yan, Z.H. (2012).</p>	<p>Fieldwork, Literature analysis method (questionnaires, interviews, and photography)</p> <p>Investigated the natural environment, living conditions, labour methods, leisure lifestyles, consumption patterns, living customs, and furniture preferences of rural residents in central Hunan.</p> <p>Explored the shape, structure, functionality, materials, colours, and surface decorations of rural furniture in central Hunan.</p> <p>Extracted furniture design characteristics suitable for the rural areas of central Hunan.</p>
<p>Research on Folk Furniture in Shanxi, Zhang Chong (2005).</p>	<p>Field investigation method, Literature research method (comparative analysis) Study Topics:</p> <p>Background and Environment of Shanxi Folk Furniture: examined the historical and environmental context in which Shanxi folk furniture emerged. Comprehensive Discussion on Ming and Qing Dynasty Shanxi Folk Furniture:</p> <p>Analysed the furniture from multiple aspects, including history, types, materials, shapes, structures, craftsmanship, and decorations; Clarified the era's background, social features, and furniture usage.</p> <p>Analysis of Modern Shanxi Folk Furniture: Focused on aspects such as wood materials, shapes, structures, and decorative elements.</p> <p>Compared the characteristics of Shanxi folk furniture from the Ming and Qing periods with modern examples.</p>
<p>Research on Folk Furniture in Southern Anhui, Zhang Yachi (2007).</p>	<p>Field Investigation Method, Case Study Method, Literature Research Method (Comparative Analysis)</p> <p>Summarize and analyse the formation and development, layout, types and characteristics, stylistic and cultural features, artistic qualities, structure,</p>

	<p>materials, and craftsmanship of Anhui Southern folk furniture.</p> <p>Conduct a horizontal comparative study between the folk furniture of Anhui Southern ancient residences and other types of traditional Chinese furniture, such as Shanxi ancient residential furniture and palace furniture. Focus on analysing the characteristics and design elements of the furniture, further highlighting the unique features and patterns of Anhui Southern folk furniture through comparison.</p>
<p>Research on the inheritance of folk furniture in Party Family Village, Shaanxi, Sun, G. R. (2014).</p>	<p>Field Investigation Method</p> <p>Study the folk furniture of Party Family Village (Shaanxi), including the overall characteristics of furniture layout, types, shapes, decorations, materials, structure and craftsmanship, artistic style, and the cultural factors influencing the formation of Party Family Village furniture.</p> <p>Research furniture decoration, including decoration themes, locations, techniques, and summarize its decorative characteristics. Analyse the factors influencing the decoration of folk furniture in Shaanxi villages.</p> <p>Construct a system for the inheritance of folk furniture traditions.</p>
<p>Self-Sufficient Furniture Design for Farmers in Rural China for Contemporary Living, Wang, C. I., & Laughton, S. (2017).</p>	<p>Ethnography (Immersive Fieldwork Research)</p> <p>Taking Shijiazhuang in the Hebei region as an example, furniture design is integrated with the local traditional rural culture.</p> <p>Use the New Technique - Tapered Tenon Joinery System</p>
<p>Design of kitchen furniture in rural Yuncheng based on lifestyle, Wang Tong (2020).</p>	<p>Literature Research Method; Combination of Qualitative and Quantitative Methods (Questionnaire, Interview, Inductive Method, Statistical Analysis, Participant Observation, Non-Participant Observation)</p> <p>Conduct theoretical research on lifestyle and rural kitchens, establishing a model for studying rural lifestyles in the Yuncheng region and conducting research based on this model.</p> <p>Analyse the lifestyle characteristics and kitchen-living demands of Yuncheng rural residents, summarizing the design elements and principles for rural kitchen furniture in the region.</p> <p>Develop a design model for rural kitchen furniture in Yuncheng.</p> <p>Complete multiple rural kitchen furniture design proposals for Yuncheng, and evaluate these proposals using the Value Opportunity Analysis (VOA) tool. Select the most reasonable proposal for modification, finalize the model, and validate its application.</p>

2.3.1 Research Direction

Currently, the research conducted by Chinese scholars on the status of regional rural furniture remains at a preliminary exploration stage, primarily divided into two directions:

Organizing and analysing traditional furniture in rural areas

This type of thesis mainly focuses on the organization and analysis of traditional furniture from specific villages or regions, typically presented in the form of a master's or doctoral theses. The aim is to fill the research gap regarding regional traditional furniture in China. The research approach involves collecting data through field investigations, and then comparing it with studies from other regions to reveal the unique furniture culture of the study area. For example, the studies by Zhang Zhong (2005) and Zhang Yachi (2007) provided in-depth analyses of traditional furniture in rural areas of Shanxi and southern Anhui, respectively. Zhang Zhong explored the types, materials, forms, and structures of traditional furniture.

Meanwhile, Zhang Yachi analysed the types and characteristics of the layout of traditional furniture in southern Anhui rural households, comparing it with traditional furniture from Shanxi and imperial furniture, thereby revealing the differences in traditional furniture across different regions.

Thus, in this research, the researcher needed to summarize the characteristics of traditional rural furniture in the studied villages regarding its types, materials, forms, structures, and styles, providing important references for the protection and transmission of local traditional furniture.

Research on the demand for furniture in rural areas

This section of the thesis primarily targets the furniture needs of rural villagers in specific regions. The first step is to first identify issues related to the furniture itself and its usage through interviews, observations, or literature review, and then summarize the furniture demands, proposing various design solutions in response. For example, Wang *et al.* (2023) took the rural living room furniture of Yuanling village as an example, analysing the existing problems and demands in detail, and proposing design principle for market positioning, cultural adaptation, local material sourcing, and environmental fit (family space). Although he conducted an in-depth analysis of rural furniture needs, the descriptions of data collection and analysis methods were unclear, limiting readers' comprehensive understanding of the research process.

Therefore, in this research, it is essential to investigate the demand for furniture in rural Jidong. By collecting data to identify furniture-related issues and villagers' needs, the analysis of design factors is followed.

In summary, this research studies the current situation of household furniture in Jidong villages, which includes organizing the traditional furniture of the studied villages, as well as analysing the problems and demands arising from the currently used furniture in Jidong villages and providing design principles.

2.3.2 Research Methods

In terms of research methods, most literature adopts field surveys to study regional rural furniture in China. This method allows researchers to visit sites in person, directly observe, and record data, thereby collecting primary data. Whether studying regional traditional furniture or identifying issues related to the currently used furniture, the field survey method has wide applicability. In the realm of traditional

furniture, Zhang Chong (2005) and Zhang Yachi (2007) employed field surveys to collect data on traditional furniture types in different regions of China. Wang Tong (2020), Sun (2014), and Wang *et al.* (2017) also utilised this method to investigate the furniture needs in various rural areas. Among them, Wang *et al.* (2017) assisted villagers in Shijia Village in utilizing local woodworking skills and materials to achieve their goal of making furniture independently. This data collection method enhances the overall value of the research.

Although field surveys are a common qualitative research method, some studies may incorporate quantitative elements within the field survey, such as using questionnaires to gather quantitative data, making the research more comprehensive. Wang Tong (2020), in her study on kitchen furniture design in rural Yuncheng, first employed questionnaires to statistically analyse residents' lifestyles. She then entered users' homes and used observational methods to organise the issues residents faced while using kitchenware, translating these problems into specific needs. Her research combined qualitative and quantitative methods to obtain more comprehensive and multidimensional data.

Therefore, this research also adopts the field survey method, incorporating quantitative elements to collect data on traditional furniture in the studied villages and to analyse the furniture needs in Jidong rural areas. This is discussed in detail in Chapter 3 of the thesis.

2.3.3 Classification Methods

Historically, there have been various methods for classifying furniture, which can be categorised according to function, material, style, and residential space (Chen, 2014).

In the review of literature on traditional regional rural furniture, the necessity of classification depends on the number of furniture types discovered; when the types are numerous, they may be classified by function (Wang, 1985; Zhang Zhong, 2005; Zhang Yachi, 2007; Engler *et al.*, 2009). For example, Wang (1985) categorised Chinese Ming-style furniture into chairs and stools, tables and desks, beds and couches, cabinets, and others, discussing the shape, structural form, and decorative methods of each category. Engler *et al.* (2009) divided American rural furniture into categories based on function: for eating and drinking, for reading and writing, for dressing and sleeping, for sitting and reflecting, for cooking and baking, and for storing and keeping. These classifications are primarily based on use-function and reflect the cultural and functional roles of furniture within traditional domestic life.

However, in cases where the number of traditional furniture types is limited, classification is not necessary (Yu *et al.*, 2020). Generally, when a few pieces of traditional furniture are discovered, only those pieces are recorded, those pieces are simply described individually. Since this study focuses on four villages in the Jidong region, although the quantity of traditional furniture may be notable, the variation in type may be limited. Therefore, rather than imposing a rigid classification system, each item will be described in detail, including its function, material, decoration, and usage context.

As for current furniture in use, literature related to rural home environments tends to classify furniture according to residential space (Zhang, 2007; Wang Tong, 2020). This classification method analyses the function, layout, usage, problems, and needs of furniture in relation to family space as a whole. For instance, Zhang (2007) analysed hall furniture, study furniture, bedroom furniture, and other types of furniture based on the family spaces in southern Anhui Province. This classification

method not only allows for a detailed enumeration of furniture types but also demonstrates the role of furniture within the overall residential environment.

Based on this literature review, this study adopts a dual approach to classification: traditional furniture will be described individually rather than strictly categorised, while currently used furniture will be classified by spatial function within the household. This method ensures clarity and consistency, while also aligning with the limited typological diversity observed in the field.

2.3.4 Design Factors and Design Principles

Design factors are specific influencing elements distilled from problems and needs identified during furniture use, whereas design principles constitute overarching guidelines for future design practice, formed by synthesising these factors (Mäkelä *et al.*, 2021). The primary motivation for this research was to uncover issues and requirements manifested in furniture within local lifestyles through anthropological fieldwork, necessitating a knowledge output format that preserves cultural/contextual details while offering practical design guidance. Given this consideration, the study opts to present design factors and further synthesise them into design principles as its primary deliverables, rather than directly providing frameworks, taxonomies, or catalogues. Frameworks and taxonomies serve primarily for knowledge organisation and categorisation, whilst catalogues often remain at a descriptive level (Kwon, 2024; Giunchiglia *et al.*, 2024). In contrast, design principles offer greater guidance and operational applicability; certain design recommendations can be directly translated into directives for future design practice (Muhammad Suandi *et al.*, 2022).

Furthermore, while subsequent design evaluations following principal formulation may be considered follow-up steps, this thesis deliberately excludes such assessments from its scope. The primary objective is to generate evidence-based, context-specific

principles rather than designing or producing tangible artefacts (Wang Tong, 2020). Evaluation would necessitate advancing into another phase of applied design practice (such as prototyping, field testing, and iterative refinement) which falls beyond this study's remit but may constitute a future research direction (Muhammad Suandi *et al.*, 2022; Jasińska *et al.*, 2024).

Table 2.4 Definition of ergonomics, participatory design, user-centred design and sustainability (Adapted from Yang *et al.*, 2024; Bai *et al.*, 2024; Wang Tong, 2020).

Ergonomics / Anthropometrics: Used to justify dimension-related principles and to convert usage observations into measurable design prescriptions.
Participatory design / Co-design: Supports the claim that principles are best implemented through collaborative processes with local craftsmen and residents; suggested operational steps include workshops and prototyping.
User-centred design: Frames the normative aim that principles must directly respond to users' daily practices, thus requiring observation and validation within use contexts.
Sustainability / Circular design: Informs material, repairability, and lifecycle principles; furniture-specific lifecycle studies give concrete strategies for sustainable design choices.

Within the fields of urban furniture and product design, existing research has proposed numerous guiding principles or specifications from diverse perspectives, including sustainable design, lifecycle design, ergonomics, user-centred design, and participatory design (Table 2.4). For instance, recent specialised lifecycle/sustainable design guidelines for furniture provide systematic strategies concerning materials, repairability, and recyclability (Yang *et al.*, 2024). Ergonomics has long served as the foundational theoretical underpinning for furniture design, providing quantitative benchmarks for dimensions, seating postures, and operational comfort (Bai *et al.*, 2024). Despite the abundance of generic furniture and sustainability guidelines, contextual principles tailored to specific regions (such as rural Jidong) remain scarce. These principles should account for unique local cultures, squatting habits, and the availability and feasibility of indigenous materials. Consequently, this study employs the aforementioned theories and terminology as an explanatory and supporting framework when proposing design principles, thereby filling this gap in contextualised design knowledge. Furthermore, existing literature (Wang Tong, 2020;

Sun, 2014; Wang *et al.* 2017) offers limited research systematically translating ethnographic fieldwork into principles or norms usable by designers, lacking clear methodological examples. Methodologically, this study demonstrates a concrete pathway from data collection, thematic analysis, design factors, design principles, serving as a methodological exemplar.

Table 2.5 The design factors for rural furniture in China (Adapted from Liu, 2022; Nong, 2022; Guo,2023).

Design Factors	Secondary Factors	Design Implications
Regional Culture & Traditions	Traditional customs, symbolic patterns, local craftsmanship, ritual uses of furniture	Furniture should embody cultural symbols, preserve traditional craftsmanship, and respect ritual practices.
Climate & Natural Environment	Cold vs. humid climates, availability of local materials (wood, bamboo, rattan, etc.)	Select climate-adaptive materials; promote comfort, ventilation, or insulation; prioritise locally sourced resources.
Residential Spatial Layout	Multi-functional rural spaces; compatibility with traditional housing structures	Design compact, multi-functional, and movable furniture adapted to limited or mixed-use spaces.
Lifestyle & Family Structure	Multi-generational households; integration of daily living and labour activities	Ensure ergonomic design for different age groups; create versatile furniture for work–life overlap.
Economic Conditions & Accessibility	Household income levels; local vs. market-based furniture acquisition	Balance cost-effectiveness with quality; provide scalable design solutions for different income groups.
Sustainability & Ecology	Local material recycling; eco-friendly production	Encourage sustainable material use, modular design, and environmentally responsible processes.
Modernisation & Rural–Urban Interaction	Urban influence on aesthetics; hybridisation of modern and traditional elements	Combine modern aesthetics (e.g., New Chinese, Nordic) with regional traditions for hybrid designs.

In the process of deriving design factors, it is evident that rural household furniture across different regions demonstrates significant variations, primarily emerging from locally embedded problems and needs that are subsequently synthesised through data analysis. For example, Wang Tong (2020), drawing on empirical data concerning the culinary practices and requirements of rural households in Yuncheng, identified design factors related to spatial configuration, operational behaviours, functional facilities, and kitchen environment. Similarly, Wang *et al.* (2023) through their fieldwork in Yuanling County, distilled design factors including market conditions, cultural context, locally available materials, and environmental considerations. These examples highlight that the accuracy of data collection and analysis is the essential prerequisite for the validity of design factors, and thus forms the basis for the articulation of design principles. From a broader review of the literature (Liu, 2022; Nong, 2022; Guo, 2023), it can be concluded that the design factors for rural furniture in China typically encompass culture, environment, spatial arrangements, lifestyle, economy, sustainability, and integration with modernity (Table 2.5).

The development of design principles is achieved through the consolidation, categorisation, and merging of design factors, thereby eliminating redundancy and producing generalisable and actionable guidance. For instance, Wang Tong (2020) integrated the functional requirement of “additional storage cabinets” with the operational need for a “rational arrangement of storage, washing, and cooking areas to improve efficiency,” thereby formulating the first item under the principle of functional practicality: “to provide adequate space for operation and storage.” Likewise, the design factors summarised in Table 2.5 can be combined according to this logic: for example, “cultural continuity” and “modern integration” may be merged into a “principle of cultural inheritance and innovation,” while “climate adaptability,” “sustainability,” and “local materials” can be consolidated into a “principle of environment and sustainability,” thus reducing redundancy and overlap

between factors. Consequently, this study requires summarising design factors and deriving design principles based on field survey data, employing the aforementioned methodology.

2.4 Rural Household Lifestyle Theories and Currently Used Furniture

In the late nineteenth and early twentieth centuries, within the early sociological and philosophical context, lifestyle theories emphasised group identity, social status, and cultural symbolism, highlighting lifestyle as an expression of social stratification and collective belonging (Li, 2015). By the mid-twentieth century, within the context of marketing and consumer research, lifestyle theories primarily functioned as a tool for consumer segmentation (Töpfer, 2015). They distinguished groups through values, interests, and consumption patterns to predict and guide consumer behaviour.

In the late twentieth century, lifestyle theories were introduced to China (Hai, 2007). Within the context of rural Chinese studies, these theories represent not merely abstract generalisations of individual behavioural patterns but also a crucial analytical lens for understanding rural social transformation, the reconfiguration of modernity, and the continuity of indigenous cultures (Martin *et al.*, 2013; Wang, 2023). Lifestyle theories highlight the shaping influence of multiple structural forces (such as state policies, market mechanisms, and urban-rural disparities) on rural life, while simultaneously emphasising regional specificity and cultural continuity. Its implications are further manifested in villagers' daily practices, encompassing dimensions such as labour organisation, consumption habits, and festive activities (Ma *et al.*, 2021).

Consequently, lifestyle theories exhibit significant variations across contexts: they may function as symbols of social status, frameworks for individual identity practices, indicators for market segmentation, or collections of sustainable behaviours. Precisely for this reason, Stephan Schwarzinger *et al.* (2024) note that without a clear definition, ‘lifestyle’ risks becoming ‘anything’. This underscores the necessity of explicitly defining the scope and boundaries of lifestyle in specific research contexts.

In recent years, within the context of Chinese rural furniture studies, lifestyle theories offer a pathway to understanding how furniture forms and functions are rooted in local residents' daily conventions and social practices (Wu, 2021; Chen, 2014). It not only examines behavioural patterns such as dwelling, labour, social interaction, and consumption but also focuses on the interconnections between these practices and how they collectively shape the utilisation of domestic spaces and the demand for furniture adaptation.

In addition, research on contemporary furniture used in rural areas can be approached from various angles, including market trends, management, inheritance of traditional Chinese furniture culture, and cross-cultural comparisons (Li, 2015). Compared with other theories, Lifestyle Theory places greater emphasis on daily habits, local culture, and the interaction with furniture (Feng, 2020). It is more capable of revealing the cultural context and behavioural logic behind the use of regional furniture. Therefore, this study adopts Lifestyle Theory as the analytical framework to examine rural household furniture in the Jidong region.

In this section, the researcher redefines the rural household lifestyle, including the concept, its constitutive elements, and the content of rural household lifestyle.

2.4.1 Concept of Rural Household Lifestyle

In current studies on regional rural household furniture, two main understandings of lifestyle exist. The first definition emphasises that lifestyle is the characteristic of life activities formed under the constraints of social conditions and values, which satisfies individual needs and encompasses labour, politics, material consumption, leisure, culture, social interaction, and religion (Hu *et al.*, 2023). The second definition limits "lifestyle" to daily activities, focusing on individual behaviours and household activities, such as clothing, food, housing, and travelling (Zhu, 2010; Li, 2015). Comparatively, the second definition has a narrower scope of research, concentrating on daily life patterns. In this research, the researcher is more inclined to adopt the second definition. Thus, the rural household lifestyle refers to lifestyle contents related to currently used furniture within the household space.

2.4.2 Components of Rural Household Lifestyle

Professor Wang (1995, pp. 41-48) proposed three components of lifestyle based on social conditions and values: conditions of living activities, subjects of living activities, and forms of living activities. This framework has been widely applied in the analysis of the lives of furniture users (Hu *et al.*, 2023; Jin, 2010; Li, 2015). The researcher has adapted this framework to better suit the study of rural furniture lifestyles (Figure 2.2).

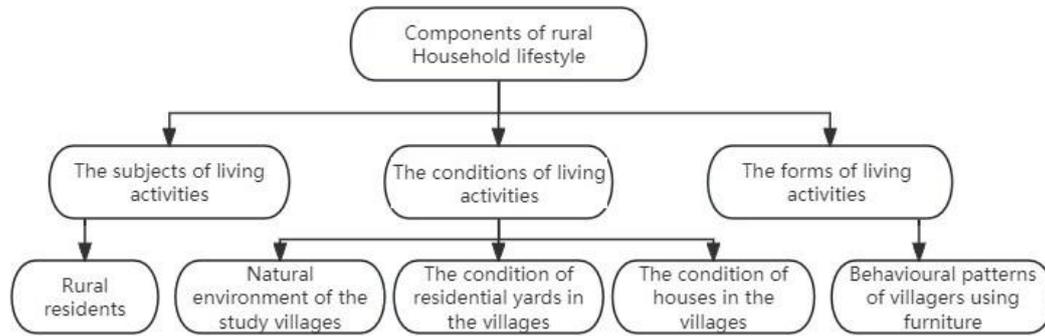


Figure 2.2 Components of rural household lifestyle (Adapted from Wang, 1995)

The subjects of living activities are individuals, groups, or societies that occupy a central position in the structure of the lifestyle under consideration (Wang Tong, 2020). In this research, the subjects of rural household living activities refer to rural residents who hold local Hukou.

The conditions of living activities refer to all external objective conditions that influence the target population, primarily including natural and social environments (Hu *et al.*, 2023). The natural environment encompasses geographical location, climate, temperature, and other factors. The social environment involves farmers' economic income, consumption levels, and living conditions, which partially overlap with the content of rural household lifestyles studied later. In this research, the conditions of rural household living activities need to be linked to currently used rural furniture, focusing on the natural environmental background and certain aspects of the social environment of the furniture, including the natural environment of the village, the conditions of residential yards and houses in the village.

The forms of living activities are the behavioural styles and patterns of the target population's activities (Hu *et al.*, 2023). Different regions, ethnic groups, and communities exhibit specific and typical lifestyles, including aspects of production,

consumption, and leisure. These differences contribute to their unique lifestyles. To thoroughly investigate the forms of rural household living activities, it is necessary to carefully analyse the specific behaviours of villagers currently used furniture within the diverse content of lifestyles in the research area, allowing for a more comprehensive understanding of rural residents' furniture-related activities.

2.4.3 Content of Rural Household Lifestyle

In the literature concerning rural household furniture and rural household lifestyles, scholars have examined the content of rural lifestyles in two major dimensions: the content of daily rural household lifestyles, including social interaction, eating, and consumption (Jin, 2010; Wang Tong, 2020; Wang *et al.*, 2023), and the content of special rural household lifestyles, such as weddings, funerals, and Chinese New Year celebrations (Li, 2015; Yu *et al.*, 2020; Yan, 2022).

Content of rural household daily lifestyles

Rural household daily lifestyles primarily encompass living and eating, income and consumption, communication and recreation (Wang, 1982, pp. 467-471; Li, 2015; Jin, 2010). Living and eating are the most basic daily needs. These activities typically occur in the inner and main rooms (or bedrooms and living rooms), directly influencing the arrangement of furniture in these spaces.

Income and consumption refer to the various trading activities conducted by individuals (Pengpai News, 2022). These factors directly or indirectly affect rural residents' purchasing power and preferences for furniture (Li, 2015). With societal development, the consumption levels of rural residents in China have gradually increased. Consumers now purchase furniture and home appliances through physical stores or online shopping, shifting their consumption mindset toward a "moderately

prosperous" consumption model (Pengpai News, 2022). This change indicates that rural residents' consumption attitudes have evolved to prioritise the quality, design, and durability of furniture, rather than merely focusing on low prices, thereby fostering the emergence of new furniture preferences and demands. Whether a similar phenomenon is occurring in rural Jidong is central to this project.

Rural communication and recreation (leisure) lifestyles refer to the ways in which villagers meet their spiritual needs, generally yielding pleasurable experiences (Yang, 2020; Tong, 2003). This aspect significantly influences villagers' choices regarding entertainment furniture.

Unique social interactions and entertainment practices, like playing mahjong and playing poker, continue to hold significant importance in rural areas (Li, 2015). The selection of specific venues for these activities and the necessity for particular furniture configurations (e.g., mahjong tables and seating) represent topics for exploration in this research. Additionally, the enduring customs of visiting relatives, chatting at home, and gathering for meals raise questions about the need for corresponding furniture support and the specific spaces within homes where these activities occur, which this research also focuses on. Furthermore, with advancements in society, economy, and technology, urban social interaction and entertainment practices are gradually permeating rural life (Tian *et al.*, 2007). For example, using computers and mobile phones as new forms of entertainment are generating new demands among rural residents, which likewise necessitates continued research.

Content of rural household special lifestyles

Unique rural household lifestyles mainly encompass home-based production activities and folk customs (Li, 2015; Ren *et al.*, 2012; Nong, 2022).

A decade ago, the primary production lifestyle in rural areas was largely labour-oriented, with farmers relying predominantly on the land for their livelihoods (Jin, 2010). However, significant changes have occurred in the production lifestyles of rural China, where some farmers can now engage in production activities at home. This phenomenon is referred to as rural home-based production (Pengpai, 2019; Yin *et al.*, 2020; Zhu, 2023). In this mode of production, residential spaces may transform into shops or workplaces (Ren *et al.*, 2012). Ma *et al.* (2018) noted that the functions of rural settlements have shifted from merely serving as residential land to integrating industrial land in suburban Beijing. Nong (2022) argued that these new home-based production modes alter the daily living spaces of households, thereby influencing furniture functionality.

Currently, the units conducting production in rural families are typically termed "family workshops," mainly utilised for home-based handicrafts or small-scale processing, such as metalworking, food processing, vegetable cultivation, village shops, and mahjong parlours (Van Auken *et al.*, 2011; Rogge *et al.*, 2013). These workshops are defined as "*workshops run by families, dominated by couples, with participation from blood relatives in production, employing no more than five workers, where family members and workers produce together*" (Gu, 2018).

Thus, family workshops, as a unique operational model, aim to engage in market exchange, achieving self-sufficiency. However, they occupy living space, intertwining life and production within the same environment, thereby altering the functions of traditional family spaces and furniture (Yangang *et al.*, 2014). This research examines whether this mode of production exists in rural Jidong, and if so, whether it affects the demand for furniture used by family members or workers, which needs to be investigated in this research.

In rural settings, families frequently host various traditional folk activities in their home, especially during traditional festivals (Yu *et al.*, 2020). Among traditional festivals, the New Year and weddings are the most significant celebrations in rural areas (Yan, 2022). In contrast to urban China, where such events are typically held in public venues such as hotels or parks, with the domestic sphere regarded as a highly private domain, rural households often employ their homes as the principal setting for these activities.

The processes for hosting New Year activities at home vary based on region, family customs, and personal preferences (Yan, 2022). Generally, the process is as follows: prior to the New Year, families purchase a large quantity of festive goods, including food, beverages, fireworks, and New Year paintings, storing these items in cabinets, refrigerators, and cupboards. Subsequently, family members clean all furniture in preparation for the arrival of the God of Wealth. On New Year's Day, the entire family gathers for the reunion dinner. In rural areas, these gatherings typically involve 10 to 20 people, including multiple generations, which is different from urban New Year dinners that usually involve around six people from three generations (Yu *et al.*, 2020). Within the ten days following the New Year, families need to provide ample seating and space to receive relatives and friends coming to pay New Year's visits (Nong, 2022). This research explores whether rural families in Jidong still uphold the tradition of hosting New Year celebrations at home and whether the furniture usage during these events differs from daily needs.

Regarding weddings hosted at home, there are primarily two scenarios. The first involves families managing the wedding banquet process independently, typically with assistance from neighbours (Shang, 2024). Before the wedding, family members arrange the venue according to the available living space and borrow tables, chairs,

and kitchen utensils from neighbours. On the wedding day, families utilize some traditional furniture, such as offering tables, for ceremonies, while preparing a sumptuous feast for guests, often with help from relatives or neighbours. After the wedding, cleaning and organizing the furniture also involve mutual assistance among friends and family. The second scenario involves hiring professional teams to handle the wedding banquet. These teams bring their own tables and kitchenware and are responsible for washing vegetables, cooking, serving dishes, and cleaning up, requiring no involvement from relatives or friends, and their fees are moderate (Xu, 2021). This research investigates which wedding hosting model is employed in rural Jidong whether it creates new furniture demands, and whether these demands resemble those encountered during New Year celebrations.

In conclusion, prior research has broadly categorised rural household lifestyles into two principal types: daily lifestyles, encompassing social interaction, dietary habits, and consumption patterns; and special lifestyles, particularly those related to weddings, funerals, and the Spring Festival. Drawing upon this classification, the present study adopts the same analytical framework to investigate rural households in Jidong. In the field research, it is first necessary to identify and analyse the characteristics of daily and special lifestyles in rural Jidong, in order to subsequently examine the specific demands these lifestyle contexts place on household furniture.

2.5 Research Framework for Examining the Current Status of Regional Rural Household Furniture

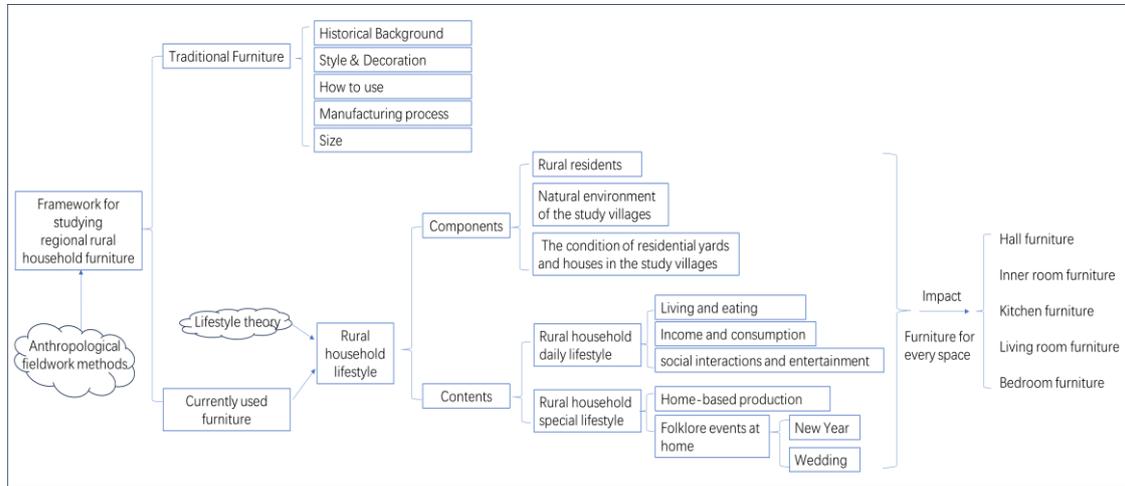


Figure 2.3 Research framework for the current status of regional rural household furniture

Based on the literature, the researcher has developed a research framework for studying regional rural household furniture (Figure 2.3). The study adopts anthropological ethnographic fieldwork methods and focuses on both traditional and currently used furniture. In the section on traditional furniture, due to the limited number of remaining pieces found in the research area, the study organises and documents each item individually. Each piece is examined from the following aspects, including but not limited to: historical background, styles and decorations, dimensions, usage modes, and manufacturing processes. In the section on currently used furniture, the study utilizes the components and contents of rural household lifestyle theory to analyse the background of currently used furniture, the user population, and the furniture needs in various household spaces under different lifestyles.

2.6 Overview of Rural Jidong

Existing research on rural household furniture in the Jidong region is extremely limited, and in particular, there is no article that addresses the design, classification,

function, and relationship between their traditional and current use of furniture and local lifestyles. In the literature screening (Figure 2.1), only one article (Wang *et al.*, 1962) provides a description of rural furniture in Jidong; however, its historical distance greatly diminishes its reference value. All other studies focus primarily on rural housing types, covering aspects such as building structure and construction materials. In such works, references to furniture are merely incidental, typically noting the presence of certain traditional pieces or current issues in furniture use, without offering substantive classification, documentation of usage, design needs, design factors, design principles, or research frameworks.

The absence of literature directly linking rural household furniture and lifestyle in Jidong can be attributed to two main factors. First, economic development in Jidong's rural areas has been slow, with residents largely prioritising subsistence; furniture consumption and design were neither a research focus nor a practical concern (Sohu, 2024). Only in the past five years, with the implementation of the Rural Revitalisation Strategy and gradual improvement in living standards, has furniture consumption begun to reveal tangible demand and development potential (Shao, 2023). Second, the 1976 Tangshan earthquake resulted in the destruction of a vast number of historical records and physical artefacts, eradicating all surviving paper-based materials.

Against this backdrop, the present study examines rural household furniture in Jidong specifically to address this regional research gap. Owing to the lack of directly comparable regional studies, the research draws upon findings from studies of rural furniture in other parts of China (Section 2.3), particularly their research orientations, methodological approaches, classification logics, data analysis models, and results, to provide reference points and analytical support.

The subsequent analysis examines existing literature on rural housing in Jidong from three interrelated perspectives: the rural environment of Jidong, traditional rural furniture, and household furniture in relation to local lifestyles, extracting mainly the textual descriptive parts about Jidong rural household furniture and Jidong rural lifestyles.

2.6.1 Residential Environment in Rural Jidong

Rural Jidong is primarily characterised by flat plains, with hot summers and cold, dry winters, and the area experiences relatively abundant annual rainfall. Poplar trees are the predominant species in this region (Shao, 2023).



Figure 2.4 11 types of yards in rural Jidong. (Adapted from Wang *et al.* 1962)

In 1962, Wang *et al.* classified 11 types of yards in rural Jidong (Figure 2.4). Subsequently, Hou (2018), Wang (2018), and Mao (2020) conducted detailed analyses of the residential types depicted in the figure. They argued that rural residences in Jidong exhibit the yard characteristics typical of traditional northern Chinese farmhouses, featuring independent yards and relatively large building spaces that serve both residential and some production functions. However, despite these studies providing thorough descriptions of the layouts of different types of yards, it remains unclear which house types are the most popular and their specific layouts, which is a key focus for further research in this research.

Currently, Shao (2023) provides a brief description of two types of residential areas in rural Jidong. The first type is a single-story, single-entry yard farmhouse (Figure 2.5), with the living area typically divided into three parts: the central hall primarily serving as a dining and kitchen space, with inner rooms on the east and west sides that accommodate both living and guest reception functions. The second type is a single-story, multi-entry yard farmhouse (Figure 2.6), which generally consists of three to five rooms of roughly equal size, with a living room in the centre and bedrooms on both sides. The rest of the space is set up as an eating space, bathroom, utility room or bedroom. Although these descriptions analyse the division of family space, they lack detailed explanations regarding specific spatial dimensions and the placement of household furniture within these spaces, which necessitates further investigation in this research.

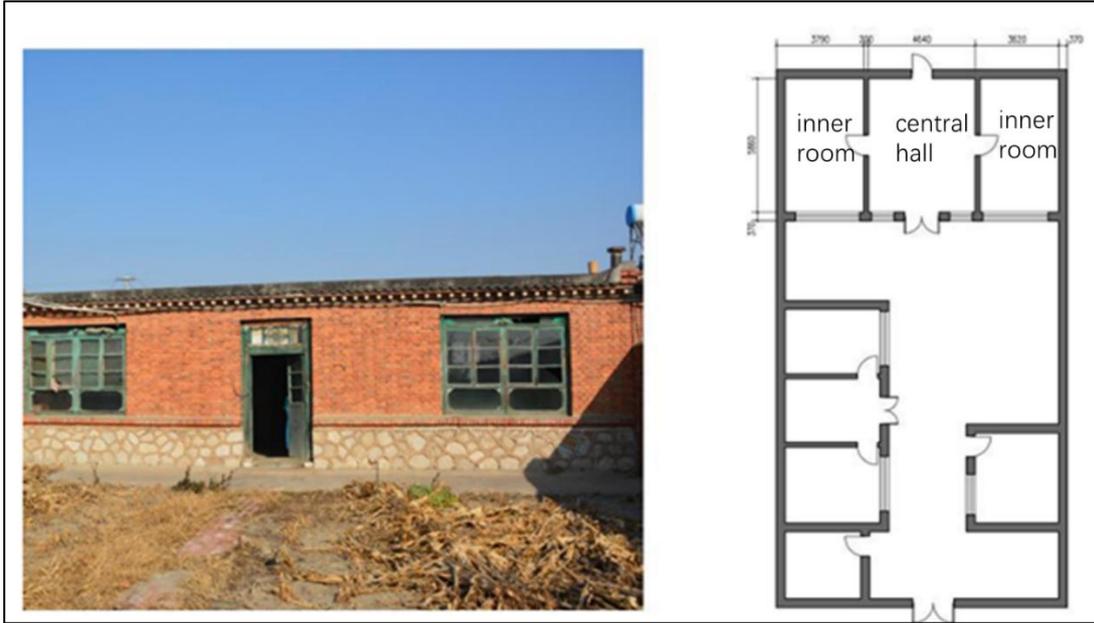


Figure 2.5 Single-story, single-entry yard farmhouse. (Adapted from Shao, 2023)

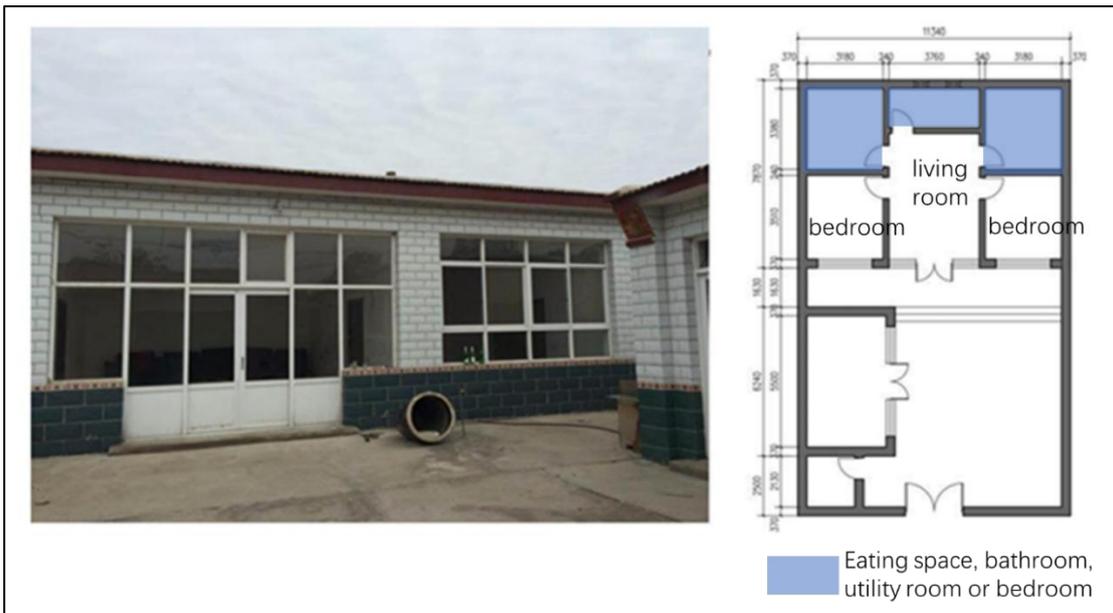


Figure 2.6 Single-story, multi-entry yard farmhouse. (Adapted from Shao, 2023)

2.6.2 Traditional Furniture in Rural Jidong



Figure 2.7 Bisha cabinet and Bogu shelf (Wang, 2018)

Wang (2018) mentioned that some traditional furniture in rural Jidong, particularly in the coastal area of Shanhaiguan, includes items such as the Bisha cabinet¹, Bogu shelf² (Figure 2.7), kang³ (Figure 4.48), and stove⁴ (Figure 4.53). However, he only referenced these pieces and included photographs without providing specific descriptions of their functions, decorations, or the craftsmanship involved in their production. This content needs to be supplemented in this research. Furthermore, Yu *et al.* (2020) pointed out that due to the relatively isolated rural living environment and lower economic levels, furniture-making techniques remain underdeveloped. The types of wedding furniture continue to adhere to tradition, primarily crafted by local artisans using ancient methods. They studied the dimensions, functions, and decorative patterns of traditional wedding furniture in Jidong, including tall cabinets⁵,

¹ Bisha cabinet is an independent space created within the inner room using partitions.

² Bogu shelf is a piece of furniture used to display antiques, jade, and other small items.

³ Kang is constructed of bricks and stones, positioned in the inner room, serving a function similar to a modern bed.

⁴ Stove is located in the hall and is used for cooking and also heats the kang.

⁵ The tall cabinet is a vertical wooden cabinet used for storing clothing.

storage tables⁶, altar tables⁷, kang cabinets⁸, and high chairs⁹, noting that with the passage of time, traditional customs have evolved, leading to the gradual disappearance of these categories of wedding furniture in Jidong.



Figure 2.8 Tall cabinet, storage table, altar table, kang cabinet, and high chair (Yu *et al.*, 2020)

Thus, the researcher reasonably speculates that there are still undiscovered traditional furniture pieces in rural Jidong. This research requires the collection and organization of this furniture in the studied villages.

2.6.3 Currently Used Furniture in Rural Jidong

The study of current furniture in rural Jidong can be analysed from two perspectives: daily lifestyles and special lifestyles.

Research on furniture use in the daily lifestyle of rural Jidong

At present, existing research on furniture use in the daily life of rural Jidong mainly focuses on the basic functions of individual furniture pieces, especially the kang

⁶ The storage table serves the function of a dressing table.

⁷ The altar table (also known as the "Heaven and Earth table", "Offering tables") is centrally located in the hall for dining or placing items, and it is used during weddings as the Heaven and Earth table.

⁸ The kang cabinet is used for storage and is placed on the kang.

⁹ The high chair is mainly placed in the hall alongside the altar table for family dining or receiving guests.

(heated platform bed). For example, Yan *et al.* (2018), through field investigations, pointed out that the kang has problems in terms of heating, privacy, and human comfort, and proposed optimisation suggestions for spatial functional zoning. An example of a problem description is:

“As the most private and most frequently used inner room also serves functions such as dining, receiving guests, and leisure activities, the flow lines of various activities intersect, making it difficult to effectively ensure personal privacy during residents’ rest.”

An example of the proposed suggestion is:

“In terms of public–private spatial zoning, the three rooms should transition from public to semi-private to private from east to west. The inner room on the east side can serve as a public area for napping, receiving guests, and resting during the day, and as a bedroom at night.”

However, their research lacks details on sample size, data collection, and analytical methods, and only provides a general description. Zheng (2019), from an architectural perspective, conducted an in-depth study on the heating issues of the kang, such as excessively high and uneven surface temperature, poor heat retention, and air pollution caused by fuel combustion. She proposed structural and material improvements, such as replacing smoke heating with hot water pipes. A new type of kang was constructed and tested against the traditional kang, verifying the improvement’s effectiveness. Although the research method was complete, its focus on a single furniture item differs from this study’s holistic analysis of furniture space.

In addition, some literature on rural housing in Jidong also sporadically mentions furniture issues. For example, Ren (2018) pointed out that blocked kang smoke exhaust leads to poor air circulation and even poisoning, and suggested relocating the stove outdoors; Wang (2018) noted insufficient storage space in village shops; Shao (2023) argued that the stove in the central hall affects the function and hygiene of the

inner room, and that the kang bears excessive functional burdens. Although brief, these descriptions indicate that furniture-related problems are widespread and urgent in the rural Jidong region.

Beyond the kang and the stove, there is currently no systematic research on what other furniture exists in rural Jidong households and their usage problems. Overall, although the existing literature reveals some furniture issues, the information is fragmented and outdated, failing to reflect the current situation. It remains unknown whether villagers have improved these problems themselves or whether new furniture-related contradictions have emerged. Therefore, this study will move beyond the limitations of single-item furniture research to conduct a comprehensive survey and analysis of the current furniture in the entire household space of rural Jidong, identifying problems and proposing corresponding design principles.

Within the special lifestyle of rural Jidong, the currently used furniture serves different functions during various folk activities. As early as 2011, Yu *et al.* explored the usage of altar tables during the Spring Festival. Later, Yan (2022) introduced the functions and usages of rural furniture in different contexts. Thus, the researcher reasonably speculates that some furniture in rural Jidong may serve different functions during traditional festivals compared to daily use; however, current research on this topic remains insufficient and requires exploration.

Research on furniture use in the special lifestyle of rural Jidong

In the special lifestyles of rural Jidong (such as hosting folk activities at home, e.g., New Year celebrations, weddings), the furniture currently in use plays different roles in various folk events. As early as 2011, Yu *et al.* discussed the use of the altar table during the Spring Festival, noting that the deities worshipped in rural Jidong are Guanyin and the God of Wealth. On the central hall's altar table, ancestral tablets,

incense burners, candlesticks, and offerings are placed in order, and the family kneels in front of the table to kowtow three times, praying for a year of favourable weather. In Wang Na's analysis of traditional dwellings in Jidong, she devoted a subsection (3.3.1) to discussing how furniture in Jidong can be used during folk activities to divide central hall space, such as with screens; during worship, the altar table is an essential tool for displaying offerings, but in daily life, it serves only as a dining table; the stove in the central hall must be cleaned before the New Year to welcome the God of Wealth.

Therefore, researchers reasonably infer that certain furniture in rural Jidong has different functions during traditional festivals compared with daily use. However, no existing study has systematically identified the functions and problems of household furniture in rural Jidong during various folk activities, a gap this research aims to address.

Home-based production activities within households also represent an important aspect of rural Jidong's special lifestyle, influencing the currently used furniture. Wang (1962), Wang (2018), and Zhang (2020) all noted the existence of planting areas within yard layouts in rural Jidong. Among them, Zhang mentioned in his paper: "*Between the side house and the main house, some have set up chicken coops, rabbit houses, etc. Chickens and rabbits, being relatively small livestock, are located close to living areas, facilitating the owner's care and safety needs.*" This information indicates that household farming and planting have existed in the village's yards since ancient times. However, existing studies have only provided brief descriptions of these spaces, and the specific types of production and their impacts on currently used furniture require in-depth investigation.

Additionally, scholars such as Meng *et al.* (2020), and Chen *et al.* (2020) have described types of home-based production from the perspective of Chinese rural left-behind women¹⁰, including simple handicrafts, yard vegetable planting, and poultry farming. Ren (2013, 2017) conducted fieldwork in Li Village, Hebei Province, analysing the "living room factory" model within the context of rural industrialisation and the situation of the women involved. He discovered that young women recognised the inadequacies of intergenerational care and rationally chose to remain in rural areas, purchasing sewing machines in their household living spaces to organise women for handicraft work. He noted: "*Processing stalls are set up in the living room of the Ma Sheng family, with the cramped space filled with sewing machines, finished products, and raw materials. The walls of the living room are piled with processed and bundled products.*" These vivid descriptions of work content reflect the state of home-based production occurring within the living room space, and the impact of home-based production on the currently used furniture is an important aspect that this research requires in-depth study.

Overall, no study has systematically examined rural household furniture in Eastern Hebei, whether in relation to local lifestyles, traditional furniture, or current usage. Almost all information currently summarised by researchers comes from brief mentions in studies of Eastern Hebei architecture or housing, leaving research on rural household furniture in Eastern Hebei highly incomplete.

¹⁰ Left-behind women are married women who have stayed behind in rural areas because their spouses have been away for a long period of time (usually more than six months) to work, do business or engage in other production and management activities.

2.7 Gap in Literature and Research Questions

Based on the literature review, current research on the status of household furniture in rural Jidong has not been fully developed, revealing two key gaps in the research.

Firstly, regarding traditional furniture in rural Jidong, historical factors and natural disasters (such as earthquakes) have led to the destruction of a large amount of documentary materials on traditional furniture in this region. Although some research has recorded traditional rural furniture in Jidong, it remains insufficiently comprehensive. Therefore, based on this research gap, this research aims to conduct an in-depth exploration of the current status of traditional furniture in rural Jidong. In research on other rural areas, traditional furniture is usually documented through field investigations to collect primary data. However, given the vast area of Jidong, this research selects specific study areas as samples to systematically organise and study the traditional furniture within these regions. Hence, the first research question proposed by this research is: **What traditional furniture was discovered in the villages surveyed?**

Secondly, regarding the current currently used furniture in rural Jidong households, the existing literature only briefly mentions that problems have arisen with the currently used furniture in rural Jidong, but these studies are not comprehensive enough. In addition, the researcher found that studies in other regions that combined current furniture use with lifestyle theories could shed a fuller light on the problems that arise with furniture. Therefore, this research proposes a second question: **What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?** In terms of existing literature, once the furniture issues in the study area have been identified, an analysis of design principles is required. Thus, a third question: **What improvement principles can be**

proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?

To better address these gaps and answer the research questions, the researcher has further refined these three research questions based on the literature review:

Background: *What is the overall environment of rural Jidong? What is the lifestyle in rural Jidong? What is the layout of the yards in rural Jidong?*

Traditional Furniture: *What types of traditional furniture exist in the studied villages? What are the characteristics of each type or piece of furniture, including aspects such as size, usage, function, decoration, and manufacturing process?*

Currently used furniture: *What types of currently used furniture are found in rural Jidong? How is furniture spatially arranged? Under the guidance of the lifestyle theory of rural households, what is the current status of the furniture? (The last question can be divided into two aspects: What problems have arisen in currently used furniture in the daily lifestyle of rural Jidong? What needs exist? What problems have arisen in currently used furniture in the special lifestyle of rural Jidong? What needs exist?)*

Design factors and principles: *Under different lifestyles, are there solutions to the furniture problems in rural Jidong?*

The above aspects guide the planning of subsequent research methods and steps.

2.8 Summary

This chapter presents an understanding of previous research and theoretical approaches, identifying that this research studies the current status of household furniture in rural Jidong from two aspects: traditional furniture and the currently used furniture. It also refines the research questions, laying the foundation for the subsequent research methods and steps.

3 Methodology

3.1 Introduction

After refining the research questions, the researcher collected data to meet the research objectives. This chapter describes in detail the development of a research methodological framework to collect data on the current state of household furniture in rural Jidong. The framework was derived from the interpretivist research paradigm and guided the field study through mixed-methods in anthropological fieldwork.

In this chapter, 3.2 presents the design of the whole methodological framework of the field study. The philosophical part is discussed in section 3.3. Sections 3.4 and 3.5 include the selection of the research methodology, the preparation for entering the field, and the detailed description of the five steps of the fieldwork (Figure 3.1). The ethical component is also discussed in section 3.4.

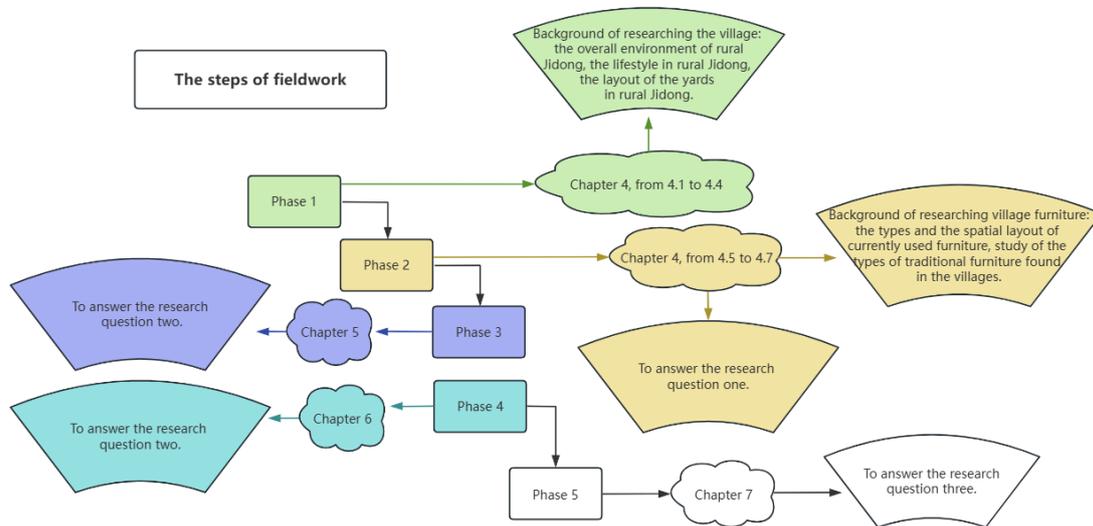


Figure 3.1 Five phases of the fieldwork

3.2 Research Process

Any formal research study needs to be designed with reference to the specific context of the research question. Crotty (1998, p. 1) remarked that there is a bewildering array

of philosophies, paradigms and approaches in the literature, often arranged in a disorganised manner, with unclear links to theoretical elements and inconsistent use of terminology. Saunders, Lewis and Thornhill (2019, p. 143) also confirmed this is a confusing picture which confronts the researcher. However, there is a difference in their design of the research framework.

Crotty's framework oversimplifies the complexity of the research process. It contains only four elements: epistemology, theoretical perspective, methodology and methods (Figure 3.2). Typically, a complete study tends to involve many intertwined elements, and reducing it to four elements may overlook some important aspects. Secondly, these four elements are quite abstract concepts that some researchers may have difficulty applying concretely to actual research projects. The researcher finds it challenging when trying to translate these concepts into practical research designs and methods.

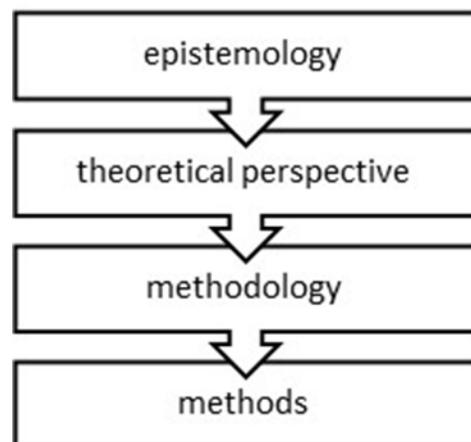


Figure 3.2 Crotty's Four Elements of the Research Process. (Reproduced from Crotty, 1998, pp. 4)

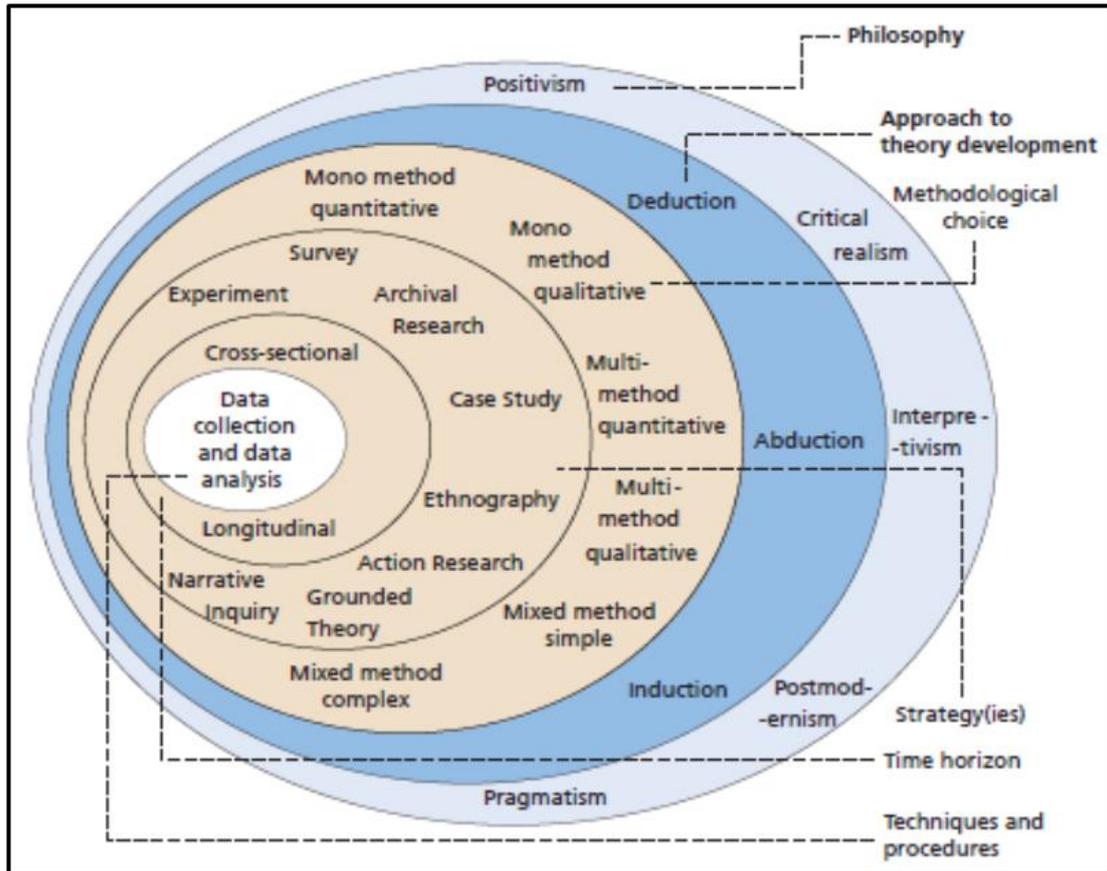


Figure 3.3 Saunders, Lewis and Thornhill's 'Research onion'. (Saunders, Lewis and Thornhill, 2019, pp. 130)

The researcher found the methodological framework of the six-layered 'research onion' (Figure 3.3) proposed by Saunders *et al.* (2019) to be appropriate for this research project. Saunders *et al.* summarised the design from philosophical paradigms to specific research methods in an 'onion' diagram. This research framework consists of six layers: research philosophy, problem understanding, research design selection, data collection, data analysis, and interpretation and application of findings. Unlike Crotty's framework, which focused on the theoretical foundation and philosophical orientation of research, Saunders concentrated on guiding the researcher's steps and decision-making during the actual research process, which provided more concrete guidance for the selection and implementation of this research project.

Therefore, this research follows Saunder's (2019, p. 130) structure as laid out in Table 3.1. Based on this research project, the researcher has partially adjusted their research framework. It seems that some of the levels can be merged; for example, the 'Approach to theory development' is merged into 'Philosophy', and both 'Time span' and 'Strategy(ies)' are merged into 'Methodological choice'. Therefore, this research design is divided into three parts: 'Research Philosophy Paradigm', 'Research Method and Design', and 'Fieldwork Process'. the researcher will discuss each of them in next sections.

Table 3.1 The research process for this research (Adapted from Saunders, 2019)

<p>1 Research Philosophy Paradigm— (Philosophy)</p> <p>Interpretivism Inductive approach</p> <p>2 Research Method and design— (Methodological Choice)</p> <p>Anthropological ethnographic fieldwork Mixed methods Cross-sectional</p> <p>3 Fieldwork process— (Techniques and procedures)</p> <p>Fieldwork research tool Data Collection and data Analysis</p>
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3.3 Research Philosophy

After the research question was identified, the researcher chose an appropriate research paradigm based on the nature and complexity of the question in order to address the research question and achieve the research objectives.

3.3.1 What is a Research Paradigm?

The term paradigm was first coined by the American scientist Thomas Kuhn (1962) in his book *'The structure of scientific revolution'*. In his book, he defined “paradigm” as a recognised 'pattern' that a particular scientific community must follow in order to engage in a particular type of scientific activity, which includes a shared worldview, fundamental theories, paradigms, methods, approaches, standards and all other things related to scientific research. Thus, a paradigm implies a worldview, an epistemological position, and a paradigm is a set of shared beliefs among members of a professional field. A paradigm can determine: how to select research questions? How to conduct research? How to interpret the results of the research?

3.3.2 Components of the Research Paradigm

The research paradigm comprises four philosophical elements: ontology, epistemology, axiology and methodology (Hughes, 2020; Figure 3.4).



Figure 3.4 Components of the Research Paradigm. (Reproduced from Alele, 2023)

Ontology

Ontology refers to assumptions about the nature of reality. It addresses questions like, "What is the nature of reality, or is it a structure created by the mind? Is the objective real or the result of personal knowledge? What is the nature of the situation?" (Alele, 2023). Therefore, by studying ontology, researchers can better understand the nature and structure of things in the real world (Johnson & Onwuegbuzie, 2004). In addition, researchers can more clearly identify their beliefs and positions on epistemology and methodology through ontology. This clarity contributes to a better understanding of the root cause of the problem and the associated theoretical underpinnings, helping the researcher to provide more appropriate solutions when solving the problem (Dhaheri, 2022).

Regarding the types of ontology, Ahmadu (2021) summarised the views of Crotty (1998) and Denzin and Lincoln (2000) and identified the three most dominant ontological types as, objectivism, subjectivism and pragmatism. Objectivism and subjectivism are entirely relative. Objectivism emphasises that truth is not subject to personal opinion or emotion but exists objectively. Objectivism emphasises acquiring knowledge through objective observation, reasoning and the scientific method. In contrast, subjectivism, which holds that individual subjective consciousness is essential to understanding and interpreting the world, argues that truth is relative and, therefore, there is no universal, objective truth. Pragmatism is the third ontological perspective that focuses on practice and the results of action. Pragmatism usually views truth as relative because it is judged in terms of actual situations and practical results.

Epistemology

Epistemology concerns the nature and origin of knowledge. It addresses questions like, "What is the nature of knowledge, and how does it relate to the object under study? How does the inquirer relate to me, and what is known?" (Dhaheri, 2022). These questions are important because they help researchers place themselves in the research context to discover what is new, given what is already known (Kivunja & Kuyini, 2017).

Axiology

Axiology is concerned with the role of values in research. It addresses the researcher's biases, ethics, and values and how they might impact the research (Alele, 2023). In a research project, researchers need to define, evaluate and understand the concept of good and bad research behaviour through axiology. Axiology explores the values researchers assign to many aspects of their research, including the participants, the data, and the audience that report the results. It addresses questions like, "What values will the research live through or will guide the research? What should be done to uphold the rights of all participants? What are the moral problems and features to be considered? What cultural, intercultural, and ethical questions arise, and how should researchers deal with them? How can participants' goodwill be secured? How should the research be conducted in a way that is socially fair, respectful, and peaceful? What issues (real, psychological, legal, social, or economic) should be considered to avoid or reduce risk and harm to participants?" (Kivunja & Kuyini, 2017) (Dhaheri, 2022).

Axiology emphasises the importance of researchers considering ethical issues in the design and conduct of research. In other words, it ensures that researchers follow basic ethical principles throughout the research process to enhance the moral legitimacy and credibility of the research. Based on this understanding, it is important

for researchers to respect and protect the dignity and human rights of individuals participating in the research process. This includes ensuring the informed consent of research participants, protecting their privacy, and respecting their wishes and opinions.

Methodology

Methodology pertains to the specific methods and procedures used to collect and analyse data. It is influenced by the researcher's ontological and epistemological beliefs (Alele, 2023). Finnis (2011) states, "Data collection, participants, tools, and analysis are all components in the broad arena of methodology". In other words, methodology refers to the systematic methods and steps used by the researcher in conducting a research study to ensure the validity and reliability of the research. It includes a series of steps, such as defining the research problem, formulating hypotheses, selecting an appropriate research design and methodology, and collecting and analysing data (Dhaheri, 2022). This part is discussed in sections 3.4 and 3.5.

3.3.3 Positivism, Interpretivism, Pragmatism

The Positivism Research Philosophy is related to the position of natural scientists (Qawasmeh, 2020). Positivism usually means that factual knowledge is genuinely obtained through observation and the use of measuring instruments, which is the only reliable way to make credible generalisations (Ahmadu, 2021). According to Saunders and Lewis (2018), positivism aims to find causal relationships in research data to create generalisations, similar to laws, which help explain and predict organisations' behaviour. It is closely related to the deductive approach, and this use of highly structured methodologies and quantitative methods facilitates the replication of research steps (Crowther & Lancaster, 2008) (Gill & Johnson, 2010). However, positivism fails to consider the possibility that not all phenomena are empirically

based. As a result, over-reliance on the status quo tends to overlook social contexts and cultural differences, for example, that may influence the phenomenon being studied (Ahmadu, 2021).

In this research, the documentation of household furniture in the daily life and special life of Jidong villages needs to be organised based on the observations of the researcher and the perceptions of the interviewees. Then the reasons for the emergence of these furniture problems or people needs and the ways of solving them are explored. Therefore, positivism is not suitable to guide this research.

Cohen, Manion, and Morrison (2018, p.348) defined pragmatism as "focused on constructing and answering research questions or problems." Pragmatism tends to concentrate attention on things that are useful for advancing real-world action rather than being distracted by unnecessary matters (Talisie and Aikin, 2008; James, 2019). The core objective of pragmatism is to integrate theoretical inquiry with practical application to effectively address issues in the real world. Therefore, the pragmatic methodology typically prioritises problem-solving over deepening understanding of social phenomena and their underlying meanings.

In this research design, although the researcher decided to use different data collection methods (including observation, interviews and questionnaires) and planned to analyse a combination of qualitative and quantitative data, it seems more suitable to use pragmatism as a guide. However, the research trying to solve the fundamental problems of furniture requires the researcher to understand the village society and culture, the village household furniture culture and explain the villagers' behaviours in their specific uses of furniture. Adopting a pragmatist approach may not be sufficient for understanding and explaining the meaning, context, and influencing factors of

human use and furniture behaviour. Therefore, pragmatism cannot sustain the whole process of this research.

Interpretivism holds that all knowledge is a matter of interpretation and considers social reality built on interpretation and interaction (Quinlan, 2011). It emphasises the importance of human factors in understanding the phenomena under study (Qawasmeh, 2020). To this end, researchers subjectively extract meaning from respondents' answers based on their interaction with them and their contextual experiences (Bogdan and Biklen, 1998). Interpretivism has been criticized for its subjectivity and the inability to generalize the collected data. However, it allows for in-depth exploration of the collected data and various issues influencing the study, leading to research outcomes often characterised by high validity (Ahmadu, 2021).

Although interpretivism generally employs qualitative analysis methods, mixed methods are also applicable to interpretivism (Creswell *et al.*, 2006) (Reichardt *et al.*, 1979) (Pelto, 2015). Willis (2007, P.109-110) stated that interpretivist researchers: *“Interpretivists accept almost all of the types of quantitative methods that positivists use, but they differ in how they interpret the results of quantitative research.”* (McChesney *et al.*, 2019). His perspective offers a connection between mixed methods and interpretivism for the researcher. McChesney (2017) demonstrated how the interpretivism paradigm supports and informs the entire mixed methods research in a survey of the professional development experiences of public-school teachers in a significant educational reform in Abu Dhabi, United Arab Emirates. He used a questionnaire to collect teachers' perceptions of the impact of professional development activities and organised semi-structured interviews with 35 teachers to discuss their professional development experiences. Qualitative and quantitative data were analysed separately through thematic analysis and constructivist grounded theory. Then, indications from these analyses were brought together in order to draw

overall conclusions based on each of the research objectives (Bryman, 2007). All processes of analysis and integration are based on interpretivism perceptions. Qualitative findings are used to corroborate and interpret quantitative findings to increase the credibility of the findings.

This research entails an anthropological fieldwork approach using tools such as observation, interviews and questionnaires to collect qualitative and quantitative data to summarise the context and types of traditional furniture, the problems that arise from currently used furniture, the reasons for this and to explain the behaviour of furniture users. These steps are in line with the interpretivist approach which focuses on understanding and interpreting the meaning, context and influences on human behaviour (Saunders *et al.*, 2007). Therefore, interpretivism is more appropriate for this research.

3.3.4 Deductive and Inductive Approach

Research approaches are divided into two main types, the Deductive and Inductive approaches. Saunders and Lewis (2018) argued that all research studies need to be linked to the research approach. The deductive research method involves designing research strategies to test existing hypotheses. In contrast, the inductive research method involves collecting data to develop a theory as a result of data analysis, meaning that the theory needs to follow the collected data (Saunders *et al.*, 2007; Wilson, 2010). Positivist philosophy is commonly associated with deductive research, while interpretivism research is typically linked with inductive research (Qawasmeh, 2020).

The deductive approach is where the researcher uses existing theories to generate the required research questions; it tests existing theories by moving from broad

generalisations to specific observations (Ahmadu, 2021). This method is based on logical rigour, and conclusive conclusions can be reached through correct reasoning steps. The typical structure of the deductive approach is that a general hypothesis or principle is first established, and then, based on this principle and the known facts, the conclusion for a particular situation is derived step by step using the rules of logic (Figure 3.5).

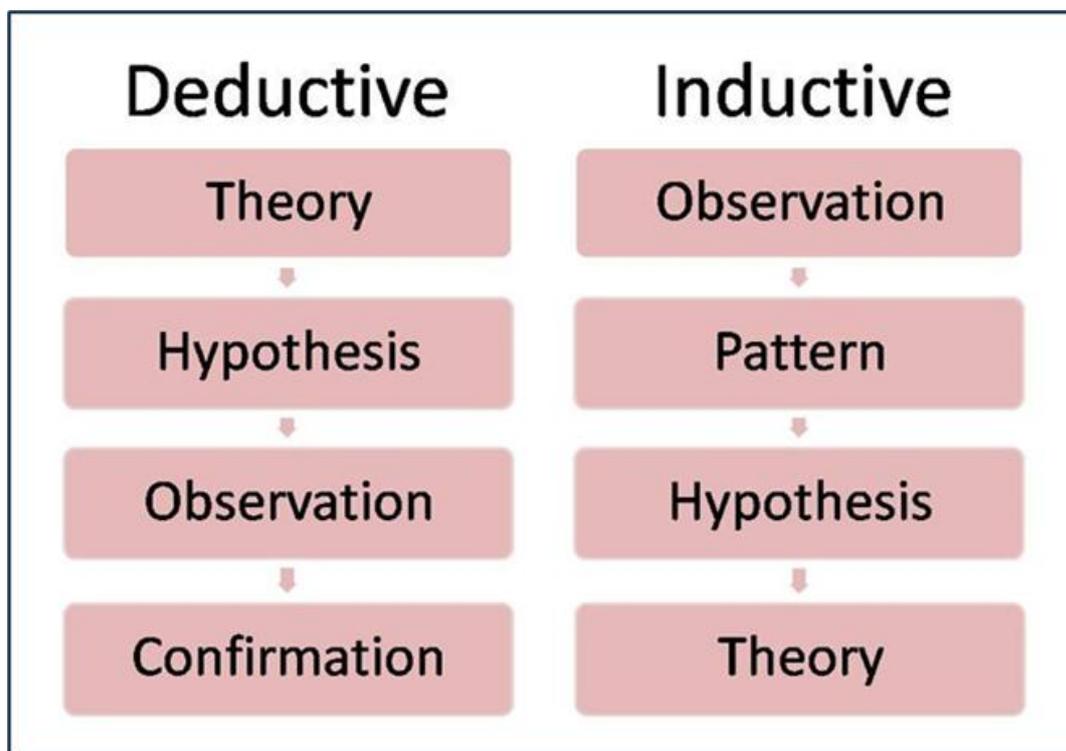


Figure 3.5 Deductive and Inductive research. (Reproduced from Qawasmeh,2020)

Although deductive reasoning is valid and reliable in many cases, it has some drawbacks. For example, its validity depends on the accuracy of the premises on which it is based. If the premiss is inaccurate, the conclusion may be wrong, even if the reasoning process itself is correct. Moreover, when the research problem becomes very complex, the application of deductive reasoning may become difficult because it requires that all the premises are clear and verifiable. Accuracy and completeness of premises may be difficult to achieve in complex problems.

Induction is the method of deducing general principles or rules from specific observations or examples. The basic idea of inductive reasoning is to observe and analyse actual data or situations in a particular case and then infer general conclusions. The typical process of the inductive approach is to first collect a large amount of specific observational data, then, by analysing and summarising these data, identify common patterns, trends or rules, and ultimately draw general conclusions (Figure 3.5). This method of reasoning is usually bottom-up, moving from the specific to the general. The inductive approach uses qualitative methods to collect data, which means that the researcher collects non-numerical data through observations, interviews, textual analyses, and so forth, in order to understand the experience or phenomenon (Ahmadu, 2012). This approach focuses more on understanding the meanings, subjective feelings and socio-cultural context behind the events rather than just analysing numerical values. In addition, the inductive approach has a more flexible research structure than traditional quantitative research. Inductive research allows researchers more flexibility to modify their research design and methodology to accommodate new findings and understandings during the course of the study. This flexibility allows researchers to gain a deeper understanding of events and phenomena, allowing them to tailor the focus and direction of their research (Saunders & Lewis, 2018).

In this research, the inductive approach is preferred, and the researcher needs to create new knowledge and understanding from the responses and behaviours of the interviewees or the observed. For the currently used furniture, the researcher needs to summarise the problems with furniture in the respondents' daily and special lifestyle, explain the reasons for the problems with furniture, and suggest design principles to address the problems with furniture. For traditional furniture, the researcher needs to

use open-ended interviews to collect the types of furniture, production processes, and dimensions to fill the gap in furniture literature resources in the study area.

3.4 Research Method and Design

3.4.1 Anthropological Fieldwork

To justify the research design within an interpretivist paradigm, this study adopts an ethnographic approach because it allows for a deep understanding of the cultural meanings and everyday practices embedded in the use of household furniture in rural Jidong (Domljan *et al.*, 2025). Unlike grounded theory, which focuses on generating theoretical models from data, ethnography emphasises thick description and cultural interpretation (Maynard, 2025; Chakabwata, 2025). Anthropological ethnography aligns with the study's aim to explore how different lifestyles influence furniture use.

Alternative approaches such as grounded theory and survey-based designs were considered but found less suitable. Grounded theory's emphasis on abstract model-building risks detaching findings from the lived cultural context central to this study, while surveys offer breadth without revealing the nuanced social meanings of furniture use. Ethnography was therefore selected for its ability to capture lived practices through observation and participation, enabling the translation of everyday behaviour into design-relevant insights.

The Origin of fieldwork

"Fieldwork" refers to all on-site research activities involving direct participation and observation, also known as "field research, field investigation". It is the practice and application of direct observation and the data collection step in order to obtain first-hand primary information (Baidu, 2024). In the late 19th century, British scholar A. C. Haddon introduced the "field concept" into the field of anthropology. He

encouraged individuals to conduct fieldwork on foreign cultures, which led to the widespread use of fieldwork in anthropology.

The literature suggests that the critical criterion for distinguishing whether a study is anthropological or not is fieldwork. (Luo *et al.*, 2005, p3). Stoking (1992) argued that fieldwork is a necessary pre-training for becoming an anthropologist and a fundamental component of the anthropologist's and anthropology's body of knowledge. In other words, if a scholar who claims to be doing anthropological research has not done fieldwork, his or her research is questionable in an anthropological sense, and even his or her identity as an anthropologist is questioned in the circle of peers.

China's use of the fieldwork method is relatively late. In 1982, Wu first published this method in a Chinese core note, and he elaborated on several requirements that need to be paid attention to in fieldwork: the investigator and the respondent have to be organically integrated, and the researcher needs to look at the problems from the participants' point of view; the information of fieldwork is often collated from observation, interviews and participation; fieldwork takes half a year to a year, and needs to focus on special social activities, such as celebrating festivals, celebrating harvests, commemorating the ancients, worshipping ghosts and gods.

Mixed methods in anthropological ethnographic fieldwork research

Some anthropologists and sociologists (as well as research scholars in other fields) have been using mixed methods in fieldwork for at least 80 years, and several anthropological ethnographic fieldwork studies from the early 20th century onwards clearly fall within the definition of 'mixed methods' (Pelto, 2015). 1953, a comprehensive review and assessment of ethnographic research methodology was

provided in *Anthropology Today: An Encyclopedic Inventory*, written under the chairmanship of A. L. Kroeber, the chapter on research methodology included the collation of qualitative data and the collection of a large amount of quantitative data. Oscar Lewis published an article in this book entitled '*Controls and Experiments in Field Work.*' His article combines quantitative data with qualitative observations and sets an example of mixed methods practice. Lewis can be considered one of the first anthropologists to seriously practice and write about “*mixed methods in field research methods*” (Pelto, 2015).

Several articles in *Method and Perspective in Anthropology*, edited by Robert F. Spencer (1954), refer to the need for researchers to make greater use of well-designed quantitative data in anthropological research. To take just one more example, Edward LeClair Jr. (1960), Director of Field Programmes at the Cornell University India Project, to assess the impact of large-scale community development projects established in different parts of India. His description in the data analysis section of the fieldwork report includes not only unstructured interviews but also: “(1) *survey schedules-structured interviews, generally made up of forced-choice questions...* (2) *questionnaires: very similar in content to survey schedules ...* (3) *interview guides-semi-structured interviews, characterised by open ended questions, to be administered to a number of informants in a uniform fashion...*” (LeClair, 1960, p. 34)

This amply justifies Herskovits, M. J.'s (1954) stated “‘*new techniques' in ethnographic fieldwork studies that we can now regard as 'development of mixed, Qual/Quan, methodology'.*” All these works demonstrated the importance of mixed methods in anthropological ethnographic field research.

Application of fieldwork to the design

In user-centred furniture design research, the application of ethnographic fieldwork methods to gather and comprehend user requirements has proven highly effective (Huang *et al.*, 2025; Chun *et al.*, 2019). Compared with single methods such as surveys or interviews, ethnography fieldwork offers long-term, in-depth field insights into users' lifestyles and cultural contexts, providing a more comprehensive and culturally sensitive basis for furniture design (Small *et al.*, 2022). For instance, Cordan (2022) and their students employed ethnographic methodologies to gather furniture functional requirements related to dining, sitting/lying, sleeping, and storage among Syrian refugee households, combining these with cultural preferences to guide furniture design. Within regional rural home furniture studies, ethnographic methods are also widely used: Wang *et al.* (2017) helped farmers in Shijia Village, China, applied their traditional techniques and materials to the craft of making their furniture through an ethnographic fieldwork investigation methodology that encouraged villagers to reduce their dependence on external goods and services, as well as detailed how the villagers' furniture was better suited to the special lifestyle and furniture needs of the area. Wang Tong (2020), similarly, used this method to collect relevant data on kitchenware in the Yuncheng rural area.

In the field of design, fieldwork often differs from traditional anthropological research in terms of data collection procedures and timeframes (Marcus, 2021). Rather than a single extended stay in anthropological fieldwork, design researchers often conduct multiple short-term visits to the field, enabling them to gather targeted data efficiently while still maintaining close engagement with participants (Tileagă *et al.*, 2021; Sperschneider *et al.*, 2003). For example, one rural participant may be visited several times under different circumstances to observe a range of behaviours and environmental factors. Thus, although data collection may occur in discrete phases,

the cumulative process reflects a user-centred, context-sensitive ethnographic strategy.

3.4.2 Preparation for Entering the Fieldwork

Fieldwork in both anthropology and art and design requires the researcher to be prepared before stepping into the field. This includes determining of fieldwork location, contacting the field guides, making material preparations, conducting a pilot study and considering the ethics of the whole study.

Determination of fieldwork location

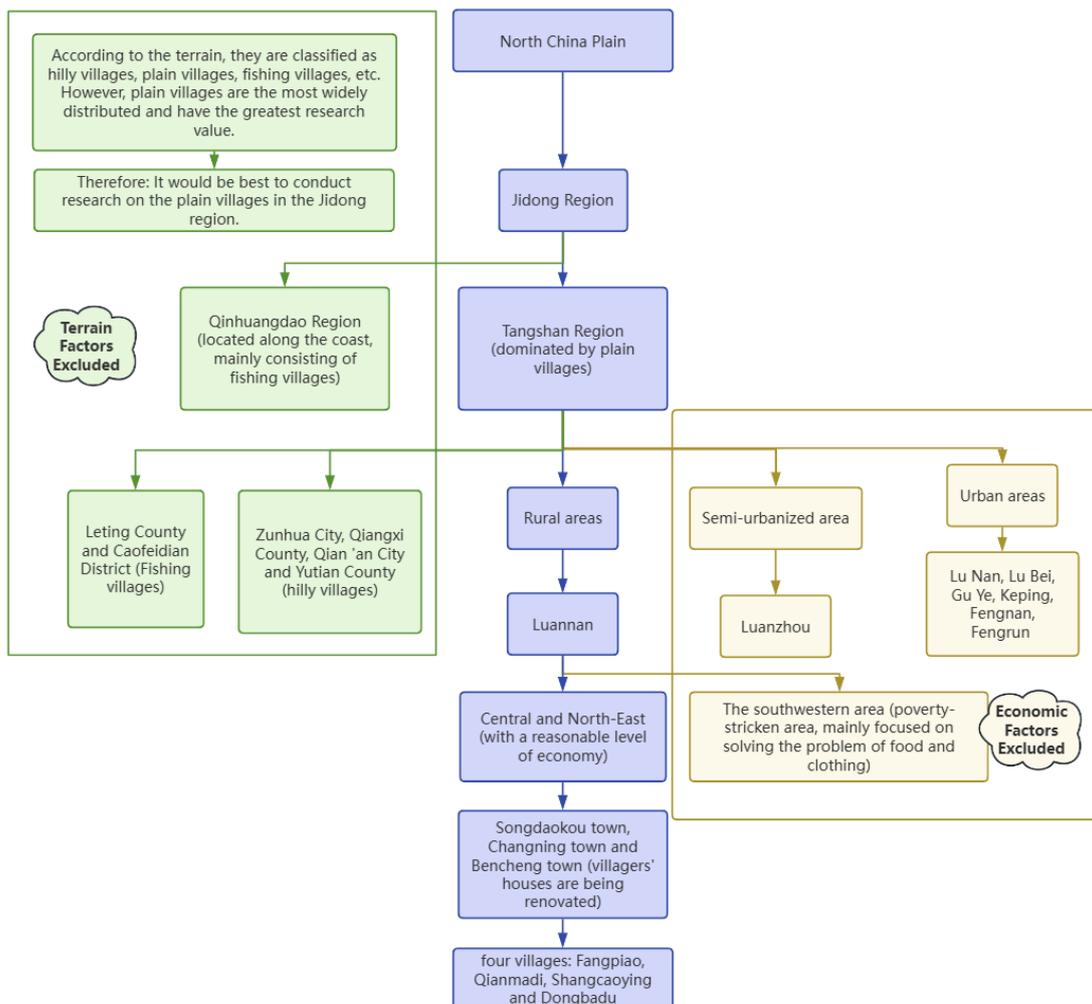


Figure 3.6 Determination of fieldwork location

The fieldwork sites of this study comprise four villages. The research scope was primarily determined according to topographical and economic factors. The figure 3.6 illustrates the entire process of site selection, from Jidong-Tangshan- Luannan County- three towns- four villages. The first four steps identified the target towns based on a literature review, and the final step determined the villages through personal recommendation (Qianmadi is the birthplace of the researcher's mother; the village was identified through the guidance of an acquaintance).

First, Tangshan in the Jidong area was selected as the research scope based on topographical considerations.

Jidong is located on the North China Plain, which contains various rural settlement types, such as fishing villages (located by rivers or the sea), hilly villages (located in mountainous areas), and plain villages (located on flat plains). Among these, plain villages are the most widely distributed and representative, and thus hold high research value. Jidong comprises the prefecture-level cities of Qinhuangdao and Tangshan (Figure 1.1), which differ significantly in topography, economy, and culture (Appendix 1, pp.393). In terms of topography, plain villages are primarily concentrated in Tangshan, whereas Qinhuangdao’s coastal location is more influenced by maritime climate and dominated by fishing villages. Fishing villages and plain villages differ in the style of their buildings and furniture (Table 3.2). Therefore, Tangshan’s rural areas were selected as the primary fieldwork area.

Table 3.2 Comparative Analysis of Buildings in Qinhuangdao and Tangshan (Adapted from Shao, 2023)

Comparison Item	Qinhuangdao	Tangshan
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Building Images		
Building Materials, Structure, and Style	Predominantly built with mountain stone, thatch, reclaimed ship wood, and stone blocks. Roofs have steep slopes; windows and doors are small and deeply set; layouts are compact and incorporate elements of marine culture.	Predominantly built with red bricks, red tiles, adobe, and timber. Houses face south with thick walls, gently sloping roofs, and spacious yards, often in the traditional siheyuan (quadrangle) layout, reflecting strong family-oriented values.
Furniture Images		
Furniture Materials and Decoration	Mostly made from reclaimed ship wood, with coarse textures and almost no carved patterns.	Mainly made from poplar and pine, with abundant decorative motifs, often carved with auspicious symbolic patterns.

Second, Luannan County in Tangshan was chosen based on topographical and economic factors.

In recent years, the economic level of the Tangshan region has been developing steadily, attracting more rural labourers and enriching the lives of rural people. According to China's seventh national census report, the population living in the countryside in the Tangshan region is 275,4076 (Pengpai, 2021). In 2023, the GDP of Tangshan reached 913,330-million-yuan (100.47 million GBP), accounting for 20.78% of the total economic output of Hebei province (Sohu, 2024). The development of the dominant industries in the Jidong region, such as iron and steel, energy, and building materials, relies mainly on the natural mineral resources in the

Tangshan area, such as iron, coal, oil, natural gas, and gold. Tangshan is the world's largest steelmaking centre, accounting for 8% of global crude steel production (Erik Hedberg, 2021). Since the 1970s, derivative industries such as coal and cement have attracted a stable labour force, fostering urban–rural development and improving rural living standards (Sohu, 2024; Hedberg, 2021).

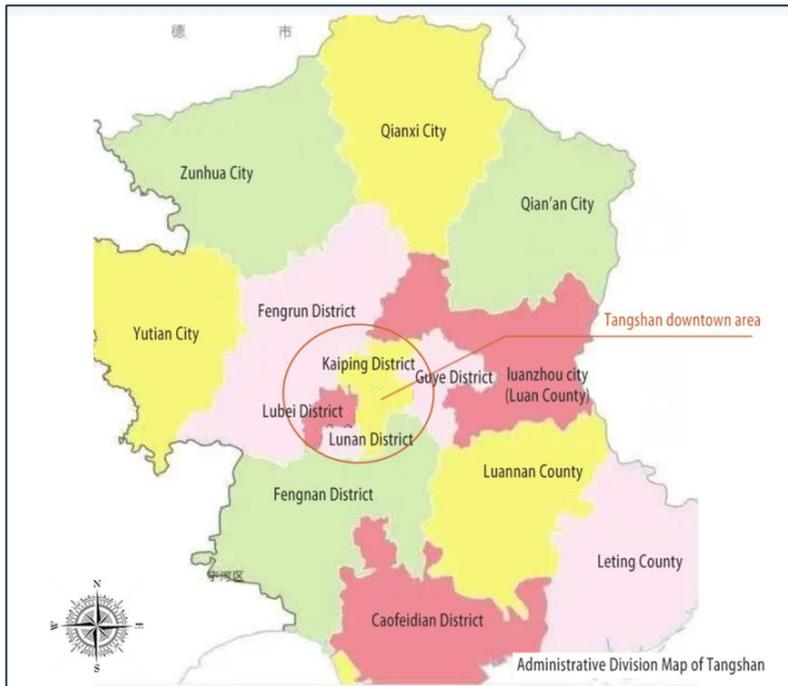


Figure 3.7 Administrative division map of Tangshan. (Adapted from Wikimedia Commons, 2022)

Urban and rural areas in Tangshan are relatively concentrated: cities are located in the central area, while rural settlements are mainly in the north and south (Figure 3.7). The specific selection process for Luannan County is as follows: Tangshan consists of 14 administrative districts (Tangshan Municipal Government, 2023). Lunan, Lubei, Guye, Kaiping, Fengnan, Fengrun, and Caofeidian areas have been fully urbanised, and surrounding villages are indistinguishable from urban life; thus, they were excluded. Plains villages dominate North China, while the northern part of the Tangshan region is mostly hilly and mountainous villages (Ge, 2014). Therefore,

Zunhua City, Qiangxi County, Qian'an City, and Yutian County in the northern part of Tangshan are not included in the study. The coastal areas of Leting County and Caofeidian District in the southern part of Tangshan are fishing villages and are also excluded from the study (Ge, 2014). Luanzhou City and Luannan County are located in the plains and far away from urban areas, which are the most suitable conditions for the study. However, in September 2018, the state abolished Luanxian County and established Luanzhou City under the jurisdiction of Hebei Province (Yong *et al.*, 2021). With the support of the Chinese government, the central city of Luanzhou City has experienced rapid economic development. The villages in the north have been rapidly demolished and relocated, and only a small portion of the villages in the south, bordering Luannan County, still maintain rural living conditions, which is not quite in line with the criteria of this research. Therefore, the main area for this fieldwork was Luannan County.

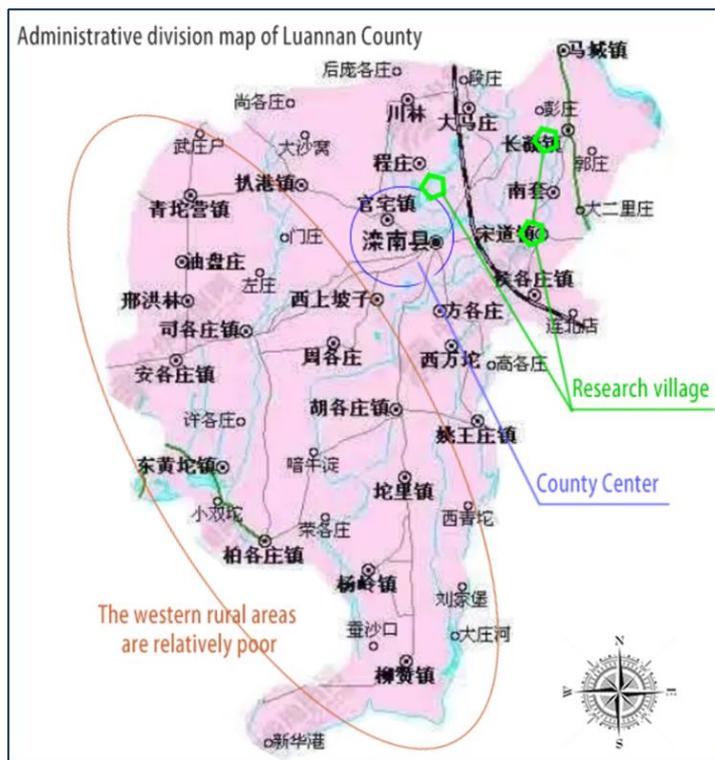


Figure 3.8 Administrative division map of Luannan County. (Adapted from The Great Valley, 2020)

Third, Songdaokou Town, Changning Town, and Bencheng Town in Luannan were selected based on economic factors.

The population living in villages in Luannan County is 270,898, accounting for 53.27 per cent of the total population (Official Surge of Luannan County Net Information Office, 2021). Currently, Luannan County consists of 1 street and 16 towns (Figure 3.8): Youyi Road Street, Sailing City, Songdaokou Town, Changning Town, Hugezhuang Town, TuoLi Town, Yao Wangzhuang Town, SiGeZhuang Town, AngeZhuang Town, PaChiGang Town, ChengZhuang Town, QingTuoYing Town, BaiGeZhuang Town, NanBao Town, FangGeZhuang Town, DongHuangTuo Town, and MaZhong Town (National Bureau of Statistics, 2022). The villages in the western part of Luannan County, such as Angezhuang Town, Bagezhuang Town, and Qingtuoying Town, are poor and are currently focused on meeting the basic needs of survival, which cannot be used as a sample for this research. Therefore, the towns in the central and eastern part of Luannan County are the fieldwork areas of this research, including 50 villages in Bengcheng Town, 65 villages in Songdaokou Town, 50 villages in Fanggezhuang Town, 45 villages in Changning Town, and 33 villages in Hugezhuang Town.

According to *Luannan County Record* (Local Records Compilation Committee, 2010, p155-170), compared to the villages in other towns, Songdaokou Town, Changning Town and Ben Cheng Town have been established for a long time, with a high per capita annual income and a high level of consumption by the residents. In addition, at present, with the support of the government, the villagers' houses in these three towns are being renovated (Luannan County Government, 2023). So, it can be inferred that the residents of these three villages have both the demand and the economic strength to purchase furniture.

Fourth, Fangpao Village, Qianmadi Village, Shangcaoying Village, and Dongbahu Village were selected through personal recommendation and sampling.

The researcher selected four villages in the three towns via personal recommendation and random sampling: Qianmadi (recommended, more accessible), Fangpao (sampled), Shangcaoying (sampled), and Dongbahu (sampled). There are 83 households in Qianmadi Village, 72 households in Shangcaoying Village, 65 households in Fangpao Village, and 172 households in Dongbahu Village (Local Records Compilation Committee, 2010, p156-160).

Their specific conditions are as follows (Table 3.3): Dongbahu, being close to the county seat (Bencheng), has the highest development level among the four: a high proportion of non-agricultural employment, a stable population dominated by nuclear families, per capita annual income of 15,000-25,000 RMB (1,551-2,585 GBP), newly built brick–concrete housing, and modern household appliances and furniture. Shangcaoying, benefiting from Songdaokou’s industrial–agricultural base, is at a middle level, with income derived from a combination of farming and wage labour, moderate family size, and functional housing and appliances. Qianmadi and Fangpao are relatively less developed, relying on traditional agriculture with lower incomes (10,000-18,000 RMB, about 1,034-1,861 GBP), a high proportion of empty-nest households, older housing, and slower replacement of appliances and furniture. Notably, these less-developed villages, due to slower replacement rates, retain more traditional furniture such as kang tables and kang cabinets, which embody local rural living memories and traditional craftsmanship.

Table 3.3 Comparison of four villages

Dimension	Dongbahu Village (Bencheng Town)	Shangcaoying Village (Songdaokou Town)	Qianmadi Village (Songdaokou Town)	Fangpao Village (Changning Town)
Population Status	Medium-scale population, approximately 500–800	Population around 200–400. Songdaokou Town is dominated	Population around 200–350. Similar to Shangcaoying	Small-scale population, approximately 150–

	people. Located near the urban area, with a relatively low rate of young and middle-aged labour outmigration; high proportion of local employment; resident population remains stable. A certain proportion of non-local tenants (e.g., migrant workers, parents accompanying children for schooling) may be present.	by agriculture and small-scale industries. Some young and middle-aged residents engage in farming or nearby employment; moderate proportion work outside the village. Permanent residents are mainly local farming households.	Village, but with a more aged population structure. Many young and middle-aged residents work in nearby towns; relatively higher proportion of elderly and children left behind.	300. Changning Town relies on traditional agriculture, with weaker economic vitality. Higher proportion of young and middle-aged outmigration; elderly account for the majority of the resident population.
Household Structure	Predominantly nuclear families (couple + children), accounting for 60–70%. Due to proximity to the city, three-generation households (for childcare or eldercare) account for 20–30%. Average household size is 3–4 persons. Non-local tenant families account for 5–10%.	Around 70% nuclear families, 20% three-generation households. Average household size is 3–4 persons. Mainly local farming households, with very few non-local families.	Around 65% nuclear families, with empty-nest elderly households (children working away) accounting for about 25%. Average household size 2.5–3.5 persons, with more dispersed family structures.	Around 50% nuclear families, and 30–40% empty-nest elderly households. Average household size is 2–3 persons. Family cohesion is somewhat weaker due to outmigration.
Economic Status	Relatively strong economic base. Benefiting from urban proximity, household income is predominantly non-agricultural: about 40% work in the city (construction, services, retail), 30% engage in transportation or small-scale commerce, and 20% combine with small-scale farming (vegetables, grains). Annual per capita income is about 15,000–25,000 RMB. Village collective economy (e.g., land leasing, factory rental) generates some revenue.	Medium-level economy. Songdaokou Town has a base in steel processing and manufacturing. Household income combines “agriculture + wage labour”: 40% engaged in grain and vegetable farming (e.g., corn, chili), 30% work in township enterprises, 20% in short-term migrant work. Annual per capita income is about 12,000–20,000 RMB. Collective economy is relatively weak.	Lower-middle economy. Dominated by traditional agriculture (grain farming accounts for 60%). About 30% of villagers work outside (mostly manual labour). No distinctive industries. Annual per capita income is about 10,000–18,000 RMB. Collective economy is weak.	Relatively weak economy. Predominantly traditional agriculture (rice and corn farming), accounting for over 70% of income. Only 20% work outside; no distinctive industries or village-run enterprises. Annual per capita income is about 8,000–15,000 RMB. Collective economy is nearly absent.
Housing Status	Good housing conditions. Over 80% are brick-concrete single-story houses or two-	Moderate housing conditions. 60–70% are brick-concrete single-story houses built after	Lower-middle housing conditions. 50% are brick-concrete houses, 30% are old	Relatively basic housing conditions. Over 70% are brick-

	<p>story buildings constructed after 2010, with floor areas of 80–120 m². Many homes have paved yards and renovated walls. Older houses account for less than 20%, mostly inhabited by the elderly or left vacant.</p>	<p>2000, with floor areas of 60–100 m². Around 30% of households have renovated (e.g., replaced doors/windows, tiled exterior walls) in recent years. Old adobe houses account for 20–30%, mostly vacant or used for storage.</p>	<p>adobe or brick-wood structures, with areas of 50–90 m². Renovation rate is low (about 20%), and some houses suffer from leakage or cracked walls.</p>	<p>wood or adobe houses built before 2000, with floor areas of 50–80 m². High proportion of old housing. Only 10–20% of households have done simple renovations (e.g., roof repairs, replacing doors/windows). Vacant houses account for over 30%.</p>
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Although the sample comprises only four villages, each was rigorously selected based on topographical and economic criteria, eliminating the influence of extreme terrain and unusual economic conditions. This ensured that the study captured, to a considerable extent, the common characteristics of rural households on the Jidong Plain, providing a degree of representativeness.

The study acknowledges certain limitations in its scope. The selected villages possess a certain level of population and economic resources and thus may not represent furniture use in poorer or more marginal rural areas. Moreover, village access was primarily facilitated by guide recommendation and practical accessibility, which may bias the sample toward more easily approachable settlements and households. Accordingly, the design recommendations of this study should be interpreted as a contextual response to the plain villages of Jidong, rather than being universally applicable to all rural areas in Hebei or China.

Guides to enter the fieldwork

In the Chinese countryside, residents are filled with a certain degree of vigilance towards outsiders, and researchers who want to enter the field smoothly need "guides"

(Tong, 2018). Ping (2003, pp. 492) stated in *“Folklore fieldwork”*: *“The place of local informants as guides, informants, translators and life assistants for fieldworkers to enter each other's cultures is significant. Without them, fieldwork cannot be opened, investigations cannot be carried out, and sometimes nothing is accomplished... Local informants can develop mutual trust with fieldworkers and develop a friendship-like bond. They can also help fieldworkers maintain and expand their interpersonal relationships and build an extensive network of relationships in the local area...”*

It can be seen that the guides are very important. The guides can not only help the researcher enter the field smoothly but also help the researcher expand the network of relationships in the study area and quickly establish good relationships with the people being studied. In this research, there were seven guides for the fieldwork.

The six guides identified before stepping into the field were the researcher's mother, a friend of her mother (Q92701, later referred to as: "Z" in the text) who lives in Qianmadi village, the village chief of Fangpao, the village chief of Shang Caoying, and the village chief of Donbahu. Firstly, the researcher contacted Z through the researcher's mother to explain the purpose and content of this research, and Z expressed great willingness to help the researcher access the field. Therefore, she helped the researcher to contact the village chiefs of this research village. With Z's help, the researcher organised an online meeting on 7 September 2023 to present the Participant Information Sheet (Appendix 4), Consent Form (Appendix 5) and the research outline in detail to the village chiefs of the four villages. All of these village chiefs agreed that the conduct of this research would help promote the villages and improve the lives of the residents. As a result, they were all very willing to act as guides for this research and lead the researcher into the villages to conduct the study.

After entering the field, through the visits in the first phase of the fieldwork, the researcher became acquainted with the seventh guide: the hostess of Q92706 in Qianmadi village (later referred to in the text as: "Guide X"). She was cheerful, hospitable, and very familiar with the study villages, which played an essential role in the smooth development of the fieldwork for this research. During the latter part of the fieldwork, the researcher was with her almost every day and became the best friend. She led the researcher to visit the pre-earthquake houses (Q92716, Q92717, and Q92718) and provided in-depth recollections and explanations of the traditional furniture that existed in the pre-earthquake houses, in which she asked other villagers for clarification of what she did not understand. In addition, she informed the researcher in advance about the three families (S92906, Q92707, F92602) in the study village where the weddings were to be held and led the researcher to the three families for a site visit. With her coordination, all three families cooperated with the researcher in completing the semi-structured interviews and observations. Also, with X's help, the researcher successfully rented a house in the Qianmadi village, lived there for about four months (23 January 2024 - 1 May 2024), and collected a lot of valuable first-hand information about furniture issues and traditional furniture.

Material Preparation

Traditional and modern fieldworkers have typically prepared material before stepping into the field. This is because fieldwork is not only a stimulating and challenging academic adventure and life experience, but also a kind of humanities research with difficulties, risks, embarrassment of being suspected and attacked, and even threats to one's life (e.g., in remote and unexplored mountainous regions of China) (Li, 2022; Ping, 2003, pp. 488-490). Adequate material preparation contributes to the success of the research. Material preparation generally includes the following three areas.

Personal belongings: cash, ID cards, Passports, Driving licences. (If the researcher lives in the field for a long time, they need to prepare suitcases, clothes, covers, toiletries.)

Fieldwork tools: The following four categories of tools are required (Table 3.4) Information, Records, Hardware, and Auxiliary.

Table 3.4 Fieldwork tool

Category	Tool Name
Materials for research	Timetable, research plan, interview outline
Recording	Field diary notebook, Observation report notebook, Interview record notebook, printed ethical approval form, printed participant information sheet, printed consent form, printed questionnaires, Waterproof document bag
Hardware	Mobile phone (recording device); personal laptop (audio/video storage device, photo recording); external hard drive and personal USB flash drive; portable stationery set (pens, pencils, erasers, scissors, tape, etc.); power bank, portable printer, measuring tools (tape measure)
Auxiliary	Maps and positioning devices (paper/electronic); portable lighting equipment (flashlight, headlamp); protective gear (masks, gloves, rain gear); first-aid kit, GPS map, spare batteries

Gift series: small gifts for guides and participants during visits to participants' homes, such as biscuits, candies, small toys, cigarettes, souvenirs.

The purpose of these material preparations is to allow the researcher to enter the survey site as quickly as possible and work smoothly.

Pilot Research

Before conducting a formal study on currently used furniture demand, the researcher needs to examine the feasibility of interview questions, anticipate the amount of

information to be collected, and assess whether this information can support the entire study. Pilot studies can assist the researcher in anticipating the nature of the raw data they are about to collect (Dhaheri, 2022).

The pilot study is also a feasibility study (Tickle-Degnen, 2013). It refers to small-scale experimental and exploratory research activities conducted on a particular scale before collecting primary data. It is a preview activity for researchers to test the feasibility of the entire research programme (Edelstein & Herbold, 2009). It can also help researchers rehearse the procedures and steps of primary data collection and understand the challenges associated with the data collection process (Janghorban *et al.*, 2014). Suppose problems with the research tools are identified in the pilot study and resolved promptly. It can ensure the fluency of the research process and the accuracy of the findings in the formal study.

The pilot study for this research focused on the semi-structured interview questions in phases three and four. Three participants were recruited through the second phase of the research. Each participant was first informed that the interview would need to be audio-recorded and would take place in the participant's home. After the participants accepted these two conditions, the researcher introduced them to the topic and objectives through the participant information sheet, helped them sign the informed consent form, and set up a time with the participants for the field interviews. All three participants in the pilot study agreed to participate.

During the formal pilot study interview, the researcher spent the first few minutes in general small talk, by Chinese cultural etiquette. The researcher then began the interview with the participant's consent. In the interview, the researcher informed the

participants that they could pause this activity at any time and had the right to terminate the interview without providing the reason (Salkind, 2010).

The researcher thematically analysed all the data collected from the semi-structured interviews in the pilot study using NVivo¹¹. This result was also arranged as three cases in the formal study. Based on the pilot test, the researcher made some changes to some of the interview questions, and the updated interview outline was used to collect primary data for this research.

Ethical consideration

Prior to the commencement of this research, an Ethical Approval Form (Appendix 2, pp.395) was submitted to the UWTSD Ethics Committee for approval. Therefore, this research was conducted in accordance with ethical and moral standards.

All participants in this research signed a participant contract and informed consent form. The researcher ensured that all participants understood the study. Prior to interviews and observations, the researcher confirmed each participant's willingness (or unwillingness) to participate in this research.

In this study, the variation in sample sizes across different phases primarily resulted from the research design and the practical constraints of fieldwork. On the one hand, the principle of data saturation was applied: once sufficient data had been collected and no new information emerged, the sample was not further expanded. On the other hand, the process was constrained by factors such as time, manpower, and participant willingness; for instance, while 63 households participated in the second stage, only

¹¹ NVivo is a software package designed for thematic analysis.

58 consented to continue in the third stage. In addition, certain data were inherently situational or object-specific, such as ancestral altars found only in a few households, or the use of furniture during weddings, which could only be observed in families hosting such events. Consequently, variations in sample size were both inevitable and necessary.

Ethical approval was particularly important in this research because the researcher was required to visit the participants' homes to document their lives. This requires that the participant's right to privacy is fully assured. Participants' consent was sought for the publication of photographs, videos, written materials, with information about their families and personal information coded and pictures blurred in the published materials. The researcher also needs to use reasonable storage means to ensure that the data is not disclosed and that the specific ways are described in detail in the Ethical Approval Form (Appendix 2, pp.395).

3.5 Fieldwork Process

According to the research questions, the fieldwork was divided into five phases, each addressing different issues, reaching different goals, and using different tools (Table 3.5). The second phase was conducted after the first phase. The third, fourth and fifth phases were parallel types where the data were collected simultaneously, and conducted after the second phase. Regarding the data type, the data in phases I, II, III, and IV were qualitative, and the data in phase V were quantitative.

3.5.1 discussed the research tools used in this fieldwork. 3.5.2 to 3.5.6 described in detail the objectives of each phase, participant information, data to be collected, how the data be analysed.

Table 3.5 Process map explaining logic of each phase

Objectives of each phase	sub-objectives of each phase	Research tools	Research location
Phase One: environment, lifestyle, and yards of the villages	The overall environment of the villages	Field journals	Fangpao Village,
	Contents of the rural household lifestyle	Field journals and literature	Qianmadi Village,
	Layout of the family yards	Photographs (30 yards)	Shangcaoying Village,
Phase Two: background of currently used furniture and traditional furniture in villages	Types and layout of currently used furniture	Photographs (63 houses)	Dongbahu Village
	Types of traditional furniture	Field journals (forming diagrams)	
		Photographs (roughly 100)	
Phase Three: the problems and demands of currently used furniture in daily lifestyle	Single-story, three-space house (Type A)	Semi-structured interviews (10 persons)	
		Field journals (28 families)	
		Participant observation (2 families, 6 days)	
	Single-story, multi-space house (Type B)	Semi-structured interviews (10 persons)	
		Field journals (30 families)	
		Participant observation (2 families, 6 days)	
Phase Four: the problems and demands of currently used furniture in special lifestyle	Traditional Folklore Events at Home: Weddings	Semi-structured interviews (5 persons)	
		Non-participant observation and participant observation (4 families, 12 days)	
	Traditional folklore events at home: New Year's	Semi-structured interviews (6 persons)	
		Participant observation (1 families, 4 days)	
	Problems with furniture in the home-based production	Semi-structured interviews (18 persons)	
		Participant observation (18 home-based production scenarios)	
Phase Five: Questionnaire survey on household furniture preferences in Jidong rural	Villagers' preferences for furniture	203 questionnaires	

3.5.1 Fieldwork Research Tools

In this research, all interviews and observations were conducted in the field environment, primarily using direct observation and on-site interview methods. Direct observation included participant observation and non-participant observation. On-site interviews included unstructured interviews and semi-structured interviews.

Observations were recorded in writing to form observation notes, while interviews were recorded on mobile phones and transcribed into text. In addition, during the research, the researcher lived in the field, with conversations with villagers about furniture issues or observations of villagers' currently used furniture captured in daily

field notes. The researcher also took numerous photos of furniture using their mobile phone to assist in analysing interview texts, observation notes, and field notes.

Participant observation and non-participant observation

Participant observation has had a long and tortuous history in the social sciences. It has been used in various forms by scholars from different disciplines. Hammersley and Atkinson (1983) argued that, in a sense, all social research is a form of participant observation because the researcher cannot study the social world without becoming part of it. Atkinson *et al.* (1998) argued that 'participant observation' is the most important research methodology in ethnography and that the generation of field reports is largely or partly dependent on 'participant observation'. In the field of design, Wasson (2000) asserted that participant observation is a fundamental method for gaining insights into user behaviour and is used to understand how people use products in their daily lives. Researchers usually spend two to five days observing and recording user behaviour in different environments and collecting data.

Participant observation was used almost throughout the study, and all the observation notes and field notes were recorded with the help of the observation method, especially in phases three and four. This can not only make up for the wrong data caused by the researcher's recall bias and the distortion of the interview data but also allow the researcher to participate in the lives of the participants and interpret the furniture problem comprehensively.

Unlike participant observation, non-participant observers are not involved in any interpersonal interaction in the field. Ciesielska *et al.* (2018, p40) argued that in non-participant observation field operations, the researcher, as an outsider, could collect more comprehensive data without being involved in the participants' activities. In the

fourth phase of this research, the wedding day of four families, the researcher placed herself as an outsider and observed different types of people using the furniture during the wedding (e.g. guests observing the ceremony, a newlywed couple, the owner of the residence), which resulted in a higher degree of completeness of the data collected.

Whether the participant or non-participant observation, there needs to be a clear primary goal of the observation before entering the field. When recording information about participant observation in the field, it is important to pay attention to the details of the participants' behaviour, e.g. participants' feelings, reactions, voices, initial impressions. The researcher needs to be constantly reminded that the notes recorded are centred on the theme and questions of the study (Ciesielska *et al.*, 2018). At the post-processing data stage, in-depth thematic analyses are required for the data collected from observations, which are used to understand and analyse more abstract issues (Laurier, 2010).

In this research, many participants strongly refused to use electronic devices to record their daily lives, and handwritten observation notes became the primary recording method for this research. However, handwritten observation notes may be subject to researcher subjectivity and bias. To address this issue, the data for this research's third and fourth phases were formed from a combination of observations and interviews, respectively. The interview data, obtained through mobile phone recordings, directly represents the participants' perceptions and experiences, thus compensating for the subjectivity and bias of the researcher and providing more comprehensive and accurate research results.

Semi-structured interviews and unstructured interviews

Ping (2003, p.495) argued that the direct interview method is very important in fieldwork. It is divided into structured interviews, semi-structured interviews, and unstructured interviews. This research used semi-structured and unstructured interviews.

In contrast to structured interviews with purely closed questions, semi-structured interviews usually use a mixture of closed and open-ended questions, with closed questions usually accompanied by open-ended 'why' or 'how' questions (Adams, 2015). This retains a degree of structure whilst allowing the researcher to raise new questions or ideas during the dialogue based on the interviewee's words. In this research, semi-structured interviews were used three times depending on the direction of the research question. The first time was to understand the problems that occur with furniture in daily life in the house. The second and third time was to understand the problems arising from furniture in special life. Unstructured interviews can help the researcher explore the perceptions and opinions of respondents on household furniture in different lifestyles and even provide some answers to furniture problems.

The practical steps of a semi-structured interview are generally selecting and recruiting respondents, drafting questions and an interview guide, and analysing the information collected (Adams, 2015). In this research, the researcher created three different interview outlines for interviewees, as the questions to be researched at each stage differed. Regarding question setting, the questions set by the researcher were flexible, and participants were free to comment, share their experiences and express their views. This interview format can inspire interviewees to provide unexpected insights (Thomas-Walters, 2022). When operating in the field, the researcher did not provide the participants with the interview outline in advance, which allowed for an understanding of the participants' real thoughts rather than pre-conceived answers.

This research used unstructured interviews regarding traditional furniture in the second phase. Because the researcher needed to understand the traditional furniture from the villagers' point of view, unstructured interviews were undoubtedly the most suitable. Secondly, the researcher did not know much about the traditional furniture in the study villages before stepping into the field. For example, does every household have the same traditional furniture? What are the types and quantities of traditional furniture? Is this furniture currently in use, and how is it made? How many participants were willing to be interviewed? Since the information was too fragmented to form a complete interview outline, the researcher went straight into the field with the direction of "collecting information on traditional furniture".

The interview data were recorded in various ways. Handwritten notes are the traditional method of obtaining interview data. However, handwritten notes are likely to disrupt the natural flow of the conversation (Zhang *et al.*, 2009, p. 243). Therefore, in this research, the researcher used mobile phone recordings to ensure that all discussions were recorded, facilitating repeated listening during subsequent data analysis, and that no important information was missing due to the researcher's omissions or subjective awareness.

It is worth noting that both Denzin (1989) and Barriball (1994) believed that the validity and reliability of the interview data depend on the similarity of the meaning of the utterances or words conveyed by each participant rather than on the repetition of the same words in each answer. Therefore, when analysing the data, it is impossible to simply analyse the repetition rate of words. However, the researcher needs to analyse the meaning of sentences or paragraphs to ensure the reliability and validity of the study.

Field note

The field note is a collection of notes taken by a researcher to remember observed behaviours, activities, events, and other characteristics during a field study. Recorded notes are intended to be read by the researcher as evidence for generating meaning and understanding of the culture, social situation, or phenomenon being studied (University of Southern California, 2024). In this research, unlike observation notes that have a clear limitation of objectives and a limitation of observation time. Field notes do not have time constraints and can be recorded daily from when the researcher enters the field. Field notes also do not have fairly explicit goals; any information that fits the current state of the furniture in this research can be recorded.

Clifford (1990, p. 68) considered field notes derived from interlocution, narration, and rewriting. In this research, field notes were recorded by the researcher in the village, either in the form of notes or photographs, documenting daily activities related to household furniture and significant dialogues between the researcher and villagers. There is a total of three parts of field notes in this research. The first part consists of discussions among villagers regarding rural lifestyle, primarily recorded during the initial field research phase. The second part of the field notes is about the graphical organisation of the dimensions of the traditional furniture, which were primarily recorded in the second phase of the field research. The third part of the field notes consisted of complaints about furniture usage in daily life or special activities, mostly recorded during the third phase of the field research.

Table 3.6 Template for field note (Adapted from Chiseri-Strater and Sunstein ,1997 & Schwandt *et al.*,2015)

<p>Description</p> <p>Date:</p> <p>Site/location:</p> <p>Length of Observation:</p> <p>Participants (list names):</p> <p>Activity (explain in detail):</p> <p>Types of notes: sketches, diagrams, other drawings and photographs (Canfield, 2011).</p> <p>Pay attention to: repetitive phrases, dialogues, the villagers use furniture behaviours.</p> <p>Reflection</p> <p>Explaining the phenomenon, problems, ideas, concerns, reflections</p>
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Regarding the specific content that needs to be recorded in the field note, Chiseri-Strater and Sunstein (1997) listed what should be included in a field note: date, time, and place of observation; specific facts, figures, and details of what happened in the field; specific words, phrases, and dialogues spoken by the participants; questions about the people or behaviours in the field; and the observer's sensory impressions, which include sight, hearing, texture, smell, and taste. Schwandt *et al.* (2015) further classified field notes into descriptive information, which records objective details such as time, place, and activities, and reflective information, which captures the researcher's thoughts and interpretations. To mitigate researcher bias and enhance credibility, a reflexivity journal was maintained alongside field notes, allowing for self-examination of potential biases and analytical reflections. Combining these frameworks, the researcher developed a structured field note template for this study (Table 3.6), and Appendix 6 (pp.422) provides an example of field notes, including both descriptive and reflective notes.

Regarding dealing with field notes, according to Schwandt (2015), the researcher must add additional details as soon as possible after the researcher completes the field task each day. Otherwise, essential facts and the opportunity to fully interpret the data may be lost. In this research, after completing each day of fieldwork, the researcher would review and collate the field notes each evening, organising each day's paper notes into an electronic version to be stored in Word on a personal computer.

Photographs

Basil (2021) identified photographs as crucial materials in fieldwork, serving to supplement audio recordings, observational notes, and field notes. Photos capture a single moment with clarity, making it easier to highlight specific details (e.g., spatial arrangements, artefacts, environmental conditions) (Müller, 2020). In addition, taking a photo is often quicker and less disruptive than recording a video, especially in sensitive settings (e.g., cultural ceremonies or private spaces) (Müller, 2020). Photos allow for selective framing, helping researchers respect privacy while still documenting relevant data (Jordan, 2014). Finally, photos can be embedded directly into field notes to emphasise key observations (Abas, 2023).

This study primarily employs mobile phone photography rather than alternative methods such as drone photography or satellite imagery, chiefly because mobile phone photography does not contravene Chinese law. In China, the Civil Code's provisions on residential privacy protection and permission regulations explicitly prohibit the unauthorised use of drones to photograph individuals within any residential area (Lantay Law Firm, 2022).

In this research, photographs served as the primary form of visual data, mainly assisting and supplementing other materials (field diaries and observation notes). For example, in the second phase of fieldwork, the photographs collected first were printed and then brought back into the field. With the assistance of local guides, the researcher used a measuring tape to re-measure reference points visible in the photographs (e.g., door widths or standard furniture dimensions). The measurement data were directly annotated on the printed photographs in pencil. Based on these annotations, the researcher produced rough sketches of yard and furniture layouts in the field notes. These sketches were subsequently digitised using Photoshop, ultimately generating schematic floor plans consistent with the actual photographs. This way, the researcher employed photographs to construct visual “scenes” of the courtyard and associated spaces, thereby supplementing the material from the field notes. (A total of 1,306 photographs were captured across four phases, averaging 259 per phase)

Questionnaire

The questionnaire survey, as a quantitative data collection method, differs from the narrative data generated by qualitative research. Quantitative data is analysed using statistical methods in numerical form (Creswell, 2014). In terms of questionnaire design, Dhaheri (2002) suggests that researchers should clearly define the data themes to be collected and ensure that the questionnaire is designed to be concise, clear, and well-structured, with a good logical flow and format, in order to increase the response rate. In this research, the data collected through the questionnaire survey aims to validate and supplement the findings from the earlier qualitative research, providing a deeper understanding of the furniture preferences of rural residents in Jidong, and offering a foundation for the final design principles.

Thematic Analysis

The data-analysis process in this study followed a structured and systematic approach, primarily based on thematic analysis using NVivo software. Braun and Clarke's groundbreaking 2006 paper, *'Using Thematic Analysis in Psychology,'* systematically introduced and explained thematic analysis (TA), a clear, flexible, and widely applied qualitative research method. The two scholars defined thematic analysis as 'a method for identifying, analysing, and reporting patterns (themes) in data.' NVivo is coding software used for thematic narrative synthesis analysis (Helen, 2021).

This study used thematic analysis rather than other analytical methods, such as content analysis, because it provides greater flexibility in capturing both expected and unexpected patterns across multiple qualitative data sources (Humble, *et al.*, 2022). While content analysis primarily focuses on quantifying codes or mentions, thematic analysis allows for the interpretation of underlying meanings and relationships between codes, which is essential for understanding the cultural and practical issues of rural household furniture (Humble & Mozelius, 2022). This approach was therefore more suitable for generating rich, contextually grounded insights that directly inform design recommendations.

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Figure 3.9 Phases of Thematic Analysis (Adapted from Braun *et al.*, 2006)

Braun *et al.* (2006, pp. 77–101) outline the process of thematic analysis within NVivo (Figure 3.9): familiarising oneself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

While this framework is indeed comprehensive, it proves challenging to apply directly in practice and draw conclusions. Naeem *et al.* (2023) outline the steps for generating each theme from the data (Figure 3.10).

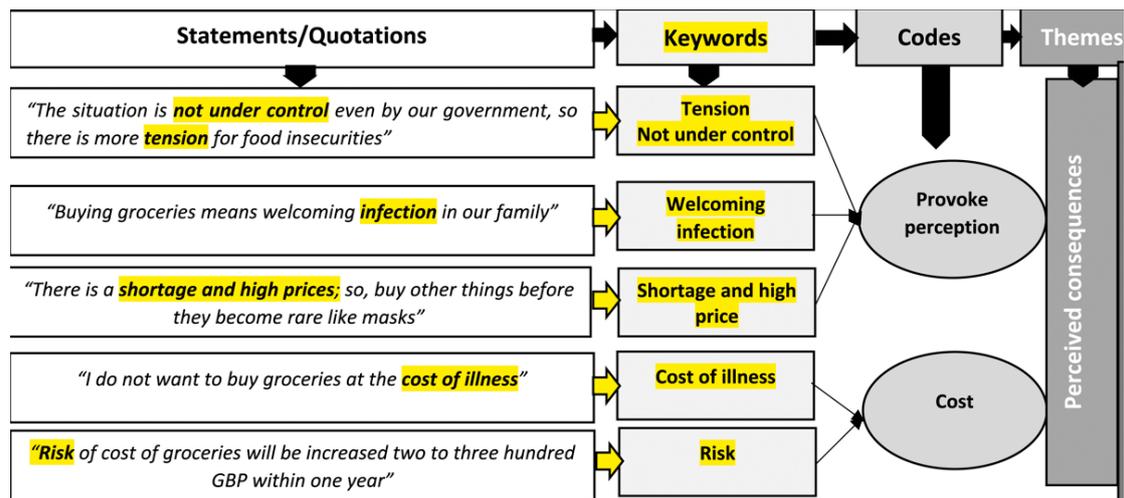


Figure 3.10 Thematic analysis process (Adapted from Naeem *et al.*, 2023)



Figure 3.11 The thematic analysis process of this study

In this study, integrating these two perspectives and guided by the research questions and objectives. Data analysis was operationalised through six iterative steps (Figure 3.11): (1) importing and familiarising with data; (2) extracting statements/quotations; (3) generating descriptive notes; (4) coding; (5) clustering codes into categories; and (6) refining categories into themes.

For example (Appendix 7, pp.424), in Phase 3 (semi-structured interviews and field notes), all household transcripts and observation notes were imported into NVivo and read through in full. During this stage, initial memos of potential furniture-related issues were recorded. Next, key quotations were highlighted and transformed into descriptive entries. For instance, the quotation *“We adults are fine, but it’s mainly the children, who have delicate skin, so I put a thicker blanket on the kang to prevent the children from getting burned (Q92710)”* was captured as the description, *“Overheating of the kang surface can burn children’s skin; current coping strategy is*

thicker blanket.” Similarly, *“Our sofa is lower than the kang... it is really hard on my neck and sometimes my back and waist hurt (S92915)”* was noted as, *“Height difference between kang and sofa causes discomfort and communication difficulties.”*

These descriptive entries were then coded, for example: *“Problems with overheating of the kang that may burn the skin”* and *“Mismatch between kang and sofa causing discomfort.”* Codes were compared and consolidated into broader categories, in this case *“Problems with the kang and peripheral products.”* Finally, categories were iteratively reviewed and refined into higher-level themes.

The coding and theme identification were primarily conducted by a single researcher. To enhance reliability and reduce potential bias, initial codes and emerging themes were repeatedly reviewed and cross-checked against the raw data (Singh *et al.*, 2021). Reflexive notes were maintained throughout the analysis to acknowledge and mitigate researcher assumptions and preconceptions, ensuring that findings were grounded in the participants’ perspectives rather than the researcher’s expectations (Barrett *et al.*, 2020).

In addition, to ensure accuracy, multiple data collection methods were employed to address each research question within a phase. For example, in the third phase of this study, data included interviews with 10 participants, and field notes from 58 households. Data were also collected from both the researcher’s and participants’ perspectives. During the wedding activities, the researchers conducted interviews in their capacity as researchers while also participating in furniture use and movement as participants.

3.5.2 Phase One

The first phase of the fieldwork was conducted to understand the content of the household lifestyle and the types of household yards in the study villages, and to answer a part of the research questions on the background of the current state of Jidong rural household furniture. Table 3.7 shows the basic information of the first phase of the fieldwork.

Table 3.7 Information sheet for the first phase of the fieldwork.

Village	Time	Guides	Recording tool
Fangpao Village	15.09.2023, full day	Village Chief of Fangpao	Field Journal (Handwritten) Mobile phone photographs
Qianmadi Village	20.09.2023, full day	Mother's friend, (Q92701, guide "Z")	
Shangcaoying Village	22.09.2023, half-day	Village Chief of Shangcaoying	
Dongbahu Village	25.09.2023, full day	Village Chief of Dongbahu	

The overall duration of Phase I: 15 September 2023 - 25 September 2023

The tasks in Phase I:

- (1) To understand the overall environment of the four villages and the content of the rural household lifestyles from the researcher's observations and conversations with the villagers to form the field notes.
- (2) To visit the villagers' yards led by the guides and photograph the yards of the participants who were willing for photographs to be taken.
- (3) Chat with the villagers as much as possible and quickly become familiar with them to facilitate the progress of the study.

The data from this phase consisted of two main parts: the field notes of the current lifestyles of the villages and the photographs of the yards of the 30 families recorded with mobile phones. (Participant family codes are listed in Appendix 8, pp.428)

In the data analysis section, regarding the collected photo data, the researcher conducted descriptive analysis directly in Word and created different types of yard layout diagrams in Photoshop. As for the field notes, the researcher learned from conversations with the village chief of Shangcaoying during the survey that the book "*Luannan County Record*" (Luannan County Government, 2023) describes the Luannan lifestyle. Therefore, in analysing the field note data, the researcher combined data with the information from this book to compensate for the lack of data on lifestyle observations. This approach also allows for comparisons between the field-collected data and the "*Luannan County Record*" descriptions to identify similarities and differences.

3.5.3 Phase Two

This phase answers research questions about traditional furniture and the status (types and layouts) of currently used furniture in rural Jidong. In this phase, guides were needed to lead the researcher into the villagers' homes to take pictures of the furniture to understand the basic situation of the current household furniture. Interviewees for Phase 3 and Phase 4 can also be recruited.

The overall duration of Phase 2: 25th September 2023 - 30th September 2023

The tasks in Phase 2:

(1) Types of currently used furniture.

- (2) The status of spatial layout of currently used furniture.
- (3) Research the condition of traditional furniture in the villages.
- (4) Identify people who could participate in the interviews.
- (5) To identify families who had recently held weddings and to contact these families.

Table 3.8 Information sheet for the second phase of the fieldwork.

Village	Date; Duration	Guides	Cases -- Families visited
Fangpao Village	26.09.2023, full day	Village Chief of Fangpao, Guide "X"	F92601, F92602, F92603, F92604, F92605, F92606, F92607, F92608, F92609, F92610, 10 families in total.
Qianmadi Village	27.09.2023, full day	Guide "Z", Guide "X"	Q92701, Q92702, Q92703, Q92704, Q92705, Q92706, Q92707, Q92708, Q92709, Q92710, Q92711, Q92712, Q92713, Q92714, Q92715, Q92716, Q92717, Q92718, 18 families in total.
Shangcaoying Village	29.09.2023, full day	Village Chief of Shangcaoying, Guide "X"	S92901, S92902, S92903, S92904, S92905, S92906, S92907, S92908, S92909, S92910, S92911, S92912, S92913, S92914, S92915, S92916, S92917, S92918, S92919, 19 families in total.
Dongbahu Village	30.09.2023, full day	Village Chief of Dongbahu, Guide "X"	D93001, D93002, D93003, D93004, D93005, D93006, D93007, D93008, D93009, D93010, D93011, D93012, D93013, D93014, D93015, D93016, 16 families in total.

During the field research, the villagers were enthusiastic and did not resent the researcher taking photographs. The original research plan was to collect information on the furniture of 60 families, but 63 houses were eventually visited (Table 3.8). The researcher numbered all the households visited by the village's initials and the time of the current research phase. The interviewees and observed households in the third and fourth phases were from the households in Table 3.8.

For the status of traditional furniture, the researcher conducted unstructured field interviews via mobile phone recordings in the research villages. Before the fieldwork,

the number of participants was not limited because it was not known precisely which households in the villages currently still had traditional furniture.

During the research period, participants were family members with traditional furniture. Interview questions were developed gradually during the research. For example: could you tell me about this furniture? How is this furniture made? Was it bought? What kind of wood is it made of? What is the story? Could I measure this piece of furniture? In the end, 45 audio recordings of 10-30 minutes were collected (Table 3.9). The researcher also took photographs of traditional furniture, measured the dimensions of traditional furniture with a tape measure, and recorded field notes.

Table 3.9 non-structured interviewers for traditional furniture

Traditional furniture	Cases – recording
Altar tables	Q92716, Q92707, S92915, Q92715, Q92712, Q92714, A total of 6
Red wardrobes	Q92718, S92915, F92607, Q92714, F92606, Q92717, Q92712, D93009, D93011, F92603, F92606, A total of 11
Wicker suitcases	D93011, A total of 1
Handcrafted carved mirrors	F92607, F92603, F92606, Q92716, Q92717, Q92718, A total of 6
Kang, Stove, Furnace	F92603, S92915, D93009, Q92712, Q92714, S92910, S92905, D93003, D93001, D93012, S92902, D93016, Workers building a kang, Workers building a stove, A total of 14
Kang tables	F92606, F92607, Q92708, D93007, D93002, A total of 5
Kang cabinets	Q92703, F92606, A total of 2

As a result, three data types were developed in this research phase: photographic data, unstructured interview data and field notes. The photographic data consisted of types and layouts of currently used furniture, and types of traditional furniture. In processing this photo data section, as in the first phase, the researcher imported the photos into Word for descriptive analysis and Photoshop for drawing furniture layout

diagrams. The second was audio recordings of traditional furniture from open-ended interviews, which the researcher converted into Word text and analysed the characteristics of each piece of traditional furniture. The third type of field note was mainly used to describe and map the dimensions of the traditional and currently used furniture, supplemented by the interviews and photographs data.

3.5.4 Phase Three

The third phase of the fieldwork was designed to answer the research question: What problems have arisen in currently used furniture in the daily lifestyle of rural Jidong?

The overall duration of Phase 3: 1st October 2023 - 1st Aug 2024. In this phase, to gain a deeper understanding, integrate into the villagers' lives, and record field notes, the researcher, accompanied by her mother, rented a house and lived in Qianmadi Village from 23rd January, 2024 - 1st May, 2024. with the help of Guide X.

The task in Phase 3: To collect data on problems with currently used furniture that occur in daily life. The data analysis in the first and second phases found that residential-type houses in the villages were classified into single-story, three-space houses (Type A houses) and single-story, multi-space houses (Type B houses). The Type and layout of furniture in different houses were not quite the same, so this phase was needed to collect the problems arising from currently used furniture in both house types.

Table 3.10 Semi-structured Interview Information Sheet for third phase of the Fieldwork

	Household	Date	Interviewee	Type of house	Duration	Recording tool
1	F92607	04.10.2023 (Pilot)	Female master	Type A house	63 min.	Recording (mobile phone)
2	F92610	17.12.2023	Female master	Type B house	77 min.	
3	Q92710	12.01.2024	Female master	Type A house	87 min.	
4	Q92711	04.02.2024	Female master	Type B house	90 min.	
5	Q92712	19.02.2024	Male master	Type A house	75 min.	
6	Q92715	23.02.2024	Female master	Type B house	85 min.	
7	S92901	26.02.2024	Female master	Type B house	82 min.	
8	S92903	12.03.2024	Female master	Type B house	69 min.	
9	D93006	12.03.2024	Male master	Type B house	50 min.	
10	D93011	13.03.2024	Male master	Type A house	71 min.	
11	F92603	01.04.2024	Male master	Type A house	50 min.	
12	F92606	01.04.2024	Male master	Type A house	55 min.	
13	D93001	03.04.2024	Female master	Type A house	82 min.	
14	D93004	03.04.2024	Male master	Type A house	60 min.	
15	S92915	03.04.2024	Female master	Type A house	75 min.	
16	Q92708	04.04.2024	Female master	Type A house	84 min.	
17	D93008	04.04.2024	Female master	Type B house	87 min.	
18	D93012	07.04.2024	Female master	Type B house	83 min.	
19	D93003	07.04.2024	Female master	Type B house	57 min.	
20	S92912	07.04.2024	Female master	Type B house	60 min.	

There are three main sources of data at this phase, semi-structured interviews, participant observation, and field records. The first to begin was semi-structured interviews, which were conducted in the interviewees' homes. The researcher interviewed the male or female masters (“master” refers to the male or female head of the household, i.e. the primary owners and decision-makers of the dwelling) of 20 households (10 Type A houses and 10 Type B houses) from the four villages for varying periods ranging from 50 to 90 minutes (Table 3.10). Table 3.11 shows the questions of the semi-structured interviews. The interview data were recorded on mobile phones and then transferred to the researcher's computer.

Table 3.11 Outline of Semi-structured interviews for third phase of the Fieldwork

<p>Semi-structure interview outline: (Daily life)</p> <ol style="list-style-type: none">1. Could you tell me a little bit about your day? From waking up in the morning to going to bed at night?2. What furniture do you use every day in your bedroom? What items of furniture do you have and how is each piece of furniture used?3. What kind of furniture do you use every day in the hall (living room)? (What items of furniture do you have and how is each piece of furniture used?)4. Could you tell me the most difficult piece of furniture in your house? (Why is it hard to use? How often do you use it?)5. Could you tell me the most easy-to-use piece of furniture in your house? (Why is it easy to use? How many times a day do you use it?)6. How often do you buy furniture for your home? Could you tell us about the furniture you buy the most? (e.g., bed, sofa, chair, cabinet, dinner table, or other, please tell me why did you buy it? When did you buy it?) What furniture do you plan to purchase in the future?7. When visitors come, which space do you choose to welcome them in the house? Typically, how long do you spend there? Could you describe the scene?8. Have you ever made your own furniture? If so, give an example. Why do you make your own furniture? (e.g., specific needs, customization to fit space), Could you show me the process?9. Have you ever reassembled your furniture? If so, by yourself or pay someone else to do it? Why? Do you have the right tools to do that? Difficulties? Yes, please give an example:
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Second is the participant observation. Initially, the researcher wanted to record by installing cameras, but all three families explicitly refused due to fear of privacy breaches. The researcher, therefore, personally conducted participant observation in each home for three consecutive days (Table 3.12). During the observation period, the researcher stayed in the participants' homes throughout the day to observe their behaviour in using the furniture in their daily lives, culminating in handwritten observation notes.

Table 3.12 Participant Observation Information Sheet for third phase of the Fieldwork

Household	Type of house	Household size	Date	Participants in Observations	Recording tool
Q92711	Type B house	5	15.05.2024, full day 16.05.2024, full day 17.05.2024, full day	All family members, including the female master, the male master, the son, the daughter, the son-in-law, the daughter-in-law, the children who are already in junior high school and high school, and seniors.	Observation notes (handwritten) Photographs (mobile phone)
F92607	Type A house	2	20.05.2024, full day 21.05.2024, full day 22.05.2024, full day		
Q92715	Type B house	6	30.05.2024, full day 31.06.2024, full day 01.06.2024, full day		
D93015	Type A house	3	04.06.2024, full day 05.06.2024, full day 06.06.2024, full day		

In terms of field notes, notes were recorded from 23 January 2024 to 1 May 2024, when the researcher lived in the study village. During this period, excluding the time spent on collating data daily, the researcher had daily access to the villagers in the village. During the daily chats and observations with the villagers, there were complaints about furniture, and the behaviours of currently used furniture were recorded. Eventually, 28 Type A houses and 30 Type B houses of field notes on currently used furniture issues in daily life were compiled, which greatly supplemented part of the interview and observation data.

In the data analysis part, the researcher first combined semi-structured interviews and field notes in NVivo for thematic analysis. Secondly, the observation records were also analysed in NVivo.

3.5.5 Phase Four

The fourth phase of the fieldwork was to answer the research question: What problems have arisen in currently used furniture in the special lifestyle of rural Jidong?

The overall duration of Phase 4: 1st October 2023 - 1st Aug 2024.

The task in Phase 4: To collect the problems in the special life when villagers in the Jidong countryside use household furniture. Two types of special lifestyles were found in the first and second phases: the villagers organised folklore activities in their homes, and the villagers carried out home-based production in their houses. Different lifestyles create different requirements for currently used furniture, so this phase needs to explore the problems that arise for currently used furniture in these two special lifestyles.

Folklore events organised by villagers at home

Based on the analysis of the content of folklore events in village homes in the first phase, two types of folklore events organised at home that occur with high frequency in the study villages were selected for this phase: weddings and New Year. The primary purpose is to discover the common problems of furniture in organising different folklore events.

Wedding:

Table 3.13 Information Sheet for Interview and Observation Data on Wedding Aspects of Fieldwork Phase 4

Household	Interview Date	Wedding Date	Interviewee	Recording tool	Observation Date	Duration of observation	Subjects of Observation	Recording tool
S92906	03.10.2023 (Pilot)	01.11.2023	Female master	Recording (mobile phone)	31.10.2023	7.am-10.pm	Married couple, the male or female master, the people moving around indoors.	Observation notes (handwritten)
					01.11.2023	5.am-11.pm		
					02.11.2023	7.am-10.pm		
Q92707	24.03.2024	22.11.2023	Female master	Recording (mobile phone)	21.11.2023	7.am-10.pm	Married couple, the male or female master, the people moving around indoors.	Photographs (mobile phone)
					22.11.2023	4.am-9.pm		
					23.11.2023	7.am-10.pm		
F92602	24.03.2024	13.12.2023	Female master, male master	Recording (mobile phone)	12.12.2023	7.am-10.pm	Married couple, the male or female master, the people moving around indoors.	Photographs (mobile phone)
					13.12.2023	4.am-9.pm		
					14.12.2023	6.am-10.pm		
S92911	26.03.2024	28.12.2023	Female master	Recording (mobile phone)	27.12.2023	7.am-10.pm	Married couple, the male or female master, the people moving around indoors.	Photographs (mobile phone)
					28.12.2023	6.am-11.pm		
					29.12.2023	7.am-10.pm		

To understand the problems and needs for currently used furniture arising from weddings organised at home by villagers, the researcher collected data from four families who organised weddings. This data included non-participant observation on the wedding day, participant observation the day before and the day after the wedding was organised, and semi-structured interviews with the fathers or mothers of the newly married husbands.

Semi-structured interviews (Table 3.13): Before formal data collection, guide X led the researcher to three wedding families for an advance visit, during which the researcher would ask the wedding organisers if they were available to be interviewed. (S92906 was interviewed after the wedding.) The number of families interviewed was four, but the number of people interviewed was five because the researcher interviewed the male and female hosts of F92602 separately. The duration of each interview ranged from 50-90 minutes. Mobile phone audio recordings recorded the data from the interviews.

Participant and non-participant observation (Table 3.13): The researcher personally conducted observation in each household for three consecutive days. One of the days before and one day after the wedding were participant observation. The researcher, as a participant, helped the villagers organising the wedding to pack up the house together, which allowed the researcher to get a direct insight into the problem of currently used furniture. Non-participant observation was used on the day of the wedding. This was mainly because of the chaotic situation at the time of the wedding, and the researcher needed to observe as a bystander all types of people that attending the wedding and their use of household furniture. (S92906 was a pilot study. the researcher did not attend the wedding day, but conducted observations three days after the wedding was completed. Therefore, all three days were participatory

observations.) The data from this section were handwritten and recorded by the researcher to form participant and non-participant observation notes, respectively.

New Year:

Table 3.14 Information Sheet for Interview and Observation Data on New Year Aspects of Fieldwork Phase 4

Interview Household	Interview Date	Interviewee	Recording tool	Observation Household	Subjects of Observation	Duration of observation	Recording tool
F92604	19.03.2024	Female master	Recording (mobile phone)	Q92706	Male or female residence owners, daughter, son-in-law, son, daughter-in-law, guest.	08.02.2024	Observation notes (handwritten)
Q92701	19.03.2024	Female master				09.02.2024	
Q92702	25.03.2024	Male master				10.02.2024	
Q92709	25.03.2024	Female master				11.02.2024	
S92914	26.03.2024	Female master				Total 4 days	
D93013	26.03.2024	Male master				Photographs (mobile phone)	

Table 3.15 Outline of Semi-structured Interviews for folklore activities in phase 4 of the fieldwork

<p>Semi-structure interview outline: (Special Lifestyle- Wedding/ New Year)</p> <ol style="list-style-type: none"> 1. Please describe the process of holding a wedding/celebrating Chinese New Year. (only indoors) 2. Please list furniture you use for traditional festivals. (You can list more than one piece of furniture or decorations) (Which pieces of furniture do you find the most difficult to use? Which furniture is best to use? Why?) 3. Could you describe how the furniture just mentioned is used in a wedding? Have you ever had any problems with furniture during a wedding? How did you deal with those problems? 4. What furniture do you think works well? 5. Do you move your furniture before the wedding? If so, please tell me how you moved it? (How easy was it to move? How easy to store it? How easy is it to bring it back to the original place? Etc.) 6. When the wedding is over, will there be questions about the furniture? (e.g. storage of kitchenware, storage of tables, chairs and benches, cleaning of the room, etc.) Why do these problems occur? How did you deal with those problems?
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To understand the problems and needs of currently used furniture when Jidong villagers have a New Year's Eve at home. The researcher conducted semi-structured

interviews with six heads or masters of the family who celebrated the New Year at home, and participant observation in one family (Table 3.14; Table 3.15). Participant observation was conducted over four days, including the day before the New Year, the day of the New Year and two days after the New Year. Subjects of observation included male and female residence owners, daughters and daughters-in-law, sons and sons-in-law, and guests. Data from the observations were presented in handwritten observation notes.

In the data analysis section, data from semi-structured interviews, participant observation, and non-participant observation of folklore events (including weddings and New Year) were integrated into NVivo for thematic analysis.

Home-based production organised by villagers

This phase was to answer the research question: What problems and needs arise from the villagers' currently used furniture during home-based production? Based on the analysed of the types of village dwellings in Phase 1 and Phase 2, the researcher selected different types of production dwellings in the study villages, including 8 village shops, 2 mahjong parlours and 8 processing factories. (Table 3.16). The primary purpose was to discover the furniture problems in the production space.

The researcher conducted semi-structured interviews and participant observation for 18 households of different production types (Table 3.16). The participants in the interviews consisted mainly of the owner or works. Table 3.17 showed the outline of the semi-structured interviews at this phase. In the observation section, three observations were conducted on the same day of the interview for a shorter period because some participants wanted to avoid receiving the researcher for secondary fieldwork. The other observations were longer, one day or half a day. In addition, the

persons observed include not only the owner of the shop or factory, but also customers, workers, neighbours.

Table 3.16 Information Sheet on Interview and Observation Data on Production Aspects of Fieldwork Phase 4

Type of house	Interview Household	Interview Date	Interviewee	Duration of Observation	Subjects of Observation	Recording tool
Village shops	F92601	4.10.2023 (Pilot)	shop owner	01.04.2024 10.am-4.pm	Shopkeepers, shop assistants, customers, neighbours	Interviews: Recording (mobile phone) Observation notes: (handwritten) Photographs (mobile phone)
	Q92704	08.06.2024	Shop worker	11.am-11.30am		
	Q92713	08.06.2024	Shop owner	21.06.2024 5.am-5.pm		
	Q92714	10.06.2024	Shop owner	9.am-10.am		
	S92916	10.06.2024	Shop owner	20.06.2024 6.am-11.am		
	S92917	11.06.2024	Shop owner	10.am-12am		
	S92919	11.06.2024	Shop worker	23.06.2024 9.am-3.pm		
	D93005	12.06.2024	Shop worker	25.06.2024 1.pm-10.pm		
Mahjong parlours	D93016	12.06.2024	Owner	27.06.2024 8.am-7.pm	Owners and customers	
	S92908	15.06.2024	Owner	28.06.2024 8.am-4.pm		
Sheet metal workshop	F92605	16.06.2024	Owner	30.06.2024 10.am-5.pm	Factory owners, workers, neighbours	
	D93003	17.06.2024	Owner	03.07.2024 7.am-12.am		
	D93002	17.06.2024	Owner	03.07.2024 1.pm-7.pm		
Animal breeding factory	D93004	17.06.2024	Owner	07.07.2024 10.am-4.pm		
	D93001	17.06.2024	Owner	10.07.2024 5.am-10.am		
	D93010	18.06.2024	Owner	10.07.2024 2.pm-10.pm		
Vegetable shed factory	D93012	18.06.2024	Owner	14.07.2024 10.am-3.pm		
Breakfast processing factory	S92909	20.06.2024	Owner	4.pm-5.pm		

Table 3.17 Outline of Semi-structured Interviews for Home-based in Phase 5 of the Fieldwork

<p>Semi-structure interview outline: (Special Lifestyle- Production)</p> <ol style="list-style-type: none">1. Do you undertake any form of home production?2. What type of home production are you performing at home right now? (Home farming, home shop, or something else?)3. Could you show me around your production process? How long do you work? Do you have a break in between?4. Does this mode of production affect your use of furniture? (How does it affect? Has it caused any damage? Do you have any specific demands on furniture?)5. How do you use furniture in your work? (When you are producing, what furniture is the most uncomfortable (or comfortable) for you to use? The most tiring or easy to use?)6. What part of the furniture do you think needs the most change or adaptation when you produce? Why? Do you have an idea of how to change this?

In the data analysis section, the data from the semi-structured interviews and participant observation were integrated and then thematically analysed in NVivo to find out the problems of currently used furniture in different home-based production activities of the villagers.

3.5.6 Phase Five

The questionnaire survey in this phase focused on the furniture preferences of rural villagers in Jidong, aiming to supplement the findings on function, material, and decoration in the earlier phase, and to gain a more in-depth understanding of the self-requirements of villagers in Jidong in the household furniture. This phase sought to provide a more accurate answer to the third research question (design principles).

In this phase, no formal power calculation was undertaken. Although the study employed a mixed-method ethnographic fieldwork approach, its core orientation remains qualitative and exploratory under an interpretivist perspective, emphasising the capture of in-depth views and practices through fieldwork. The questionnaire survey in this phase was primarily descriptive, aiming to identify patterns of

preference from a diverse sample rather than to test predefined hypotheses through inferential statistics. Additionally, when the quantitative component serves solely descriptive purposes, the sample size need not meet the strict standards of inferential research, with greater emphasis placed on the integration of data with the depth of qualitative analysis (Hollen N *et al.*, 2020). In this study, 200 questionnaires were sufficient to meet the practical descriptive precision objectives.

The questionnaire consisted of three main sections: The first section gathered basic demographic information of the villagers, the second section investigated the current usage and purchasing preferences for furniture, and the third section analysed furniture styles and preferences. Specifically, the questionnaire covered the following content:

Basic Information Section (Questions 1-6): This section included demographic details such as gender, age, height, household members, income sources, and monthly family income (Appendix 3, pp.413).

Analysis of Furniture Usage and Purchasing Factors (Questions 7-12): This section analysed the most commonly used furniture spaces in daily life, and analysed the convenience of current furniture uses through scale questions. It also investigated the factors influencing villagers' decisions to purchase new furniture in different contexts, including internal needs and external influences, ranked by importance (Appendix 3).

Furniture Styles and Preference Analysis (Questions 13-21): Using single-choice questions, this section explored villagers' style preferences for the overall space of their home, as well as furniture preferences for individual spaces (such as the

bedroom, living room, kitchen, etc.), including items like beds, bedroom seating, wardrobes, sofas, dining tables, benches, shoe cabinets, and cupboards (Appendix 3).

For this phase, the researcher conducted on-site distribution and collection of questionnaires from March 1, 2024, to Sep 1, 2024, across four study villages. A total of 232 questionnaires were distributed, with 203 valid responses collected. The data were subsequently analysed through descriptive statistics and cross-tabulation analysis using SPSS, with the findings reported in Chapter 7. This provided significant quantitative data to support the discussions in subsequent chapters.

3.6 Summary

This chapter describes the field research conducted under the interpretive paradigm using a mixed-methods anthropological ethnographic approach. The following chapters (Chapters 4, 5, 6, and 7) present and report the findings, and analysis from each stage of the research process.

4 Findings and Analysis from Phase One and Two

4.1 Introduction

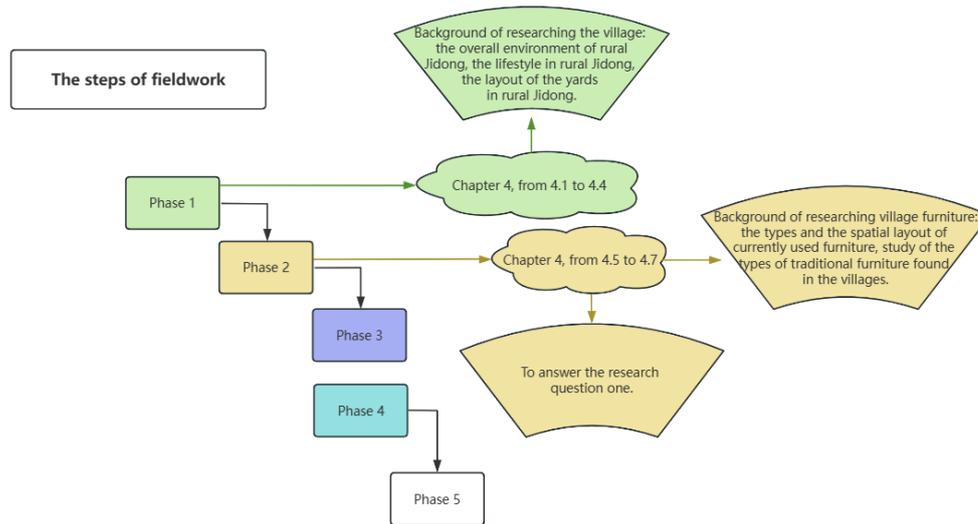


Figure 4.1 Introduction to chapter 4

This chapter analyses the data collected during phase one and phase two of the field investigation (Figure 4.1). Sections 4.2 through 4.4 analyse the data from phase one. Section 4.2 focuses on analysing the overall environment of the villages and the lifestyle of its inhabitants, including both daily life and special lifestyle, based on field notes. Section 4.3 analyses photographs of the yards in the Jidong villages. Section 4.4 is the summary of the first phase. All coding and theme validation were conducted by the author, with triangulation achieved through cross-checking field notes, photographic records, and spatial sketches, as detailed in Section 3.5.1.

Sections 4.5 through 4.7 analyse the data from phase two. Section 4.5 examines the types and the spatial layout of currently used furniture in the villages through an analysis of photographs. Section 4.6 analyses the field notes and unstructured interviews on the types of traditional furniture in the village and answers the first

research question (What traditional furniture was discovered in the villages surveyed?). Section 4.7 presents a summary of the findings from phase two.

4.2 Phase One: Field Notes and Literature

In phase one, the researcher conducted a two-and-a-half-day field study in four villages, guided by local tour guides, and two types of data are collected. The first type was handwritten field notes. The data primarily came from conversations with local guides and enthusiastic villagers. These data were summarized into a Word document, and combined with the book "*Luannan County Record*", the researcher analysed and categorised the field notes into three aspects: the overall environment of the village, daily life of village families, and special lifestyles of village families (including home-based production and families organise folklore events). The second type of data consisted of photographic data. The researcher took photographs of 30 households yards using mobile phones, and these photographs were compiled into a Word document for descriptive analysis.

4.2.1 Overall Village Environment

The four villages investigated in this research all feature beautiful natural environments, with flat and expansive terrain, as well as abundant natural resources. The surrounding trees are primarily poplars and willows, which support the local natural landscape and material resources. There are economic differences among the villages: Qianmadi Village and Fangpao Village have relatively lower economic levels, and their residents maintain more traditional lifestyles; whereas Shangcaoying Village and Dongbahu Village have more prosperous economies, and their residents lead more modernized lifestyles.

The guides from all four villages consistently pointed out that the residential buildings in these villages are all self-built, yard-style houses. These buildings are heavily influenced by the architectural styles of the Shanxi Jinzhong residences and the Beijing yard houses, with all the houses facing south. The guides from Qianmadi Village and Fangpao Village mentioned that most of the houses were built after the 1976 Tangshan earthquake, and have been standing for about 40 years; while the guides from Shangcaoying Village and Dongbahu Village noted that most of the houses in their villages were built within the last ten to fifteen years.

The study also found significant differences in spatial layout between rural yards and urban residential areas. Rural yards typically cover larger areas, and the main gates of each household's yard are usually left open and rarely locked, showcasing an openness and community sense of security that contrasts with the enclosed nature of urban housing.

4.2.2 Daily Life in Rural Households

Household composition

According to "*Luannan County Record*" (2010, pp.1063), household composition in the villages can be categorised into two types based on the number of family members: "large families" and "small families." "Large families" typically consist of 3 to 8 members, including the male and female masters of the household, the husband's parents, and the children of the male and female masters. In contrast, "small families" are composed of 2 to 3 members and can be further divided into two types: the first type includes the male and female masters and their children, where the older generation has either passed away or lives separately; the second type consisting of the husband's parents and the children of the male and female masters, with the masters often working away from the village.

However, field investigation records reveal the presence of a new household type in the villages, consisting of 3 to 5 members, including the male and female masters and their children. The village head of Dongbahu Village noted, "*In last year's population census by the village committee, this type of household, consisting of two adults and their children, accounted for 30% of all household types.*"

The number of family members directly affects the quantity, functionality, comfort, safety, and spatial layout of furniture within the household. For instance, a larger number of family members indicates a greater need for seating, beds, storage space, and other furniture items. Therefore, furniture design principles should be adjusted based on the actual members of the household. The most common household types in the village need to be further identified in the questionnaire.

Income and consumption

According to "*Luannan County Record*" (2010, pp.412-418), in the four villages, traditional grain farming used to be the main source of income for households, with only a few families primarily engaged in self-sustaining home-based production, focusing on animal husbandry and fishing. However, field notes reveal that grain farming is no longer the primary income source for households. Currently, there are two main sources of income:

The first source is working outside the village. This migration for work is a reluctant choice for many villagers. The male head of household in F92607 stated, "*If I could earn money in the village, I wouldn't have to go work in the city.*" The male head of household in Q92710 added, "*The people from our village who work in the city have*

no education or skills, and big companies won't hire us. We can only work on construction sites."

The second source is home-based production, which refers to small-scale commercial activities conducted within the household. This model not only provides income for the household but also offers employment opportunities to other villagers in the community. During fieldwork, the researcher observed that the notice board at the Qianmadi Village Committee had a section for recruitment information. The staff collects information on new factories in the village at the beginning of each month and posts job vacancies on the notice board to recruit local villagers. The village head of Dongbahu Village explicitly stated that home-based production is currently the main source of income for Dongbahu villagers.

The sources of household income directly influence the selection and configuration of currently used furniture. Households with higher incomes tend to purchase more, higher-quality, and more diverse furniture, while lower-income households tend to choose more practical, durable, and moderately priced furniture. Therefore, exploration in the questionnaire of the differences in household furniture choices between different income sources could provide more detailed data to support furniture design and rural household improvement measures.

During this field study, through conversations with villagers, the researcher summarized five situations (Appendix 9) in which villagers would choose to purchase furniture. These situations include: when building or renovating a house; when existing furniture styles are outdated; when existing furniture is damaged; during sales or promotional periods at furniture stores; and when children or the household itself is

getting married. Questionnaire data is needed to verify which of these situations most strongly influences furniture purchasing decisions.

Regarding the factors that influence furniture purchases, villagers mentioned both internal and external factors (Appendix 10, pp.431). Internal factors include the material, functionality, comfort, design style, size, and environmental friendliness of the furniture. However, the specific factor that has the greatest impact on the purchasing decision still needs to be analysed through questionnaire data. As for external factors, villagers primarily consider price, brand, and after-sales service. More detailed research through questionnaire surveys is needed to determine the relative importance and priority of these external factors in their decision-making.

Socializing and entertainment



Figure 4.2 People chatting in the yard, F92607

According to "*Luannan County Record*" (2010, pp.895-910), "gathering" is the most prominent feature of villagers' daily social and recreational activities, typically involving groups of five or more people. During field visits and observations in the villages, the researcher found that the yard gates and house doors of each household were not locked, and it was common to see 7 to 8 people sitting together in the yard or inside the house (Figure 4.2), happily engaging in conversation. Socializing and entertainment modes vary according to different age groups in the village. Middle-

aged women often gather to play mahjong, do farm work, or chat. Elderly people prefer to relax and talk on the large stone platforms at the village entrance, on the sofas in front of small shops, or on chairs at the doorsteps of certain households. The male owner of Q92712, as a representative of seniors, said, "*Sometimes we also gather to play cards on the kang in someone's house.*" Preschool children gather at certain households to play and watch cartoons. Teenagers in junior high and high school prefer to gather at certain households to play games on their phones or computers.

This suggests that the design of furniture should not only meet basic comfort and practicality needs but also consider the diversity of social and recreational activities in the village. For example, when six people are playing cards, the seating should accommodate enough people and cater to the needs of different age groups. These factors directly influence the functional configuration, material selection, and design of the furniture. Therefore, whether current furniture designs adequately consider these needs remains an issue that needs exploration in the phase three fieldwork.

4.2.3 Special Life in Rural Households

Folk activities

According to "*Luannan County Record*" (2010, pp.1057-1069), the folk activities held at home in Jidong villages of can be divided into four categories: sacrificial rites, childbirth-related activities, traditional festivals, and weddings and funerals.

Specifically, sacrificial rites involve setting up an altar at home and offering food to the heavens to seek blessings for the family's health and safety. Childbirth-related activities are held on the third day and the one-hundredth day after the birth of a child, during which the family invites friends and relatives to wish for the child's healthy growth and longevity. Traditional festivals include the New Year, Lantern Festival,

Qingming Festival, Dragon Boat Festival, and Mid-Autumn Festival, during which family members gather to share a reunion meal. Weddings and funerals are also typically celebrated with a feast for family and friends at home.

According to the village head of Fangpao Village, childbirth-related activities are no longer held at home due to their complexity. However, other folk activities continue to be hosted at home. On the day of these activities, participants typically include not only family members but also relatives, friends, villagers, and even some strangers. In such cases, the private spaces of the home temporarily transform into open public spaces for the use of all participants. This shift in space may have an impact on the use and arrangement of furniture.

Specifically, the increase in the number of participants and the diversity of activities may create new demands for the quantity, size, and arrangement of furniture. For example, additional seating and dining tables may be needed, or a special altar might need to be set up for specific activities such as sacrificial rites. These scenarios suggest that villagers may prefer multifunctional, flexible, and convenient furniture to meet different needs during both daily life and special activities. These demands need to be verified in the phase four fieldwork.

Home-based production

In the four villages investigated during this field study, the researcher found that home-based production activities have become a common phenomenon. The village head of Shangcaoying Village said, "*Now, many people in the village are doing home-based production, raising chickens, cattle, and growing vegetables.*" The village head of Dongbahu Village also noted, "*There are many types of production, for example, men typically engage in large-scale production, such as factories or vegetable*

greenhouses, while women stay home to raise meat chickens and mink. There are all sorts of types... Iron plate processing factories are common in villages, and breakfast processing factories have become popular in recent years."

Table 4.1 Two types of home-based production

Type of Home-Based Production	Indoor Workshops	Yard Workshops
Space Occupied	Occupies indoor living space	Occupies yard or side houses
Specific Activities	Village shops, Mahjong parlours	Metal workshops, food processing, animal breeding, vegetable sheds
Characteristics and Impact	Living spaces transformed into business areas, compressing traditional living functions	Simple buildings or converted side houses used; activities often extend into nighttime
Impact on Furniture and Needs	Household furniture usage and functions affected; potential new furniture demands need further study	Large amounts of furniture appear in production spaces; needs investigation on impact on quality of life and new demands
Representative Quotes from Field Notes	<p>"My family has turned the west room into a small store, where the closet used to be piled up with soy sauce and vinegar, and the bed has been moved to the corner, so I have to be careful when I sleep and turn over. The old Zhang family runs a mahjong parlour, and three tables are set up in the living room of the main house. The original sofa has been squeezed into the inner room, and the children have no place to sit while doing their homework." (F92601, Chief of Shangcaoying Village)</p> <p>"My store shelves take up half of the house, the original dinner table can only be moved to the door, in case of rain also have to hurry to move to the house, the furniture are knocked off the paint."(Q92714)</p> <p>"After opening a mahjong parlour, guests smoke and drink tea, the original solid wood chairs were rubbed with no lustre, and my</p>	<p>'The night is still in the yard workshop rushed work, the original put in the yard rattan chairs were moved to use as temporary stools, sitting broken several' (F92605)</p> <p>'My family is the compartment converted into a workshop, the night rushed to work, the folding beds in the inner room are moved in, tired, curled up on the bed to rest for a while, quilts are stained with flour.' (S92909)</p> <p>'Busy up to work around the clock, my family moved the old wardrobe to put tools. It doesn't matter if it's broken.' (D93012)</p>

	daughter-in-law reads every day that ‘good furniture is finished’.” (D93016)	
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According to the field survey, home-based production can be broadly divided into two types (Table 4.1): family workshops that occupy indoor space and family workshops that occupy yard space. Family workshops that occupy indoor space include village shops and mahjong parlours. In this model, villagers transform their living space (main house) into a business operation. Traditional living spaces are occupied or compressed, which often leads to significant changes in household functions. The use and function of household furniture are also impacted. The specific effects on household furniture and whether new demands arise requires research.

Family workshops that occupy yard space include various types of processing factories (metal workshop, food processing factory, animal breeding factory, and vegetable shed factory). In this model, simple buildings are constructed in the yard or side houses are repurposed for production activities. The researcher found that many production activities even extend into the night, with some villagers working, resting, or even sleeping in the production spaces. This has led to the emergence of a large amount of furniture in the production space. Whether this furniture has a negative impact on the quality of life or creates a new demand for furniture is a question to be investigated in the fourth phase of the fieldwork.

4.3 Phase One: Photographic Analysis

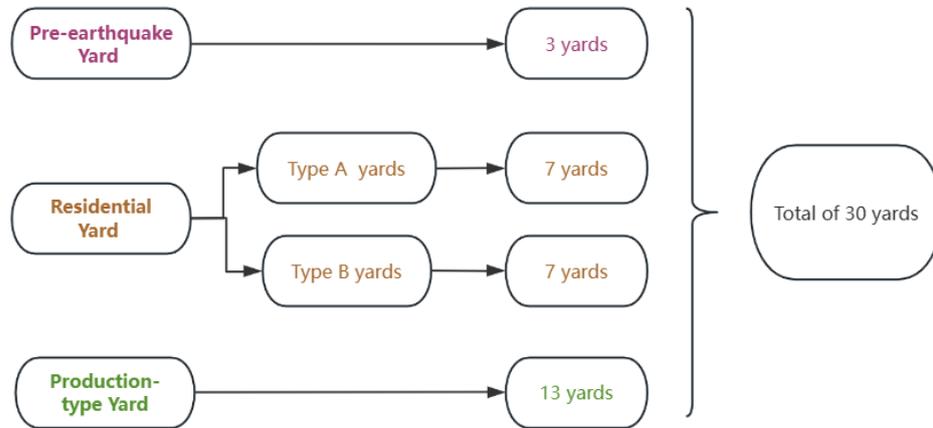


Figure 4.3 Composition of data for Phase 1 (Photographic)

The researcher analysed photographs of 30 yards (Figure 4.3) and categorised them into the following three types. The first type is three yards that were built before the 1976 Tangshan earthquake. These yards survived the 7.6-magnitude earthquake. Now, the yard is in disrepair and uninhabited, but the overall layout can be seen from the wreckage. The second type is the 12 residential yards, but they are divided into two types according to the longevity of the year of construction. The first is the seven yards with long years of construction; these houses are single-storey, single-entry yards built immediately after the earthquake and are referred to as ‘Type A yards’ in the thesis. The second type is seven single-storey, multi-entry yards that have been renovated or rebuilt in the last ten to fifteen years and later referred to as ‘Type B yards’ in the thesis. The third type is the 13 yards with a productive character.

4.3.1 Pre-earthquake Yard

Figure 4.4 depicts the pre-earthquake dwellings still extant in the four study villages. The layout of Q92716 is the same as that of Q92717, which was one of the most popular yard layouts at that time. The yard has a main house for the elders and a side house for the adults and children. An area for food cultivation that takes up almost 1/3

of the yard, and an area for raising poultry. A path connects the main house's south door with the yard's gate, and the yard is divided into two halves (Figure 4.5).

According to the owner of Q92716, at that time, only the more affluent could afford to raise poultry, mainly chickens, rabbits, ducks, and geese. The poultry breeding area was located between the main house and the side house where people lived, which not only facilitated the owner to take care of the poultry but also prevented thieves from stealing the poultry.



Figure 4.4 Actual yard view of Q 92716, Q92717, Q92718

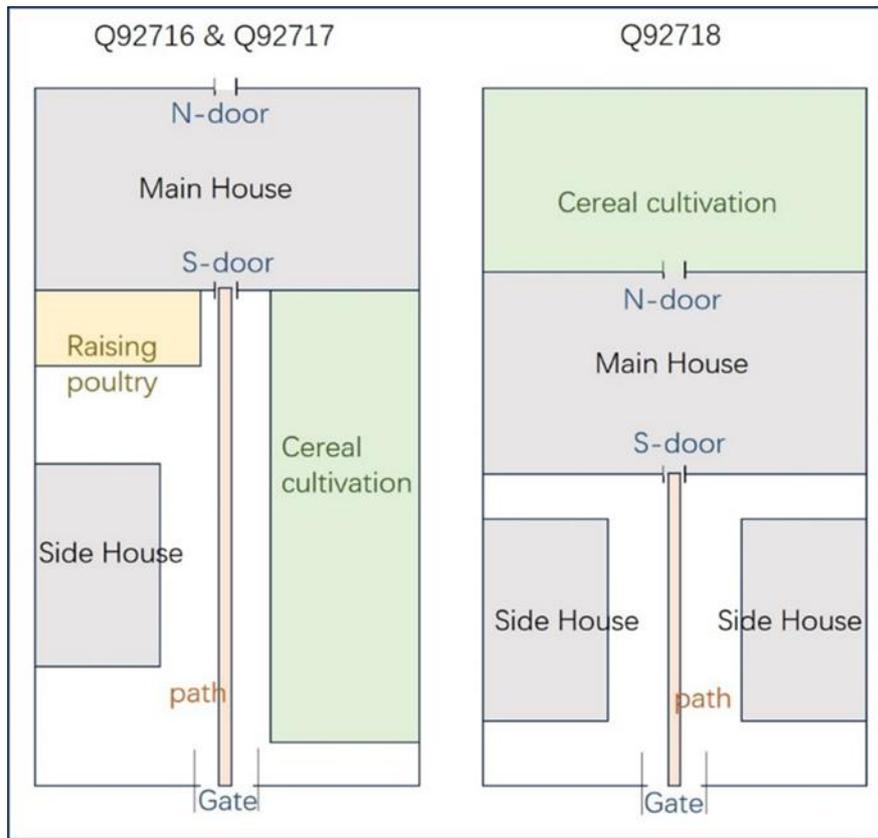


Figure 4.5 Layout of two types of pre-earthquake yards

The yard layout in Q92718 is rather particular, with one main house and two side houses. Guide Z and the owners of Q92718 said that this type of yard is because some families have a total population of more than seven people and need to build one more side room to accommodate a larger population than ordinary families. Also, this type of yard is devoid of the raising poultry area; the cereal cultivation area is to the north of the main house, and a path divides the yard into two halves.

4.3.2 Residential Yard

The residential yards were all built after the Tangshan earthquake, and there are two main types: Type A yards (Single-storey, single-entry yards) built immediately after the earthquake and Type B yards (Single-storey, multi-entry yards) built in the last fifteen years or so (Figure 4.6). Q92712 and D93006 mentioned that the Type A yards

are now inhabited mainly by older people in the villages who are over 60 years old, and the Type B yards are occupied mainly by middle-aged or newly married couples in the villages.



Figure 4.6 Actual Type A yard view of F92607 and Type B yard view of Q92715

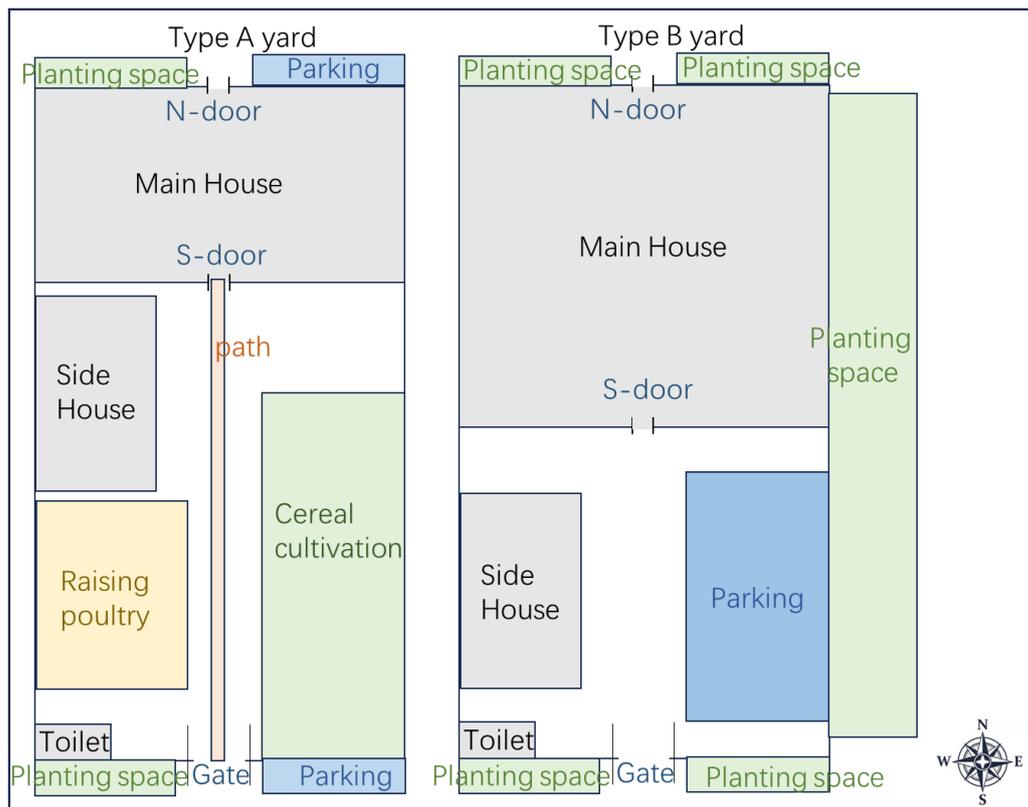


Figure 4.7 Layout of two types of residential yards

Type A yard is rectangular, with houses used for human habitation, livestock rearing, and storage. (Figure 4.7). The yard includes gates, a main house, a side house, a toilet,

a poultry-raising area, and a cereal cultivation area. The main house is located in the northernmost part of the yard and is used for living. Unlike the pre-earthquake yard, the Type A yard has a side house in front of the main house instead of a raising poultry area. The residents of F92607 explained, “*If the poultry breeding area is placed in front of the main house like the house before the earthquake, the smell of animals will be too strong.*” So, the raising area in the Type A yard was built in the middle of the side houses and toilets.

Unlike the pre-earthquake yard, the side rooms of the Type A yards are now used for storing miscellaneous items rather than for living (Chiefs of Fangpao and Dongbahu). Opposite the toilet and poultry-raising area is the cereal cultivation area. The residents of S92907, S92908 and S92915 said that “*the type of planting in the houses before the earthquake was very homogeneous, just some grains, but the planting area in the Type A houses would be based on the needs of the family, not only grains but also fruits and vegetables*”. Additionally, the main gate of the Type A yard directly faces the main house door, connected by a cement or dirt path. All the open fields in the yard, and the main house's roof can be used as fields for drying grains. Families Q92710, Q92712, D93011, and S92907 have set up cellars, hand-pumped wells, and granaries between the main house and the cereal cultivation area (Figure 4.8).



Figure 4.8 Cellars, hand-pumped wells, and granaries in Type A yard of Q92712

Type B yards' layout is more rational than Type A yards (Figure 4.7). Although the overall area within the Type B yards remains unchanged, the positions and sizes of each functional zone have been altered. Firstly, the Type B yards have eliminated the poultry-raising areas. The cereal cultivation areas within the Type A yards have been converted into parking spaces. All planting is done outside the yard. Secondly, the main house in the Type B yard is twice the size of the Type A one. Residents of five Type B yards (Q92711, Q92715, F92610, S92903, and D93006) stated, *“When we lived in the Type A houses, we were poor, and we didn't have much furniture, so there was no need to build large houses. But now that our living standards have improved and we can earn more money, the Type A houses are too small to accommodate all our furniture, so we built larger ones.”* Therefore, when constructing the Type B yards, the villagers expanded the size of the main house used for living. The resident of D93006 also mentioned that the side house in the Type B yard still serves the same function as in the Type A yards, being used for storage.

In addition, all the open fields in the Type B yard were cemented and turned into concrete floors. The areas outside the north door and the main gate have also been paved with cement. Like the Type A yards, all photographed Type B yards have granaries, cellars, and hand-pumped wells in front of the main houses (Figure 4.9).



Figure 4.9 Cellars, hand-pumped wells, and granaries in Type A yard of F92610

4.3.3 Production-type Yard

Yards with production functions are locally known as 'family workshops'. Currently, family workshops in the village include the village shop, mahjong parlour, sheet metal workshop, breakfast processing factory, vegetable shed factory, and animal breeding factory. The village shop and mahjong parlour do not change the spatial layout of the yard but occupy the space of the main house. The other processing factories occupy the side house or build a production house in the yard.



Figure 4.10 Actual view of village shop Q92704, converted from the Type A yard.



Figure 4.11 Actual view of village shop D93015, converted from the Type B yard.

The village shop is the most important of the family workshops, with two or three village shops in each of the four villages for villagers to buy daily necessities. There are two types of village shops: those converted from Type A yards (Figure 4.10) and those converted from Type B yards (Figure 4.11). The shop converted from the Type A yard occupies the main room, and the side room becomes the main room and assumes the living function (Figure 4.12).

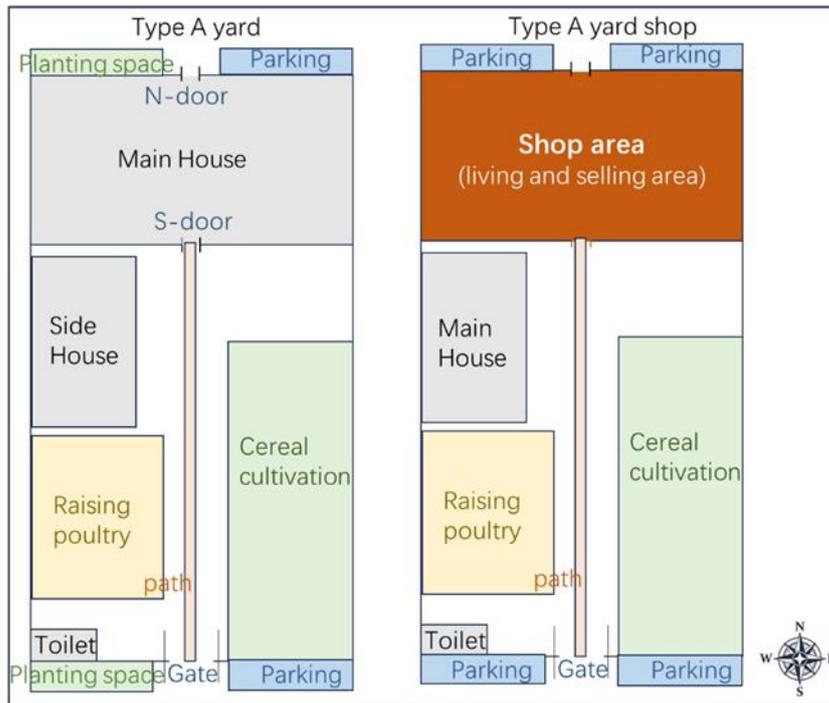


Figure 4.12 Layout of the village shop converted from the Type A yard.

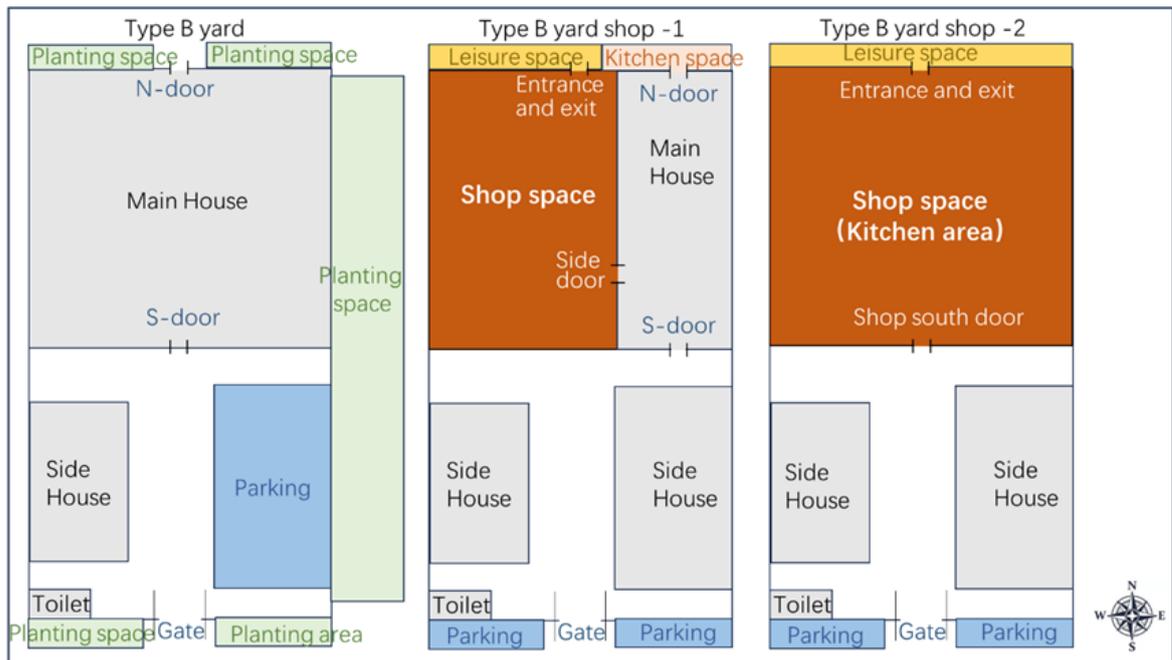


Figure 4.13 Layout of the village shop converted from the Type B yard.

There are two types of shops converted from the Type B yard. The first is a shop area occupying two-thirds of the main house's space (Figure 4.13). A wall is built between

the main house and the shop area, and a side door in the wall is used for access by the shopkeeper and his family. The main house has a north and a south door, and the shop area has a separate entrance and exit door for customer access. The main house and two side houses were used for living. In addition, a simple shed was erected outside the north yard and divided into leisure and kitchen areas. The leisure area is where sofas are placed for customers who come to buy goods to relax, and the kitchen area is the cooking area for the shop owner's family. Outside the southern yard, the two sides of the gate are set up as parking areas.

The second type, like the Type A converted shop, is that the store area occupies the entire space of the main room, while the living space is in the two side rooms (Figure 4.13). This type of shop is very spacious and well-stocked. As with the first type, the parking area remains outside the yard gate. Unlike the first type, there is only a leisure area outside the north door and no cooking area. The owner of shop D93008 added:

“The cooking area is in the side house, and the eating area is within the shop.”

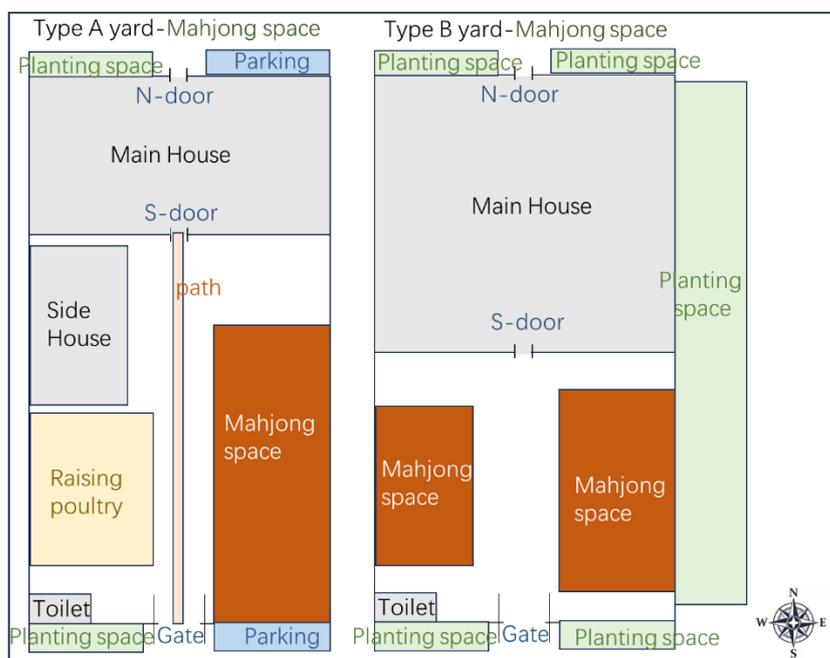


Figure 4.14 Layout of the mahjong parlours converted from the Type A and B yards

The mahjong parlour occupies a side house and parking area in the Type B yard, and a cereal planting area in the Type A yard is used to build a simple room as a mahjong parlour (Figure 4.14).

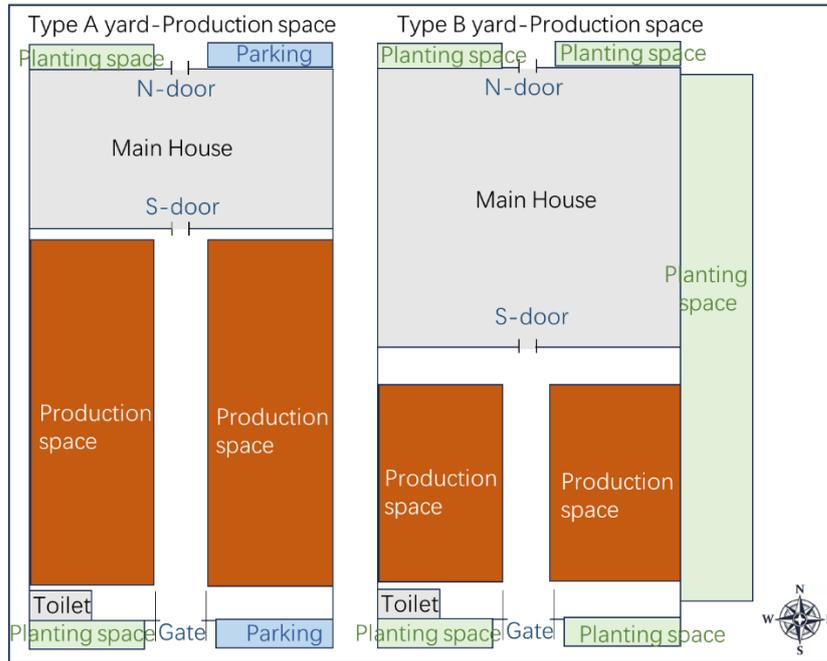


Figure 4.15 Layout of the home-based production converted from the Type A and B yards

The sheet metal workshop, breakfast processing factory, vegetable shed factory, and animal breeding factory occupy all the spaces in the yard as production houses, both Type B and Type A, except for the space of the main house and the toilet, including two categories (Figure 4.15). The first is transformed by the Type A yard. By closing the top of the yard, the villagers demolished the side houses on both sides and built simple houses as production space. The second is transformed by the Type B yard, which directly occupies the side room and parking area as production space. Figure 4.16 shows the scenes inside the D93016 mahjong parlour and S92909 bun processing factory.



Figure 4.16 Actual view of D93016 mahjong parlour and S92909 bun processing factory.

4.3.4 Summary table of yard types

Table 4.2 Summary of yard types

Category	Construction Period & Origin	Layout Features	Functional Areas	Residents / Users	Key Changes Over Time
Pre-earthquake Yard	Built before 1976 Tangshan earthquake; survived in earthquake.	Main house + side house(s); path from main gate to main house; areas for poultry raising & cereal cultivation	- Main house for elders living- Side house for adults/children - Poultry area (for affluent families) - Cereal cultivation area (~1/3 of yard)	Originally families (often >7 members for 2 side houses)	Now in disrepair, uninhabited; poultry area located close to living space for care and security
Residential Yard – Type A	Built immediately after 1976 quake	Single-storey, single-entry rectangular yard; main house in north, side house in front; poultry & cereal areas separated	- Main house for living- Side house for storage - Poultry area (moved away from main house) - Cereal cultivation - Granary, cellar, well	Mainly elderly villagers (60+)	Planting diversified (grains, fruits, vegetables); open spaces & roofs used for drying grains
Residential Yard – Type B	Built in last 10–15 years	Single-storey, multi-entry; no poultry area; more rational space use	- Larger main house for living (twice Type A size) - Side house for storage - Parking space instead of cereal area	Middle-aged couples, newlyweds	Livestock raising moved outside yard; planting outside yard; improved living space and facilities

			- Cemented yard & gates - Granary, cellar, well		
Production-type Yard	Converted from Type A or B yards	Layout adapted to business or production; some functions replace living space	- Village shop, mahjong parlour, small factories - Shops: main house partially/fully as store, side house or shed for living/kitchen - Factories/mahjong parlour: occupy side houses or build new production sheds	Business owners, production workers, consumers	Cereal/poultry areas replaced with production facilities; added customer leisure areas, parking, and production buildings

Table 4.2 summarizes the analysis of the three types of yards in this subsection: First, Pre-earthquake yards were multifunctional, combining living, poultry raising, and cereal cultivation in close proximity. Second, post-earthquake residential yards (Type A) separated living and production spaces but still retained planting and storage functions, while Type B emphasised comfort, larger main houses, and reduced on-site production. Third, Production-type yards repurposed residential space for commercial or manufacturing use, often replacing agricultural areas with workshops or main houses with shops.

Over time, a discernible progression can be observed, transitioning from agriculture-oriented yards to mixed-use yards, and subsequently to production- or commercial-oriented yards.

4.4 Summary of Phase One

In this phase, the researcher, based on fieldwork notes and relevant records from the “*Luannan County Record*”, conducted an in-depth analysis of the daily and special

lifestyles in Jidong rural. This analysis provides an essential foundation for the quantitative and qualitative collection of furniture data in subsequent stages three, four, and five. Additionally, the researcher identified three typical yard types currently found in rural Jidong through photographic documentation: first, the pre-1962 pre-earthquake yards; second, the residential yards of types A and B established from 1962 to the present; and third, the production-yards that occupy residential spaces. This typology of yards serves as a contextual background for research on household furniture.

4.5 Phase Two: Photographic Analysis of Currently Used Furniture

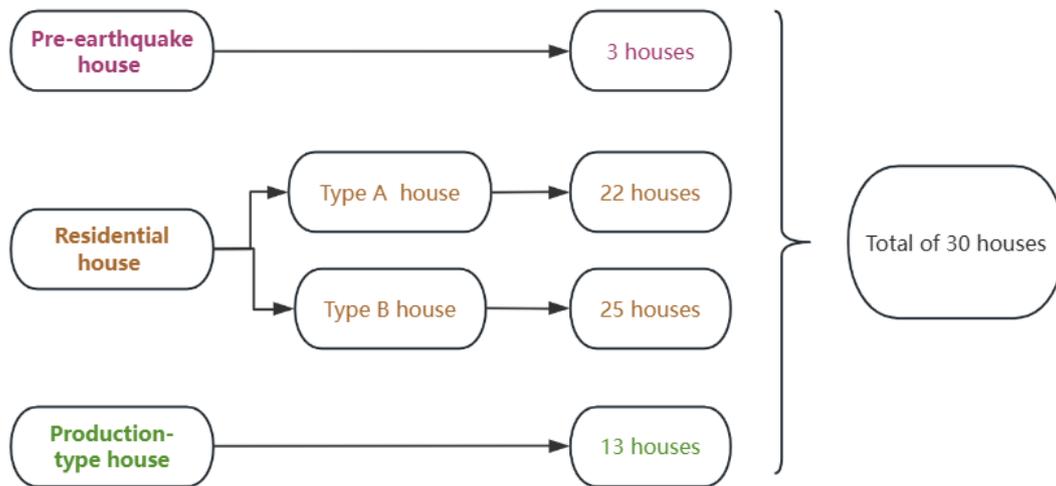


Figure 4.17 Composition of data for Phase 2 (Photographic)

The researcher analysed photos of the layout and types of currently used furniture in the main house space (living space) of 63 households (Figure 4.17). Specifically, the following data were included: photographs of the main houses in the 3 pre-earthquake yards; photographs of the main houses (Type A houses) in the 22 Type A yards;

photographs of the main houses (Type B houses) in the 25 Type B yards; and production spaces in the 13 home-based production yards.

The measurement procedure was as follows: First, any obstacles along the measurement path, such as agricultural tools or firewood stacks, were cleared to ensure that the measuring tape could be extended in a straight line without obstruction. Second, a 30-meter tape measure was used, with three individuals collaborating: one person holding the tape's starting point, one pulling it to the endpoint, and one recording the data. In addition, to measure the height of the house, one person climbed a ladder to the roof and fixed one end of the tape to the eaves, while another person on the ground pulled the tape vertically to the ground, and a third person read the vertical value. Care was taken to avoid the risk of roof tile slippage during the process.

4.5.1 The Pre-earthquake House

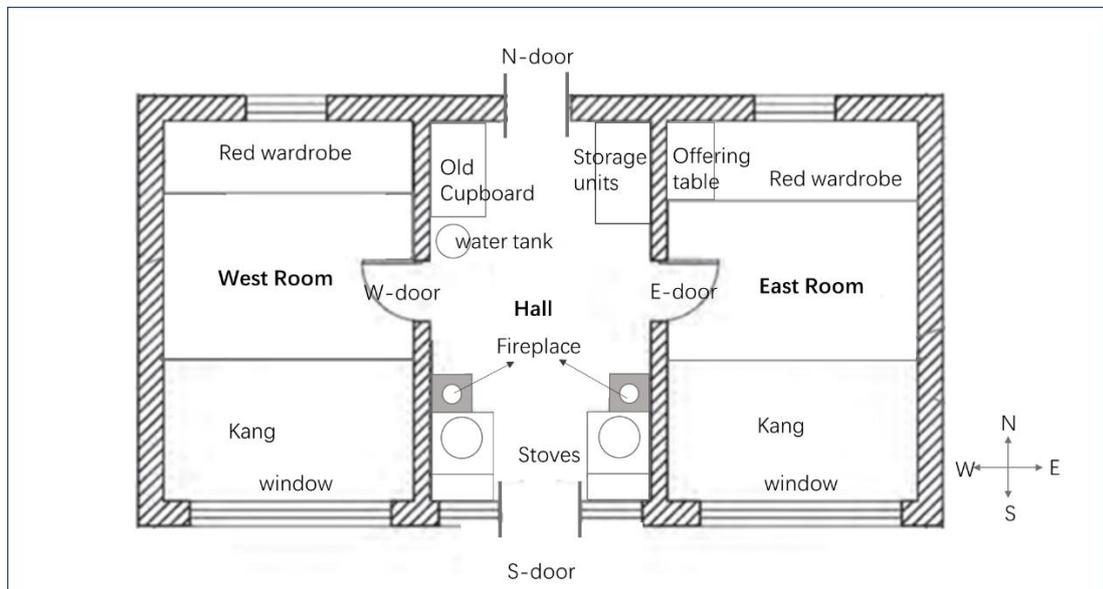


Figure 4.18 Layout of currently used furniture in the pre-earthquake main house

The pre-earthquake residences are currently uninhabited, but examining the remaining furniture images reveals that the primary living space was in the main house. The overall layout of the main house is low and consists of a single story with three bays. The width from east to west is 9.5 to 11 meters, the length from north to south is 5 to 7 meters, and the height ranges from 2.8 to 3 meters.

The main house (Figure 4.18) is divided into three sections: the central hall (also known as the "parlour" or "kitchen"), the eastern room, and the western room (Both are referred to as the "inner room"). The owner of Q92718 commented, *“Unlike the southern regions of China, where the central hall is often used for worship, in Jidong, the hall serves the function of a kitchen, while the inner rooms are used for living, similar to bedrooms.”*



Figure 4.19 Q92717 wall and roof



Figure 4.20 Q92717 window

The walls of the house are constructed from red bricks, while the roofs are made of poplar or willow wood (Figure 4.19). The windows are crafted from pine wood and are referred to as "small open windows," also known as "carved windows" (Figure 4.20). The lengths of the inner rooms range from 3.2 to 3.7 meters. The furniture in the two inner rooms, used for residential purposes, is similar. In the case of the eastern house, the furniture consists of three main parts: the kang (a heated brick bed) and its surrounding items on the north side, the red wardrobe and surrounding living items on the south side, and the furniture suspended from the walls.



Figure 4.21 The internal structure of the Q92716's Kang



Figure 4.22 Kang and surrounding items of Q92717

The north side: figure 4.21 shows the internal structure of the kang, revealing signs of manual construction. Figure 4.22 illustrates the kang and surrounding items, including the kang mat, kang quilt, kang cushion, and a flyswatter. An old-fashioned electric light controlled by a rope is attached to the wall near the kang (Figure 4.23).



Figure 4.23 Bulbs and switches for an old-fashioned electric light of Q92718



Figure 4.24 Q92718 red wardrobe



Figure 4.25 An old-fashioned four-panel mirror of Q92716



Figure 4.26 Q92716 mantel clock

The south side: opposite the kang is the red wardrobe (Figure 4.24). Directly above this red wardrobe hangs an old-fashioned four-panel screen¹² (Figure 4.25), and a mantel clock (Figure 4.26) is placed on top of the red wardrobe. Beside the red wardrobe is an altar table (also called an ‘offering table’) (Figure 4.27).



Figure 4.27 Q92716 altar table

¹² Handcrafted carved mirror, made by artisans in the village, is detailed in 4.6.4 of thesis.



Figure 4.28 Q92717 woven wicker basket



Figure 4.29 Q92717 woven straw hat



Figure 4.30 Q92716 wall clock

The furniture suspended from the walls includes a woven wicker basket (Figure 4.28) hanging from the roof beam, a woven straw hat (Figure 4.29), and a wall clock (Figure 4.30). Additionally, wooden pieces suspended from the roof beam, locally known as "manzi"(Figure 4.31), hold infrequently used household items.



Figure 4.31 Q92716 manzi

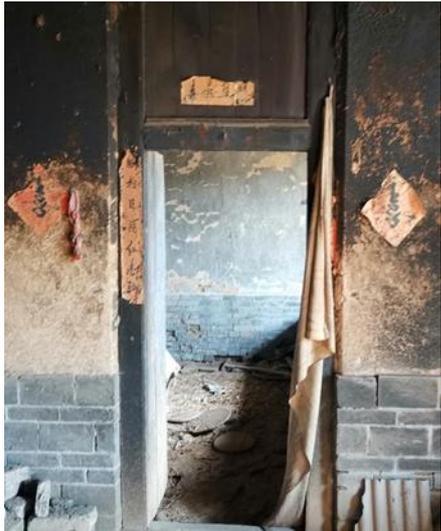


Figure 4.32 Fabric door curtain of Q92716



Figure 4.33 Paper door curtain of Q92717

In addition, the partition between the inner rooms and the hall comprises door curtains. Figure 4.32 shows the fabric door curtain used in spring, autumn, and winter, while Figure 4.33 depicts the paper door curtain used in summer. A platform is set

above the door of the inner rooms (Figure 4.34), which stores miscellaneous items such as matches and nails.



Figure 4.34 Q92716 platform



Figure 4.35 Q92717 stove



Figure 4.36 Q92718 fireplace



Figure 4.37 Q92717 water tank



Figure 4.38 Q92718 water ladle



Figure 4.39 Q92718 old cupboard



Figure 4.40 A straw-woven pot lid of Q92717

The central hall has an east-west width ranging from 3.1 to 3.6 meters. The furniture primarily consists of kitchen utensils, functioning similarly to a kitchen. These include two stoves built with red bricks (Figure 4.35) and a furnace (also known locally as 'Fireplace') (Figure 4.36), a water tank (also known locally as 'water crock') (Figure 4.37), a water ladle (Figure 4.38), an old cupboard (Figure 4.39), and a straw-woven pot lid (Figure 4.40).

4.5.2 The Residential House

Type A house



Figure 4.41 The exterior of F92607.

The primary living space in Type A yards is the main house (Type A house). Type A house has an east-west width of 9.5 to 11 meters, a north-south length of 5 to 7 meters, and a height of 2.8 to 3 meters. Figure 4.41 shows the exterior of a Type A house. The building's facade has smooth walls constructed with bricks on the upper part and stones on the lower part, with cement filling the gaps. The roof is made of pine wood.

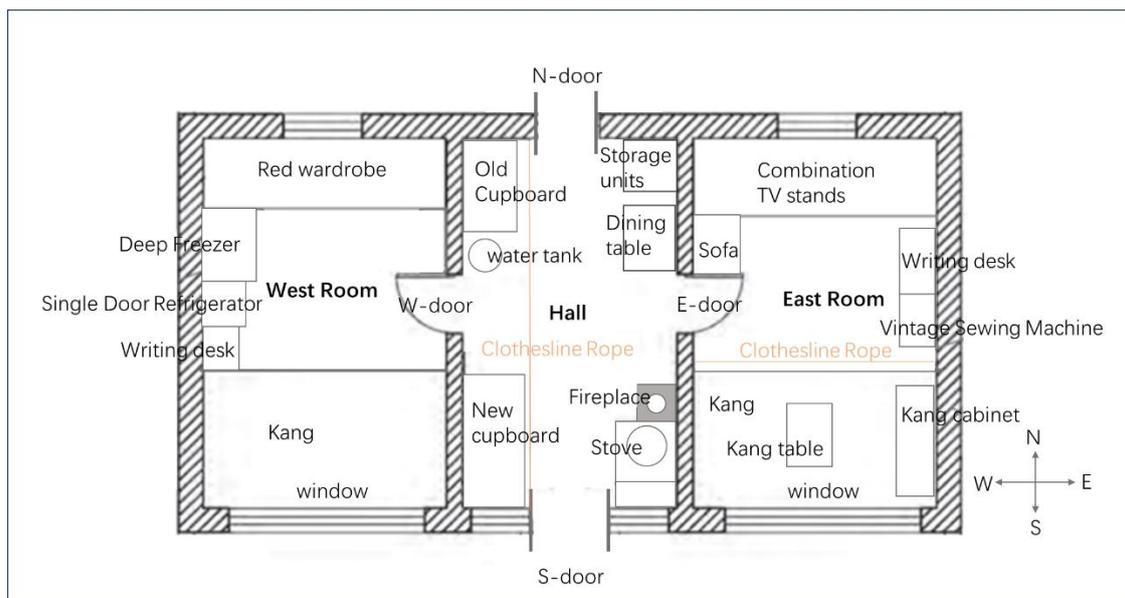


Figure 4.42 Layout of currently used furniture in the Type A house.

The layout of the Type A house (Figure 4.42) is the same as that of the pre-earthquake houses, comprising three parts: two inner rooms (the east and west room), and the central hall. The central hall in the Type A houses serves as both the kitchen and dining room, mainly storing kitchen utensils. The inner rooms are used for living and receiving guests, functioning as bedrooms and living rooms.

The inner rooms are 3.2 to 3.7 meters each. Typically, the west room is occupied by elders or children, while the east room is for the house owners. The east room contains four types: sleeping furniture centred around the kang on the south side, storage and washing furniture centred around the combination TV stand on the north side, guest reception and study furniture on the east and west sides, and wall-mounted and decorative furniture.



Figure 4.43 Sleeping furniture of F92607

The south side (Figure 4.43): Compared to pre-earthquake houses, the kang in Type A houses has more living supplies, including the kang, kang bedding, mattresses, blankets, pillows, and pillow covers. The bedding is neatly stacked in the corner of the kang. Often, a kang table is placed on the kang, and some families have a kang cabinet next to it.



Figure 4.44 F92607 combination TV stand

The north side: A combination TV stand (Figure 4.44) replaces the red wardrobe found in pre-earthquake houses and occupies about 30% of the room's total area. The combination TV stand includes wardrobes on both sides and a TV cabinet in the middle, serving storage and entertainment functions. Adjacent to it are washing items, such as a washstand, thermos flask, and basin rack. The washstand usually has a small platform for placing soap; if not, the soap is placed on the combination TV cabinet.



Figure 4.45 F92607 sofa



Figure 4.46 Q92710 writing desk

The east and west sides are mainly guest reception and study furniture (Figure 4.45) (Figure 4.46), including a writing desk, sewing machine, sofa, and chairs. Wall-mounted and decorative furniture includes (Figure 4.47) roof lamps, roof fans, clotheslines, wall mirrors, wall paintings, posters, clocks, and mosquito nets.



Figure 4.47 Wall-mounted and decorative furniture in F92607



Figure 4.48 Q92710 kang



Figure 4.49 F92607 red wardrobe



Figure 4.50 Q92710 freezer



Figure 4.51 F92607 manzi

The furnishings in the west room are straightforward. On the south side is the kang (Figure 4.48). On the north side is the red wardrobe, on top of which sundry items are placed (Figure 4.49). On the east side is a refrigerator, a freezer and a writing desk (Figure 4.50). The 'Manzi' hanging from the roof stores items that are not commonly used (Figure 4.51). Twelve families with a small number of people used the west room directly as a storage room, while eight families with many people used it for their children.

The central hall (Figure 4.42) has an east-west width of 3.1-3.6 meters. The hall features two doors, the south door and the north door, which also serve as the main entrances and exits of the main house. The partitions between the central hall and the inner rooms are not doors but door curtains (Figure 4.52).



Figure 4.52 F92607 door curtain



Figure 4.53 A stove and a furnace of Q92710



Figure 4.54 F92607new cupboard



Figure 4.55 D93011 traditional cupboard



Figure 4.56 A water tank and faucet of F92607.



Figure 4.57 F92607 storage units



Figure 4.58 Sitting furniture in the central hall of Type A house

In the southeast corner of the hall, there is a stove and a furnace, with a broom and a dustpan placed next to the furnace (Figure 4.53). The southwest corner houses a new cupboard (Figure 4.54), which stores various condiments, rice, flour, cookware, and utensils. Several kitchen appliances are placed on the cupboard's countertop, including a pressure cooker, pans, gas cooker. In the northwest corner, there is a traditional cupboard (Figure 4.55), along with a water tank, water ladles, plastic water ladles, and a cutting board. The traditional cupboard contains chopsticks, bowls, plates, and leftover food. Above the water tank is a faucet connected to the tap water system (Figure 4.56). In the northeast corner (Figure 4.57), storage units, a square dining table, a round dining table, and cupboards or kang tables are placed. Around

the tables, there are various types of sitting, including high wooden stools, iron stools, plastic stools, or wooden benches (Figure 4.58).



Figure 4.59 A clothesline and a kitchen steamer of F92607.



Figure 4.60 Q92710 sofa



Figure 4.61 S92915 wooden chair

Additionally, nails are hammered into the north and south walls of the hall, with a rope strung between them to serve as a clothesline, where towels or clothes are hung to dry. A kitchen steamer is also hung on the walls using nails (Figure 4.59). Only two

families place living room sofas or wooden chairs in the northwest or northeast corners (Figure 4.60) (Figure 4.61).

Compared with the pre-earthquake houses, the space dimensions of Type A houses remain the same, but the types of furniture have been increased and the space layout has been rationalised. For the inner rooms, the west room remained unchanged in its entirety, but the east room was refurbished with new usable furniture, such as sofas and combination TV stands, which made the east room not only functional as a bedroom but also as a living and entertaining room. The types of furniture in the central hall have also been increased, such as new cupboards, dining sets, and hanging furniture for seating. In addition, the old cupboard on the west side of the pre-earthquake house has been replaced by a new cupboard in the Type A house to store more kitchenware.

Type B house



Figure 4.62 The exterior of Q92711

The living space in the Type B yards is mainly centred around the main house (Type B house). Type B house has a width of 11 meters and a length of 11 meters, with a

height of 3 meters. Figure 4.62 shows the exterior of a Type B yard's main house. The construction materials for the walls are similar to those of the Type A houses, with bricks, stones and cement filling the gaps. However, the surfaces of the Type B house walls are covered with colourful tiles. The roof is reinforced concrete, and the windows are made of aluminium alloy.

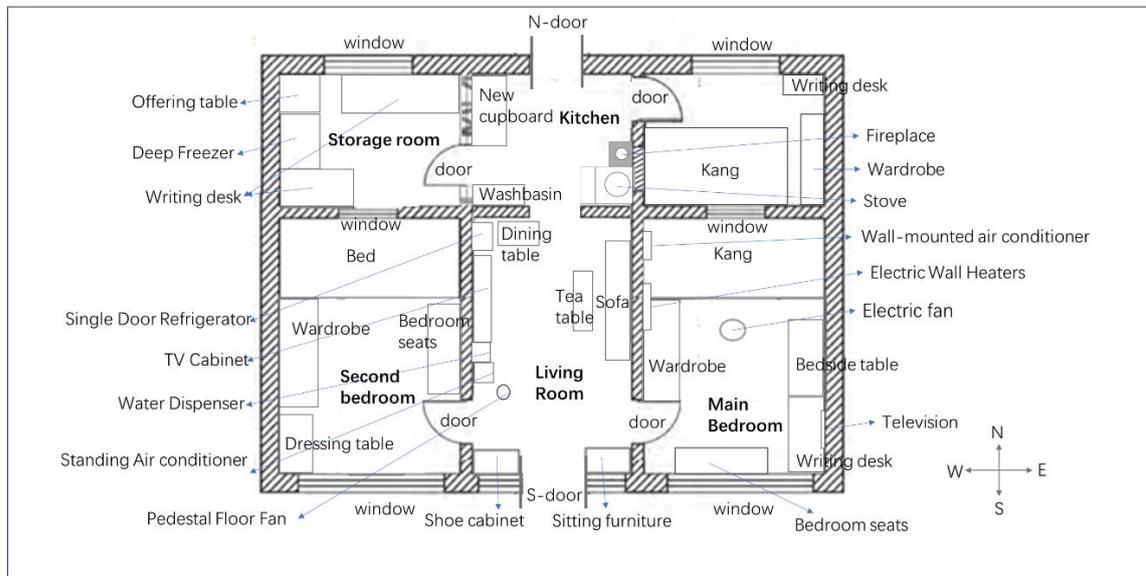


Figure 4.63 Layout of currently used furniture in the Type B house.

The main house has 5-6 distinct spaces (Figure 4.63). The central southern area serves as the living room, measuring 7 meters in length from north to south and 4 meters in width from east to west, and is furnished with living room furniture. The central northern area functions as the kitchen, measuring 4 meters by 4 meters. In the study of 17 households, 2 had no wall between the living room and the kitchen, thus integrating these spaces into a single area.

The southern section, which receives sunlight, contains two bedrooms of equal size, each measuring 3.5 meters in length from east to west and 7 meters in width from north to south. The southeastern space is the main bedroom, occupied by the male and female heads of the household. The southwestern space is the secondary bedroom, typically used by elders or children. The northeastern and northwestern areas can be

used as children's bedrooms or storage rooms. Among the families studied, three households removed the wall between the kitchen and the northwestern space, merging these two areas into a single kitchen space.

The living room furniture is divided into six categories: TV cabinets and surrounding items, tea table and sofa area, dining table and chairs area, entryway area, hanging decorations, and smart products.



Figure 4.64 TV cabinets and surrounding items of Q92711



Figure 4.65 TV cabinets and surrounding items of D93006



Figure 4.66 TV cabinets and surrounding items of Q92715

In terms of TV cabinets and surrounding items, only the Q92711 and D93006 households have a TV on the cabinet (Figure 4.64, Figure 4.65). Other families use the TV cabinet to store various items. Surrounding the TV cabinet are household appliances such as standing air conditioners, pedestal floor fans, plastic stools, and water dispensers (Figure 4.66). The wall behind the TV cabinet often features paintings or mirrors.



Figure 4.67 The tea table and sofa area of D93003

The tea table and sofa area (Figure 4.67) are cluttered with various dining utensils, including chopsticks, bowls, leftovers, and rice cookers. Sitting furniture around the tea table are diverse, including plastic stools, iron ring stools, and square wooden stools. All 17 households surveyed place their dining tables and chairs in the living

room (Figure 4.68). According to the residents of the Q92715 household, this arrangement is due to the limited space in the adjacent kitchen. The kitchen is so tiny that a cupboard and a stove are placed in the entire space, necessitating the use of the living room for dining.



Figure 4.68 The dining table and chairs of Q92715



Figure 4.69 Q92715 entryway



Figure 4.70 F92610 entryway

The entryway connects the living room to the yard and includes shoe cabinets, shoe racks, shoe boxes, seating, delivery boxes, and potted factories (Figure 4.69; Figure 4.70). The resident of F92610 added that the shoe cabinets are often cluttered with shoe polish, brushes, and grocery bags.



Figure 4.71 Hanging decorations in the living room of Type B house

Hanging decorations in the living room (Figure 4.71) include half-body mirrors, wedding photos, electronic clocks, small ornaments, calendars, keychains, and full-body mirrors.

These homes have relatively few smart products, mainly limited to essential household appliances. These include air conditioners, fans, refrigerators, and freezers in the living room.



Figure 4.72 A furnace and a stove of Q92711



Figure 4.73 Q92715 new cupboard

The kitchen space is adjacent to the living room. The kitchen floor and stove are tiled, with the furnace beside the stove and a kettle on top. Numerous cleaning tools, including brooms and mops, surround the stove (Figure 4.72). Opposite or adjacent to the stove platform, there is usually a new cupboard which holds a variety of kitchen supplies (Figure 4.73).



Figure 4.74 The washing area of Q92711



Figure 4.75 The washing area for seniors of D93006

Next to the cupboard is the washing area (Figure 4.74). The washing area includes fixtures such as a washbasin, an iron rack, a half-length mirror, various washing supplies, a hot water kettle, and small buckets. Among the 17 families studied, 16 combine the washing area with the kitchen space. Only three families have set up a separate washing area in the utility room to accommodate elderly family members (Figure 4.75).



Figure 4.76 The south window of Q92711



Figure 4.77 The north window of Q92711

The main bedroom on the eastern side of the house (Figure 4.65) is inhabited by the male and female heads of the household. This room features two windows, one facing south (Figure 4.76) and one facing north (Figure 4.77), with 13 families having installed curtains. On the northern side is a modern heated kang bed covered with tiles and equipped with kang furniture such as a kang table, bedding neatly stacked in the corner, and a broom for sweeping the kang.

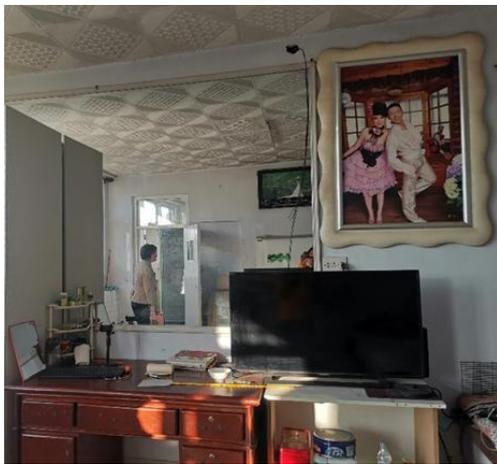


Figure 4.78 Q92711 TV



Figure 4.79 Q92715 TV



Figure 4.80 Q92711 wardrobe

On the eastern side of the room, there is a bedside table and a TV cabinet. Every family place a television in the main bedroom; 18 families have the TV on the desk (Figure 4.78), while two families have it directly mounted on the wall (Figure 4.79). A wardrobe is placed on the western side (Figure 4.80). Beneath the southern window, 137 families have placed seating furniture, such as two wooden chairs side by side or a single sofa (Figure 4.76). The walls of the main bedroom are adorned with various hanging items, including a wall-mounted air conditioner, electric wall heaters, lights, fans, marriage certificates, and posters.



Figure 4.81 A wooden hardboard bed of Q92711



Figure 4.82 A wardrobe and a dressing table of Q92715



Figure 4.83 Old car seats of S92903

The secondary bedroom on the western side is used by elderly family members or young adults. On the northern side is a Japanese tatami or a wooden hardboard bed, with bedding similar to that used on the kang in the main house (Figure 4.81). The western side features a wardrobe and a dressing table (Figure 4.82). The eastern side contains seating furniture, typically wooden chairs, and three families have repurposed old car seats as chairs (Figure 4.83).



Figure 4.84 The northeast storage room of S92903



Figure 4.85 The northeast bedroom of Q92711



Figure 4.86 The northwest storage room of Q92711

The spaces in the northeast and northwest parts of the house are relatively smaller. In the northeast, 4 families use this area as a storage room (Figure 4.84), while 16 use it as a bedroom (Figure 4.85) consisting of a kang bed, a wardrobe, and a desk. In the northwest, 14 families use this space as a storage room (Figure 4.86), primarily for storing unused furniture, including supply tables, freezers, desks, and unused books.

In the 20 families surveyed, the partitions between spaces are either sliding doors or hinged doors. The south door of the living room is equipped with a sliding door (Figure 4.69), while the doors separating other spaces are hinged (Figure 4.68). Almost all the bedroom door frames have cloth curtains hanging on them.

The dimensions of the spaces in the Type B houses have changed compared to the Type A houses. Although the width and height of the main house remain the same as the Type A houses, the north-south length is 4 metres longer. Additionally, the number of sitting furniture, storage items, and smart products has increased in the Type B houses.

In the layout of the bedrooms, the kang bed in the Type A houses was on the south side, whereas in the Type B houses, it is on the north side. A resident of F92610 explained, *“This is mainly because the Type B living room needs to face the sun, the kitchen has become smaller and is arranged in the shade, and the stove needs to be connected to the kang to heat the kang. Therefore, placing the kang on the north side of the bedroom can shorten the connection distance with the stove”*.

4.5.3 The Production-type House

Workshops utilizing indoor spaces

Village shops

During the survey, photos of 10 village shops were collected (Q92704, Q92713, Q92714, F92601, S92916, S92917, S92919, D93005, D93015, D93008). The first six shops were renovated from Type A houses, while the last four were renovated from Type B houses.

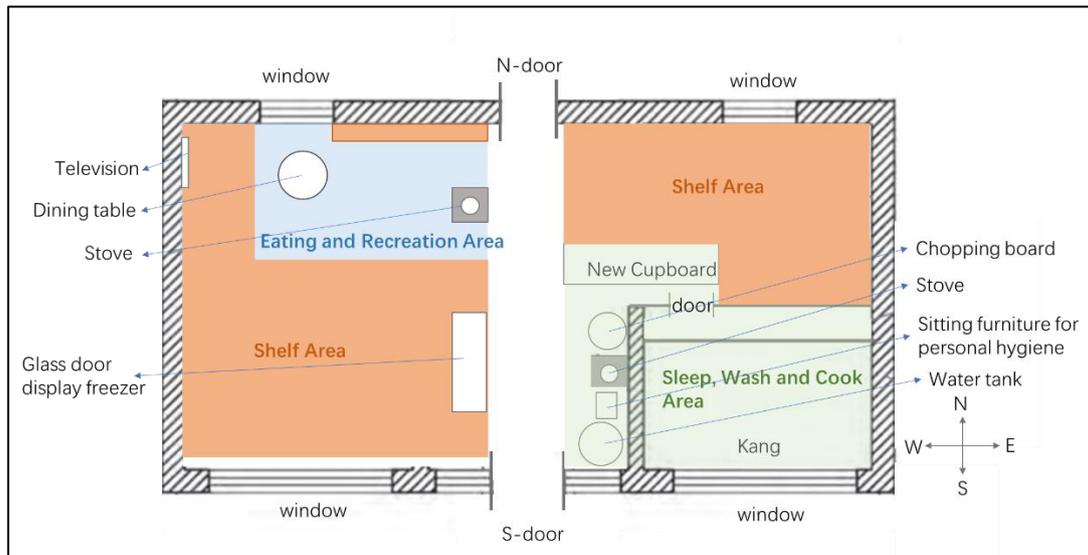


Figure 4.87 Furniture layout of the village shop converted from the Type A house

Figure 4.87 shows the layout of the village shop furniture converted from the Type A house. The shop is symmetrically divided into east and west parts along a central axis with north and south doors. The eastern part includes the shelf area and eating and recreation area (Figure 4.88). The western part comprises the shelf area, as well as the washing, cooking, and sleeping area (Figure 4.89). Furniture in the sales area consists solely of shelves. The eating and recreation area in the eastern part includes a television, dining table, stoves, a glass door display freezer, and various sitting furniture. The washing, cooking, and sleeping area in the western part includes a new cupboard, kang bed, chopping board, stoves, sitting furniture for personal hygiene, and a water tank.



Figure 4.88 The eating and recreation area of Q92704



Figure 4.89 The washing, cooking, and sleeping area of Q92704

While collecting photos, the researcher found that owners of these six shops renovated from Type A yards were reluctant to refurbish the entire shop but were interested in adjusting the furniture arrangement to expand the sales area. Among them, shop owners of Q92713, Q92714, S92916, and S92917, who are all over 60 years old, expressed that the current residential and dining furniture in the shop is not suitable for elderly use and intended to replace them with more elderly-friendly furniture.

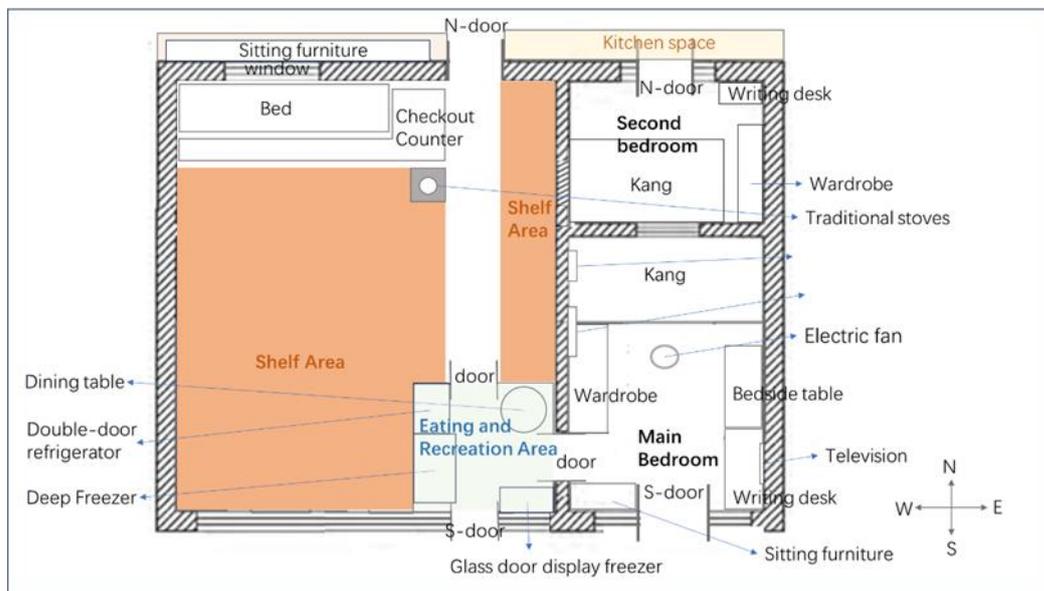


Figure 4.90 Furniture layout of the village shop converted from the Type B house.

Figure 4.90 shows shops renovated from Type B yards, specifically S92919 and D93005, renovated in 2015. These shops occupy the main house area of the Type B

yard and are divided into three parts: the western sales area, the northwestern main bedroom, and the northeastern secondary bedroom. The furniture in the main and secondary bedrooms is similar to that of the Type B houses, including a kang bed, writing desk, wardrobe, wall-mounted air conditioner, electric wall heaters, electric fan, bedside table, and television. The western sales area includes not only shelves and merchandises (Figure 4.91) but also an eating and recreation area (Figure 4.92) furnished with a dining table, double-door refrigerator, glass door display freezer, deep freezer, and various sitting furniture.



Figure 4.91 Shelves and merchandises area of S92919



Figure 4.92 Eating and recreation area of S92919

Compared to shops renovated from Type A yards, those from Type B yards also feature eating and reaction areas, although the furniture differs slightly. Both types of shops have dining tables, sitting furniture, and glass door display freezers. However,

the Type B yard shops do not have televisions. An employee at D93015 commented, *“I don't see the point of having a TV here. Young people prefer using their phones.”* The Type B yard shops have more refrigerators and freezers than the Type A ones. The owner of D93015 explained, *“We have more refrigerators and freezers because there is a lot of frozen food, both for family consumption and for sale. More storage helps prevent spoilage.”* Additionally, the dining tables in these areas are sometimes used for playing mahjong.

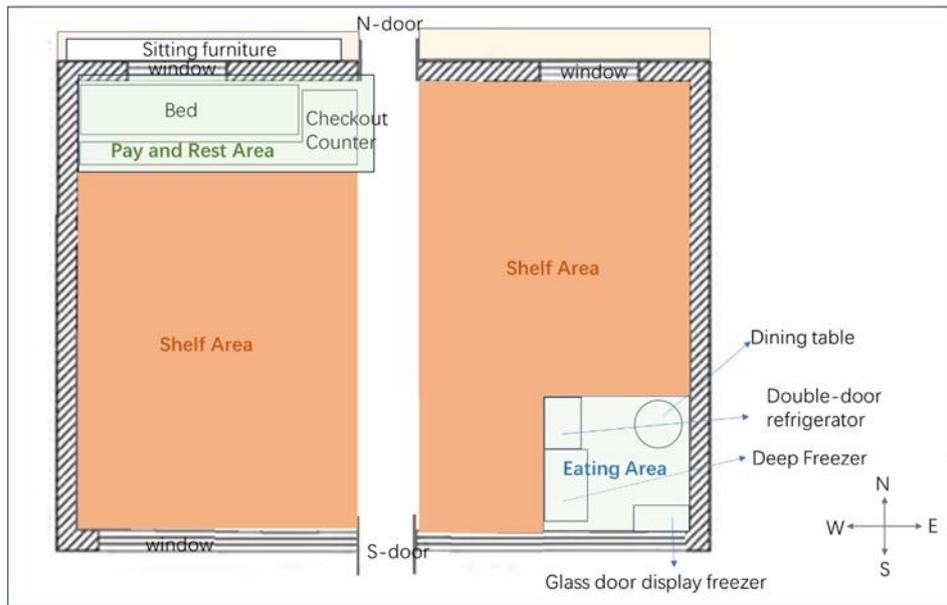


Figure 4.93 Furniture layout of the D93008 village shop converted from the Type B house



Figure 4.94 Eating area of D93008



Figure 4.95 Shelves and merchandises area of village shop D93008

Figure 4.93 shows the shop at D93008, renovated in 2020. This shop has a more formal layout and a more comprehensive selection of merchandise (Figure 4.95). The shop owner expanded the shop area to occupy the entire main house, leaving only the northwestern pay and rest area and the southeastern eating area (Figure 4.94). The pay and rest area includes a bed and a checkout counter. The furniture in the eating area is similar to that in the shops shown in Figure 4.89, with a comparable layout.

The above analysis shows the spatial layouts of different residential houses converted into shops and the development changes of these shops over the past 30 years. Unlike sizeable urban shopping malls, village shops function as points of sale and serve as spaces for entertainment, cooking, dining, and resting. Various types of currently used furniture are used in village shops to meet these diverse needs. The practical issues arising from using this furniture warrant in-depth research.

Mahjong parlours

The mahjong parlours in the village are fewer and fewer in number with only two (D93016 and S92908) as emerging entertainment venues. The type of furniture and arrangement of these mahjong parlours has not yet developed a fixed spatial layout. However, the furniture configurations have basically included mahjong tables, stools,

cookers, beds, air conditioners and electric fans (Figure 4.14).

Workshops utilizing outdoor spaces

The researcher collected data on eight types of processing factories that utilize outdoor space for production. These include F92605, D93002, D93003 sheet metal workshop, S92909 steamed bun factory, D93004, D93001, D93010 animal breeding factory, and D93012 vegetable shed factory.



Figure 4.96 F92605 sheet metal workshop

Figure 4.96 illustrates the production facility of a sheet metal workshop. In addition to the production machines for processing iron sheets, currently used furniture in these facilities includes electric lights, floor fans, ceiling fans, seating, furnaces, and heaters.

Regarding fans, furnaces, and heaters, the owner of the D93003 sheet metal workshop explained, *“The large machines used in the iron sheet processing generate a significant amount of heat during operation. In the summer, we need around seven to eight fans... The winter temperature in Tangshan can drop to -13 degrees Celsius, which is too cold for humans to endure. we use plastic sheeting to enclose the entire production facility and set up furnaces and heaters to keep the space warm.”* The owners of the other two factories also concurred with this assessment. From their comments, it is explained why a large amount of currently used furniture is found in

the production space, and what is needed for this furniture in the production space to be studied next.



Figure 4.97 S92909 steamed bun factory.

Figure 4.97 depicts the production facility of the S92909 steamed bun factory, which is used for mass-producing steamed buns. In addition to the equipment for steaming buns, the furniture includes electric lights, floor fans, ceiling fans, seating, stoves, heaters, and a cooking stove.



Figure 4.98 D93004 animal breeding factory

Figure 4.98 shows the D93004 *Nyctereutes procyonoides* (common racoon dog) breeding factory. The owner converted the yard space into iron cages to house the animals. The D93010 owner stated, “*I don't think my factory impact on currently used furniture.*” However, the owner of D93004 noted, “*Every time I enter the house, I forget to change my shoes and end up lying on the sofa.*” The owner of D93001 added, “*Our chickens are very smart. In the summer, they peck open the living room*

door when the air conditioning is on, and the living room gets filled with their droppings. It's very dirty.” From these comments, it is clear that while these factories may not use furniture in their production spaces, they affect the living areas' currently used furniture.



Figure 4.99 D93012 vegetable shed factory

Figure 4.99 shows the D93012 vegetable shed factory, where currently used furniture is not needed for production. The owner stated, “*Our work involves dealing with soil, which is messy... The white walls in my house have turned black, and all the furniture is dirty, and there's nothing we can do about it.*” This indicates that, similar to the breeding factory, the nature of the work in a vegetable shed factory impacts the currently used furniture in the living areas.

Based on the analysis of the eight different types of home-based workshops, it is found that commonly used household furniture is also placed in the production space. For example, sittings, electric lights, and fans are standard currently used furniture in each production space. Whether this furniture can adapt to production activities and whether villagers have new demands for household furniture due to changes in the use scene is the fourth stage to be studied.

4.5.4 Summary Table of the Layout and Type of Currently Used Furniture

Table 4.3 Summary of the layout and type of currently used furniture

Space	Dimensions / Structure	Main Functions	Key Furniture & Equipment	Furniture Characteristics: Functions and uses
The Pre-earthquake House				
Inner Rooms (East & West)	Length: 3.2-3.7 m (N-S) Width: 9.5 - 11 m (E-W) Height: 2.8 - 3 m 30.4 m ² - 40.7 m ²	Living (bedrooms)	Kang (heated brick bed) with mat, quilt, cushion, flyswatter; Red wardrobe; Four-panel screen; Mantel clock; Altar table	Kang used for sleeping and heating; bedding items provide comfort; red wardrobe for clothing storage; four-panel screen and mantel clock for decoration; altar table for offerings
Central Hall	Length: 3.2-3.7 m Width: 3.1–3.6 m Height: 2.8 - 3 m 9.92 m ² - 13.32 m ²	Kitchen and dining	Stove (red brick), furnace (fireplace), water tank, water ladle, old cupboard, straw-woven pot lid	Stove and furnace used for cooking and heating; water tank and ladle for water; old cupboard for kitchen utensils; pot lid as cooking accessory
Walls & Suspended Items	Walls made of red bricks; Roof: poplar or willow wood; Windows: pine wood "small open/carved windows"	Structural elements and storage	Woven wicker basket, woven straw hat, wall clock, "manzi" (wooden hanging storage)	Suspended baskets and hats for storage and drying; wall clock for timekeeping; "manzi" holds infrequently used items
Door Curtains & Platform	Partition between inner rooms and hall with fabric door curtains (spring/autumn/winter) and paper curtains (summer); platform above inner door	Room division and storage	Fabric and paper door curtains; platform for miscellaneous items (matches, nails)	Door curtains used seasonally for room separation; platform used for storing small household items
The Residential House - Type A house				
Space	Dimensions / Structure	Main Functions	Key Furniture & Equipment	Furniture Characteristics: Functions and Uses
East Inner Room	Length: 3.2-3.7 m (N-S) Width: 9.5 - 11 m	Sleeping, storage, guest reception, study	Kang bed with bedding, kang table, kang cabinet; Combination TV stand;	Kang and bedding for sleeping; kang table and cabinet for convenience; combination TV stand for

	(E-W) Height:2.8 - 3 m 30.4 m ² - 40.7 m ²		Writing desk; Sofa; Chairs; Wall-mounted furniture (roof lamps, roof fans, clotheslines, wall mirrors, paintings, posters, clocks, mosquito nets)	storage and entertainment; writing desk, sofa, chairs for guest reception and study; wall-mounted furniture for decoration and utility.
West Inner Room	Length: 3.2-3.7 m Width: 9.5 - 11 m Height:2.8 - 3 m 30.4 m ² - 40.7 m ²	Sleeping, storage, study/work	Kang; Red wardrobe with items on top; Refrigerator; Freezer; Writing desk; Manzi (hanging storage)	Kang for sleeping; red wardrobe for storage; refrigerator and freezer for food preservation; writing desk for study/work; manzi for storing infrequently used items.
Central Hall	Length: 3.2-3.7 m Width: 3.1–3.6 m Height:2.8 - 3 m 9.92 m ² - 13.32 m ²	Cooking, dining, entry, storage	Stove; Furnace; Broom and dustpan; New cupboard with kitchen appliances (pressure cooker, pans, gas cooker); Traditional cupboard with chopsticks, bowls, plates, leftovers; Water tank and faucet; Dining tables (square and round); Sitting furniture (high wooden stools, iron stools, plastic stools, wooden benches); Clothesline; Kitchen steamer	Stove and furnace for cooking and heating; cupboards for storing condiments, rice, flour, cookware, utensils, chopsticks, bowls, plates, leftover food; water tank and faucet for water; dining tables and various stools/benches for seating; clothesline for drying clothes; kitchen steamer hung on wall.

The Residential House - Type B house

Space	Dimensions / Structure	Main Functions	Key Furniture & Equipment	Furniture Characteristics: Functions and uses
Living Room	Length: 7 m Width: 4 m Height: 3 m 28 m ²	Living and social activities	TV cabinets and surrounding items, tea table, sofa, dining table and chairs, entryway items, hanging decorations, smart products (air	TV cabinets store electronics and household items; tea table and sofa area for dining and socializing; varied sitting furniture; hanging decorations for aesthetics;

			conditioners, fans, refrigerators, freezers)	smart products provide comfort and utility
Kitchen	Length: 4 m Width: 4 m Height: 3 m 16 m ²	Cooking and food preparation	Stove, furnace, kettle, cleaning tools (brooms, mops), cupboard holding kitchen supplies	Stove and furnace for cooking and heating; cupboard for kitchenware storage; cleaning tools maintain hygiene
Main Bedroom (Southeast)	Length: 7 m Width: 3.5 m Height: 3 m 24.5 m ²	Sleeping and private space	Heated kang bed with tiled surface, kang table, bedding, broom, bedside table, TV cabinet, wardrobe, seating (wooden chairs, sofas), wall-mounted items (air conditioner, heaters, lights, fans, marriage certificates, posters)	Kang bed provides heating and sleeping comfort; TV and bedside table for entertainment and convenience; wardrobe for clothes storage; seating for rest; wall items for decoration and utility
Secondary Bedroom (Southwest)	Length: 7 m Width: 3.5 m Height: 3 m 24.5 m ²	Sleeping, used by elders/young adults	Japanese tatami or wooden hardboard bed, bedding, wardrobe, dressing table, seating (wooden chairs, repurposed old car seats)	Beds for sleeping; wardrobe and dressing table for clothes and grooming; seating varies, including reused car seats showing adaptability
Northeast Space	Length: 4 m Width: 3.5 m Height: 3 m 14 m ²	Bedroom or storage	Kang bed, wardrobe, desk (for bedrooms); supply tables, freezers, desks, books (for storage)	Bedroom furniture for sleeping and study; storage area holds unused furniture and items
Northwest Space	Length: 4 m Width: 3.5 m Height: 3 m 14 m ²	Storage	Supply tables, freezers, desks, unused books	Storage for unused or infrequently used furniture and items
Partitions & Doors	Sliding door for living room south door; hinged doors elsewhere; cloth	Space division and privacy	Doors (sliding and hinged), cloth curtains	Doors and curtains provide separation and privacy between rooms

	curtains on bedroom doors			
The Production-type House				
Space	Dimensions / Structure	Main Functions	Key Furniture & Equipment	Furniture Characteristics: Functions and uses
Village shop: converted from Type A yards	Converted from Type A main house; shop divided E/W with north & south doors	Retail sales; eating & recreation; washing/cooking; sleeping/rest for owner	Eastern part: shelf area; eating & recreation area (television; dining table; stoves; glass-door display freezer; sitting furniture) Western part: shelf area; washing, cooking & sleeping area (cupboard; kang bed; chopping board; stoves; sitting furniture; water tank)	Sales area dominated by shelves; dining/entertainment area for customers; western part retains living space. Some owners adjust layout to enlarge sales area; elderly owners plan to replace furniture with elderly-friendly designs.
Village shop: converted from Type B yards	Converted from Type B main house; divided into western sales area, northwest main bedroom, northeast secondary bedroom	Retail sales; eating & recreation; living	Western sales area: shelves; dining table; double-door refrigerator; display freezer; deep freezer; sitting furniture Bedrooms: kang bed; writing desk; wardrobe; heaters; fan; bedside table; television	Similar to Type A but usually without TV; heavier use of cold-chain equipment for frozen goods; dining table sometimes doubles as mahjong table.
Village shop: large/expanded	Renovated 2020; shop occupies entire main house	Retail sales; limited eating & rest	Pay/rest area: bed; checkout counter SE eating area: dining table; seating; display freezer Sales area: shelves	More formal layout, wider product range; mixed rest and work function in pay area; eating area similar to other shops.
Mahjong parlour	Converted simple rooms	Leisure / entertainment	Mahjong tables; stools; cookers; beds; fans	Non-standard layout; furniture focused on group activity and basic rest/cooking needs.

Sheet-metal workshop	Side building / yard shed; contains metal machines	Metal processing	Electric lights; floor & ceiling fans; seating; furnaces; heaters	High heat/dust environment; fans, heating and lighting to maintain work conditions; seats for rest.
Steamed-bun processing factory	Side house / shed for food production	Food mass-production	Electric lights; fans; seating; stoves; heaters; cooking stove	Standard lighting/ventilation/rest setup in addition to production equipment.
Animal-breeding factory	Yard converted to iron cages	Livestock breeding	Iron cages; living area with sofa etc.	Production area rarely uses furniture, but breeding activities affect domestic furniture hygiene (e.g., dirt, Odors, contamination).
Vegetable-shed factory	Greenhouse/shed adjacent to yard	Vegetable cultivation/processing	None in production area	Domestic furniture gets dirty from work materials.
General observation	Mostly side rooms or simple sheds	Production, processing, breeding	Common items: seating; lighting; fans; heaters	Shared furniture in workshops mainly for climate control and rest; suitability for production requires further study.

Table 4.3 summarises the types and layout of furniture in the three types of houses discussed in this section: types and layout of furniture in pre-earthquake houses; types and layout of furniture in residential houses (Type A and Type B); types and layout of furniture in production-type houses.

Comparative analysis of Pre-earthquake houses and residential houses (Type A and Type B):

Firstly, in terms of spatial structure, Pre-earthquake houses followed a traditional single-story, three-bay layout, with a central hall for cooking and two side rooms for sleeping. Built with red brick walls, timber roofs, and pine windows, they reflected vernacular styles. Type A houses kept similar dimensions but expanded functions: the hall doubled as a kitchen and dining area, while inner rooms served for sleeping,

study, and guest reception. Type B houses marked a clearer shift, with larger square plans, distinct living, cooking, and sleeping zones, and the use of modern materials such as reinforced concrete, tiled walls, and aluminium windows.

Secondly, the furniture typology and arrangement reveal marked developmental trends. Pre-earthquake houses are characterised by furniture centred on the kang, a heated brick bed that integrates sleeping and warming functions, with supporting items such as bedding, mats, and mosquito nets. Red wardrobes primarily provide storage, and various utilitarian items are suspended from walls and beams to maximise space usage. Kitchen furniture is basic, including stoves, water tanks, and cupboards. Type A houses introduce a broader variety of furniture, integrating traditional elements like the kang with modern additions such as combination TV stands, sofas, writing desks, and refrigerators. The central hall expands its functionality with increased kitchen and dining furniture, and decorative or wall-mounted items become more prevalent. Type B houses further diversify furniture types and enhance functionality. The living room accommodates multiple furniture clusters, including TV cabinets, tea tables, sofas, and dining sets. Bedrooms are equipped with modern heated kang beds, wardrobes, dressing tables, and additional seating, reflecting an enhanced focus on comfort and storage. The presence of smart home appliances like air conditioners and electric fans indicates a progression towards modern domestic lifestyles.

Finally, these spatial and furniture transformations correspond with shifts in rural lifestyle and household needs. The Pre-earthquake house setup reflects a subsistence lifestyle with emphasis on practicality and thermal comfort. Type A houses illustrate an intermediate stage where traditional functions are retained but adapted to accommodate entertainment, socialisation, and diversified domestic activities. The Type B house represents a more contemporary rural dwelling, where spatial

segmentation, multifunctional furniture, and technological integration meet the demands of a modernised lifestyle while maintaining cultural continuities such as the kang.

Comparative analysis of residential houses (Type A and B) and production-type houses:

For residential houses (A and B) converted into production-type (commercial) houses (shops/mahjong parlours/workshops), some production spaces exist within the original indoor space (main house), while others extensively utilise or remodel the yard space. When residential space is restructured for commercial or production purposes, furniture no longer serves solely traditional residential functions but is reconfigured to accommodate sales, reception, production, or temporary resting functions.

For example, commercial shops (Type A/Type B conversions) retain some bedroom furniture while adding a large amount of furniture for sales/reception purposes (shelves, display refrigerators, dining area furniture); Type B conversion shops lean more towards cold chain storage (more refrigerators/freezers), while Type A conversion shops retain televisions and more ‘residential-style’ dining/entertainment configurations.

Yard workshops (metal/food/farming/vegetable sheds) each have specialised machinery, but they generally feature a large amount of furniture and equipment similar to that found in residential settings (chairs, fans, lights, stoves/heating equipment, etc.). This furniture is primarily present to address production environment needs (ventilation, cooling, heating, lighting, and temporary rest). Additionally, production activities can negatively impact the cleanliness, suitability,

and usage of furniture in residential areas (e.g., farming leading to furniture contamination, extended production hours causing people to rest/sleep in production spaces and use furniture there).

4.6 Phase Two: Field Notes and Unstructured Interviews of Traditional Furniture

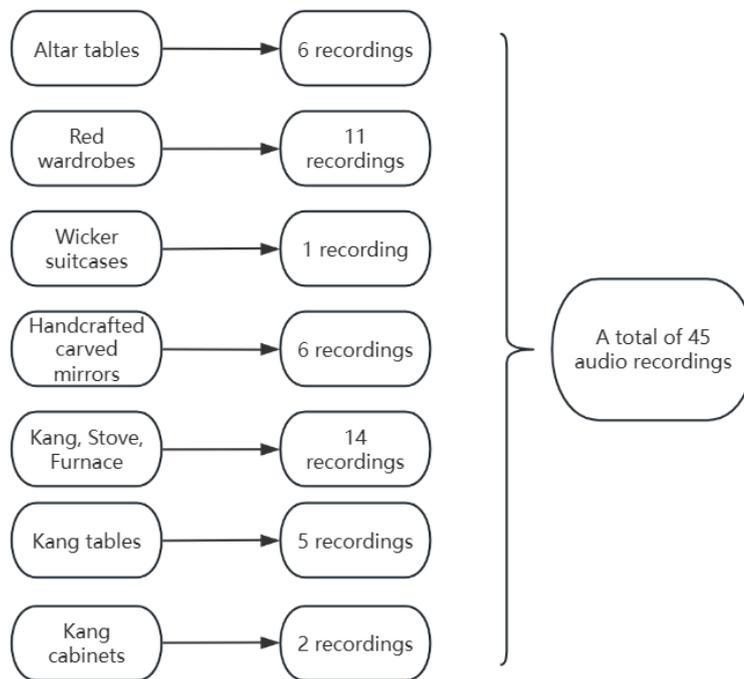


Figure 4.100 Composition of data for Phase 2 (Field Notes and Unstructured Interviews)

This section introduces and analyses unstructured interview data on traditional furniture (Figure 4.100).

4.6.1 The Altar Table

An altar table is a piece of furniture used for placing offerings during rituals, also known as the "offering table". In the studied village, a traditional altar table is preserved in the pre-earthquake house of Q92716 (Figure 4.27). This altar table

measured 0.61 meters in width, 1 meter in length, and 1 meter in height and was made from local poplar wood in Qanmadi village.

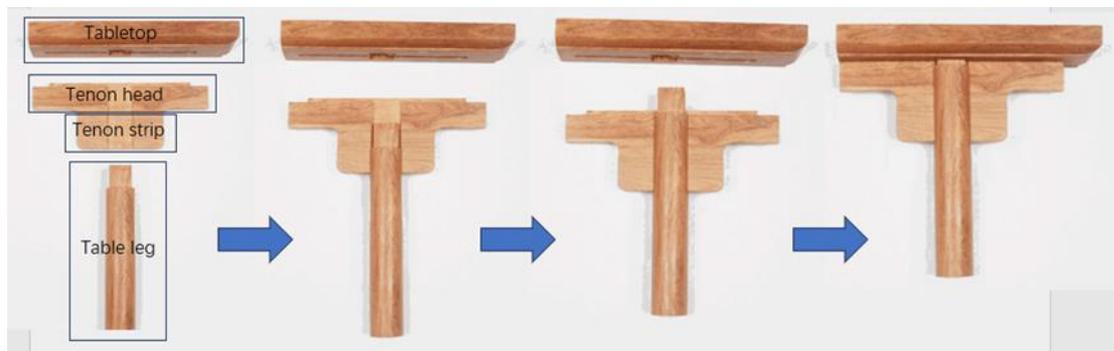


Figure 4.101 Structure of the altar table

The connection between the tabletop and the table legs employs a type of mortise and tenon joint known as a "Chuck tenon" consisting of a wooden tenon head and tenon strip (Figure 401). The chuck tenon connects the tabletop to the legs, ensuring a secure fit without using any nails. According to a local craftsman from Madi Village, this structure originated in the Song Dynasty, and tables and chairs from the Ming and Qing Dynasties also employed this structure. Although this type of altar table is no longer used, the chuck tenon is still widely used in wooden furniture today.

The owner of Q92716 mentioned, *“Not every household had one of these tables; our family was the only one in the village with an altar table placed beside the red wardrobe in the east room. It was used as a family altar, offering fruits, pork, and other items... When villagers held weddings, they would borrow our table to use as the 'heaven and earth table' for the ceremony...The old craftsman who made this altar table has passed away, and we no longer have access to buy such tables...We use writing desks or wall cabinets as substitutes for the altar table.”*



Figure 4.102 Q92707 "Bai tang" scene

From the owner's words, it is clear that this altar table had two primary uses: first, as a 'heaven and earth table' during weddings, and second, as a daily table for worshipping deities. On the wedding day, the altar table (Figure 4.102) was placed in the yard in front of the main house's south door, facing south. The tabletop was covered with a red cloth for good luck. Four plates filled with red dates, peanuts, longans, and melon seeds were placed on the table. The bride and groom would bow to heaven and earth in front of the altar table, a ritual known as "Bai tang" (bowing ceremony).

In daily life, the altar table served as a place for worshipping deities, positioned in the east or west room, with offerings such as incense, candles, fruits, and pork placed on top to bless the family. In addition, although this traditional altar table is no longer in use, villagers continue its function using other pieces of furniture (Figure 4.103).



Figure 4.103 Tables used as altar table in S92915, Q92715

4.6.2 Red Wardrobe



Figure 4.104 Q92718 red wardrobe

A red wardrobe, commonly known as a 'Tanggui', is a low-lying rectangular wardrobe with a lid. Typically, its dimensions range from 150 to 300 centimetres in length, 120 centimetres in width, and 100 centimetres in height. Above the wardrobe includes a fixed rear panel and a front panel that can be opened (Figure 4.104). The front surface of the wardrobe is equipped with brass latches (Table 4.4), and the base features legs that elevate it from the ground to prevent moisture accumulation.

Red wardrobes serve both storage and display purposes. The spacious and deep interior can store clothes, bedding, grains, cash, ration tickets, fabric coupons, and

other valuables. The top surface often holds mirrors, water pitchers, and study materials. In daily life, the red wardrobe is typically locked, and accessing items requires lifting the top panel.

Table 4.4 Red wardrobes in villages

S92915	
F92607	
Q92714	

F92606	
Q92717	

In the studied village, two materials are used for red wardrobes: pinewood (Table 4.4) and poplar wood (Figure 4.104). Pinewood is sourced from northeastern China, making it more expensive due to high transportation costs. In contrast, poplar wood is a local material from the Jidong area. It is more affordable and has moderate hardness. Whether pine or poplar wood is used, red wardrobes must undergo insect-proof treatment.

The owner of the poplar red wardrobe from Q92718 mentioned, *“This red wardrobe was part of my dowry when I got married in 1971. My family saved up to buy the cheapest poplar wood, and two carpenter uncles helped me make it. They painted it with bright red paint and then a layer of varnish, adding brass peach leaf latches. I placed the chest opposite the kang, and it looked beautiful. People from the village came to see it.”* The pine red wardrobe from Q92712 is cherished by its owner, who stated, *“It’s my dowry item, a beloved possession. The chest contains some clothes, bedding, sweets, and pastries for my grandchildren. During the Cultural Revolution,*

it almost got burned, but I hid it at a relative's house to save it.” They mentioned red wardrobes highlighted the wardrobe as part of the bride's dowry brought to the groom's home, It's traditional wedding furniture.

Additionally, red wardrobes are entirely coated with red paint and a layer of varnish. Depending on personal preference, the wardrobe's body can be carved with auspicious patterns such as flowers, birds, longevity peaches, and figures. At the same time, the legs often feature geometric patterns, like 'hui (回)' (Figure 4.104).

4.6.3 Wicker Suitcase



Figure 4.105 D93011 wicker suitcase

A wicker suitcase is a lightweight container made from woven willow or rattan branches, characterised by its breathability and durability, and traditionally used for storing or carrying clothes and daily necessities. Figure 4.105 shows a wicker suitcase of D93011. The suitcase owner stated, *“This suitcase was used by my great-grandfather during his overseas studies at the end of the Qing Dynasty in 1910.”* The suitcase is well-preserved, measuring 61 cm in length, 38 cm in width, and 22 cm in

height. The suitcase's body is woven from peeled willow branches, and its exterior is reinforced with red-brown iron strips. The interior is lined with a layer of purple floral paper. The junction between the lid and the base features a handle and a gold peach-shaped lock. Like modern suitcases, it was an essential tool for travellers to store clothes and other items during journeys.

4.6.4 Handcrafted Carved Mirror



Figure 4.106 A handcrafted carved mirror of F92607

Figure 4.106 shows a handcrafted carved mirror from the F92607 household. This mirror was made by an elderly craftsman from Fangpao Village in 1954 while working at the Beijing July 1st Mirror Factory. It hangs above the red wardrobe in the F92607 home and is still in use. Because the carved mirror resembles a calligraphy couplet in shape, locals call it the 'couplet mirror' or 'four-panel screen'. The structure includes a large central mirror, left and right sections with couplets, and four handcrafted carved mirrors next to the couplets. These mirrors are often decorated with flowers, birds, insects, and fish, making them functional and aesthetically pleasing.

When viewed from the front, the handcrafted carved mirror appears to have a protruding three-dimensional effect, but touching the surface reveals it is flat. According to the craftsman who made this mirror, this visual effect is achieved by processing the back of the glass. The manufacturing process utilizes the transparency of the glass, with designs of flowers, landscapes, animals, and people carved into the back using a rotating diamond wheel. A complete piece is formed after grinding, polishing, silver plating, and framing. Light refraction creates an illusion of raised and recessed patterns on the mirror, resulting in a striking visual impact.

The craftsman added, *“Every step, from preparing the solution, mixing, to blending, affects the quality of the final product. Making a small carved mirror takes at least a week, while a carved mirror of 1 square meter requires a month.”*

In making carved mirrors, 'carving' is the core technique and represents the pinnacle of this craft. The tools needed for carving are simple, primarily a grinding wheel. The artisan must hold the glass and bring it into contact with the rapidly rotating grinding wheel, using water as a medium and the wheel as a pen to engrave intricate designs. The marks left by the grinding wheel on the glass vary in depth by millimetres. Themes such as flowers, birds, fish, and insects are common on carved mirrors, with the lifelike feathers of birds and realistic petals of flowers being crafted stroke by stroke.

However, handcrafted carved mirrors and their manufacturing techniques are gradually disappearing. The craftsman from Fangpao Village noted, *“In 1993, the Beijing July 1st Mirror Factory closed down, and I lost my job. The skill of making handcrafted carved mirrors has gradually faded. In the past ten years, some young people have visited me to learn this craft. Although I am old, I teach anyone willing to*

learn, hoping to pass on this craft to future generations.” In 2014, 'handcrafted carved mirror making' was declared an intangible cultural heritage of Changping District in Beijing.

4.6.5 Kang, Stove, and Furnace



Figure 4.107 D93016's kang is being built

The “kang” (heated bed) in northern China has a history spanning over two thousand years. Currently, in villages across Jidong, nearly every household's inner room is equipped with a kang, which serves not only as a bed but also provides essential heating during the winter. The kangs in Jidong are constructed from red bricks and cement, with their width matching the east-west dimension of the room, while the length and height are fixed at 190 cm and 50-60 cm, respectively. The construction of the kang in the D93016 household exemplifies this traditional technique (Figure 4.107).

Constructing a kang requires a high level of skill, needing experienced artisans.

Craftsman Chen explained: *“There are many ways to build a kang, but the traditional*

method in Jidong is the 'seven rows for the stove and eight rows for the kang.' ”

Following the standard dimensions of red brick (24 cm in length, 5.3 cm in width, and 11.5 cm in height), the height of the kang in the inner room is built to 42.4 cm by stacking eight layers of bricks, to which an additional 10-15 cm of kang board and cement thickness is added, resulting in a total height of 50-60 cm. This height is suitable for adults of 1.55-1.70 meters. The “traditional stove of seven rows” means the stove is one brick layer lower than the kang (about 37.1 cm). The interior of the kang is hollow, supported by brick columns under the kang board. This hollow design not only conserves materials but also enhances the insulation effect of the kang. Workers first build supporting walls along the edges of the kang, then lay the kang board on top, and finally, smooth the surface with cement. Once the cement is dry, the kang is complete.

The ends of the kang are typically equipped with a stove opening and a chimney opening, with the stove opening connected to the stove in the main room. When cooking, the heat and smoke generated from burning firewood flow through the kang, heating the kang board, and then the exhaust exits through the chimney. This design allows the heat from cooking to warm the kang as well, greatly improving energy efficiency. Additionally, the use of the kang carries social etiquette: the warmer end near the stove, known as the “kang head,” is usually reserved for elders or honoured guests, while the cooler “kang tail,” further from the stove, is allocated to younger family members. This arrangement reflects traditional intergenerational relationships and social hierarchy within rural households.

The stove in Jidong households is typically located in the main room or kitchen and serves as the primary cooking facility, with firewood as the main fuel, a practice that dates back to the Neolithic era. About the construction of the stove, first, the kang is built in the inner room, and then the traditional stove in the main room, with a wall

separating the two. The stove, made from bricks and cement, generally comprises three main parts: the stove chamber, the countertop, and a large pot (Figure 4.108).



Figure 4.108 D93016's stove is being built

The stove chamber is constructed with bricks and has a fire opening on one side to facilitate fuel feeding. Above the stove chamber, a large pot is fixed, and the area around the pot is levelled with cement to form a countertop, allowing for the placement of smaller kitchen utensils. Additionally, a furnace (Figure 4.72) is typically installed beside the stove. This furnace, which emerged in the 1960s, is a heating device that primarily uses coal as fuel. Its pipes are connected to the stove opening, and the heat generated by burning coal passes through the kang via the chimney, enabling the furnace to independently heat the kang.

4.6.6 Kang Table

As early as the Ming and Qing Dynasties, the kang table was placed in the centre of the kang and used as a dining table. At present, it is used for daily dining and leisure in Jidong rural.



Figure 4.109 A mid-Qing Dynasty Zitan marble-topped kang table in F92606



Figure 4.110 Bottom of the Zitan marble-topped kang table in F92606

In the research village, the researcher discovered a mid-Qing Dynasty Zitan marble-topped kang table in F92606 (Figure 4.109), which is approximately three hundred years old. This kang table measures 60 cm in length, 40 cm in width, and 30 cm in height, with the tabletop inlaid with a single slab of marble featuring a cloud peak pattern. The table legs have three bends and are carved with grass patterns at the bottom, with thick, rounded supports added around the feet, giving a sense of stability. The apron of the kang table is adorned with Ruyi cloud patterns, hooked dragon patterns, and grass patterns. The Ruyi cloud pattern symbolizes good fortune and longevity, the hooked dragon pattern signifies prosperity, peace, and wealth, while the grass pattern represents continuous growth. Additionally, the bottom of the kang table was coated with lime to prevent insect infestation (Figure 4.110).



Figure 4.111 Kang table in the village

In the research village, now, every household has a kang table (Figure 4.111). These kang tables are rectangular, measuring 90 cm in length, 60 cm in width, and 40 cm in height, and are relatively heavy. Local carpenters make them from poplar wood and lack any decorative patterns. Regarding usage, villagers rarely place kang tables on the kang anymore, typically using them in the hall as dining tables.

4.6.7 Kang Cabinet

Kang cabinet is placed on the kang for storing bedding and clothes. It is also known as "Kang geda," "painted gold cabinets," and "Kang qin." In the study village, two traditional kang cabinets still exist.



Figure 4.112 Q92703 kang cabinet

Figure 4.112 shows the kang cabinet of household Q92703, which measures 155 cm in length, 40 cm in width, and 60 cm in height. It is made of poplar wood and is still in use. This cabinet is divided into three sections: the middle section for storing clothes and the sides for holding sewing tools or valuable items. The top of the cabinet is neatly stacked with bedding. The cabinet doors are decorated with floral ceramic tiles, and the cabinet body showcases the natural grain of the poplar wood. The owner explained, *“This cabinet is actually from the late Qing Dynasty. It used to have a dark red lacquer finish, but over time, much of it wore off, so we removed the rest. Where we couldn't clean it completely, we covered it with floral ceramic tiles... The cabinet originally had brass handles, but the children played with them, and they got lost. Now we can't find replacements.”*



Figure 4.113 A photograph of the pine kang cabinet from household F92606

Figure 4.113 shows a photograph of the pine kang cabinet from household F92606. This cabinet also dates back to the late Qing Dynasty and exhibits typical features of Qing furniture. It is divided into two sections, each about 1.2 meters high, which are stacked. The upper section is for bedding, while the lower section is used for storing clothes. The upper cabinet doors are made of glass, and the cabinet body is painted black. The lower section has double doors that can open, while the side doors are purely decorative and cannot be opened. The bottom of the kang cabinet has two drawers with small brass handles. The owner mentioned that the decorative patterns

on the cabinet were hand-painted by local artisans of that time. Due to its well-preserved condition, this cabinet was collected by the Tangshan Museum in September 2023.

4.6.8 Summary Table of Traditional Furniture

Table 4.5 summarises the research findings on traditional furniture in Section 4.6.

Table 4.5 Summary of Traditional Furniture

Furniture Type	Materials	Dimensions	Structure/Technique/decorative features	Functions/Uses	Background: Cultural/Social	Current Status
Altar Table	Local poplar wood	0.61m (W) × 1m (L) × 1m (H)	Mortise-and-tenon “Chuck tenon” joints (no nails)	Daily worship; “Heaven and Earth Table” during weddings	Symbol of family ritual and collective ceremony; borrowed by villagers for weddings	Rarely used; substituted by desks or cabinets
Red Wardrobe (Tanggui)	Pinewood (expensive, transported) and local poplar (affordable)	150–300cm (L) × 120cm (W) × 100cm (H)	Rectangular form, rear fixed panel, front panel with brass latches; raised legs to avoid damp	Storage of clothes, bedding, valuables; display surface for mirrors and pitchers	Important dowry furniture; painted bright red with auspicious carvings	Still used; well-preserved; highly valued as dowry items
Wicker Suitcase	Woven willow branches with iron reinforcement; lined with floral paper	61cm (L) × 38cm (W) × 22cm (H)	Woven willow, reinforced with iron strips, peach-shaped lock	Storage and transport of clothes and necessities during travel	Used during overseas study (early 20th century); symbol of mobility and education	Rare, preserved as heirloom
Handcrafted Carved Mirror	Glass, wood frame	Variable sizes	Carving on glass reverse with diamond	Decorative and functional;	Cultural artistry; motifs of flowers,	Craft endangered; few artisans

			wheel; polished, silvered, framed	hung above wardrobes	birds, insects; intangible heritage	remain; listed as intangible heritage (2014)
Kang (Heated Bed)	Red bricks, cement, kang board	190cm (L) × 50–60cm (H)	“Seven rows for stove, eight rows for kang”; hollow brick structure for heat circulation	Sleeping and heating; integrated with stove	Reflects social etiquette (elders at kang head, juniors at kang tail)	Still widely built and used
Stove and Furnace	Bricks, cement, iron pot	Variable	Stove chamber, countertop, chimney; furnace added in 1960s for coal heating	Cooking, heating, energy efficiency (shared with kang)	Integral to domestic life and cooking traditions	Still used; furnace gradually replaced by modern heating
Kang Table	Zitan wood with marble top (historic); modern ones from poplar	Qing Dynasty: 60 × 40 × 30cm; Modern: 90 × 60 × 40cm	Carved legs with Ruyi, dragon, grass motifs; lime coating underneath; modern versions plain	Dining, leisure on kang; now often used as dining table in halls	Symbol of fortune and continuity in Qing designs	Still present in every household; design simplified
Kang Cabinet	Poplar wood, pine wood (Qing Dynasty)	Q92703: 155 × 40 × 60cm; F92606: stacked, 1.2m height	Divided compartments; decorated with floral tiles, painted patterns, brass handles	Storage of bedding, clothes, sewing tools; stacked with bedding on top	Decorative features (hand- painted, ceramic tiles); traditional household storage	Some preserved; one collected by Tangshan Museum (2023)

Overall, the fieldwork findings demonstrate that traditional furniture in Jidong embodies a complex interplay of functionality, material culture, and symbolic meaning. The pieces collected- ranging from altar tables and wardrobes to wicker suitcases, kang furniture, and carved mirrors - reflect not only the practical needs of

rural households but also their social values, ritual practices, and aesthetic preferences. Local timbers such as poplar and pine dominate production, with the addition of imported materials in wealthier households, highlighting both ecological adaptation and socioeconomic stratification. Structurally, mortise-and-tenon joinery and woven or carved craftsmanship reveal a reliance on vernacular skills and intangible knowledge systems, some of which, such as glass-carving, are now endangered. Functionally, these items served multifunctional purposes: storage, heating, cooking, ritual, and social interaction, often merging everyday life with symbolic practices such as dowry preparation or ancestor worship. From a cultural perspective, furniture also acted as markers of identity and continuity, particularly through red wardrobes, kang arrangements, and decorative motifs that reinforced generational values. At the same time, the current condition of these objects indicates a gradual transformation, as certain traditional types persist in adapted forms (e.g., kang tables, kangs) while others decline or are relegated to heritage status (e.g., altar tables, carved mirrors). Taken together, these findings underscore the significance of Jidong's furniture not merely as utilitarian artefacts but as material embodiments of lived tradition, collective memory, and ongoing socio-cultural negotiation.

4.8 Summary of Phase Two

In terms of currently used furniture, this phase summarizes the characteristics of furniture types and layouts in pre-earthquake houses, residential houses (Type A and Type B), and production-type houses in rural Jidong. This analysis provides a research background for subsequent studies on issues related to currently used furniture.

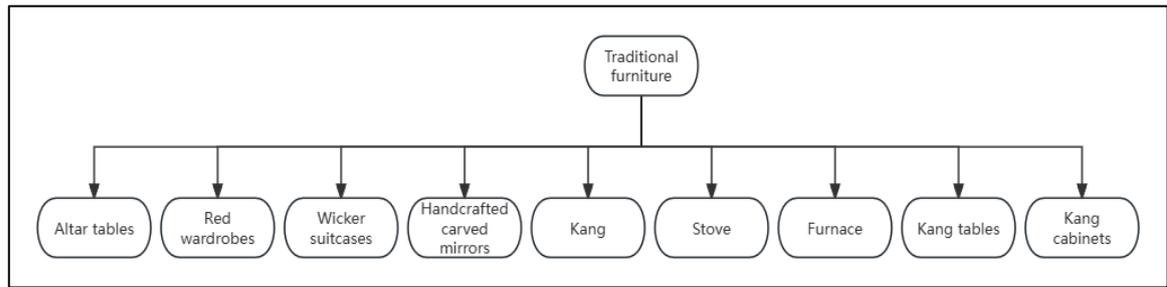


Figure 4.114 Nine categories of traditional furniture

Regarding traditional furniture, this phase identified nine categories (Figure 4.114), including altar tables, red wardrobes (made of pine and poplar), wicker suitcases, handcrafted carved mirrors, kang, stove, furnace, kang tables, and kang cabinets. The researcher conducted an in-depth investigation and description of the background, function, materials, decorative features, usage, size, and manufacturing techniques of these items. This detailed analysis addresses research question 1 and fills part of the research gap on traditional furniture in rural Jidong.

5 Findings and Analysis from Phase Three

5.1 Introduction

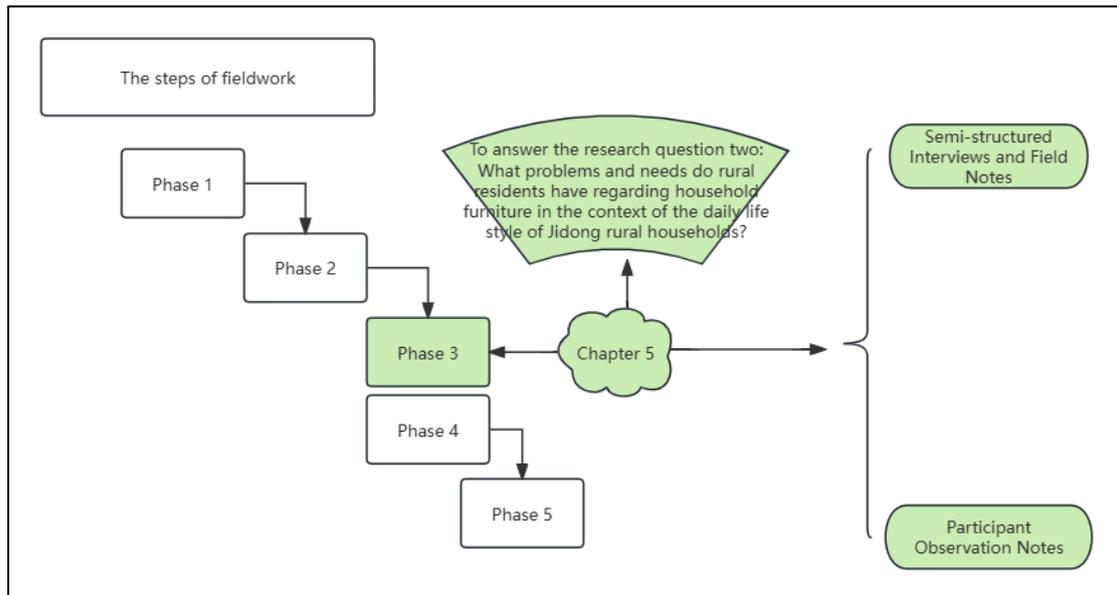


Figure 5.1 Introduction to chapter 5

This phase collected three key types of data on currently used furniture: interview data, field notes, and participant observation notes. All data were systematically analysed using thematic analysis methods to answer the research question, “What problems and needs do residents have regarding furniture in the context of the lifestyle of rural households in eastern Hebei?” (Figure 5.1).

A total of ten main themes and twenty-one sub-themes were generated in this phase (Figure 5.2). The first five themes, based on the analysis of interview data and field notes, are presented in Section 5.2, while the latter five themes, derived from observation notes, are presented in Section 5.3. Section 5.4 summarizes all issues and needs related to currently used furniture in daily life, facilitating the development of design principles in Chapter 8.

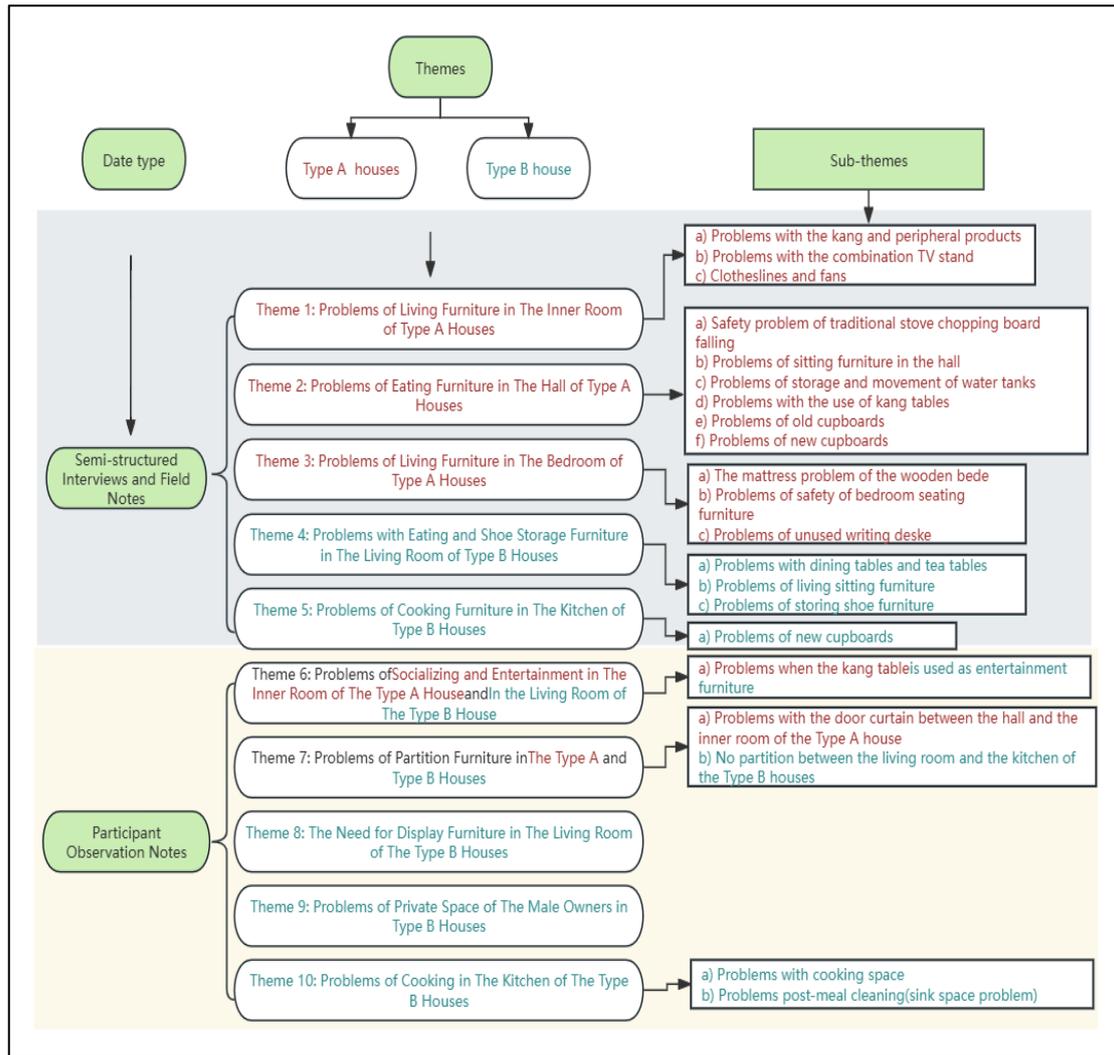


Figure 5.2 Themes and sub-themes of phase 3

5.2 Semi-structured Interviews and Field Notes

This section introduces and analyses data obtained from semi-structured interviews and field notes, revealing issues related to furniture use in Type A and Type B houses in rural Jidong (Figure 5.2). In the second phase of fieldwork, the types and layouts of furniture in both Type A and Type B residences were analysed. To gain an in-depth understanding of furniture use across different household types, a total of 20 semi-structured interviews were conducted, including 10 respondents from Type A houses and 10 from Type B houses. Additionally, from January 23 to May 1, 2024, field

notes were collected from 58 households, comprising 28 Type A and 30 Type B houses (Figure 5.3).

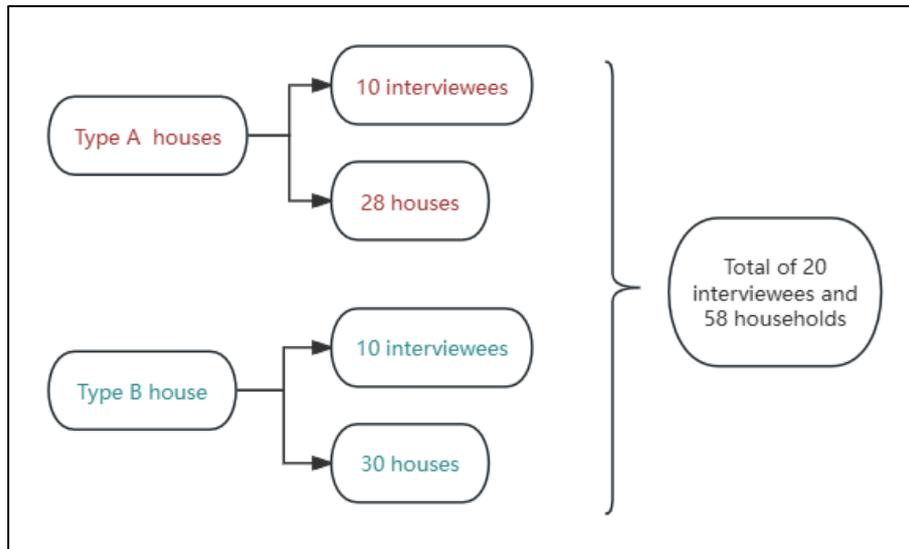


Figure 5.3 Composition of data for Phase 3 (Interviews and field notes)

Based on the different house types, this section systematically presents the issues in currently used furniture identified from interview data and field notes, organised into five themes (Table 5.1). The first two themes primarily address furniture issues in Type A houses, while the last three pertain to furniture issues in Type B houses. Each theme is divided into several sub-themes.

Table 5.1 Thematic analysis theme statistics: furniture problems in daily life (Semi-structured interviews and field notes)

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 1: Problems of living furniture in the inner room of Type A houses	10/10	28/28
Theme 2: Problems of eating furniture in the hall of Type A houses	10/10	28/28
Theme 3: Problems of living furniture in the bedroom of Type B houses	10/10	30/30
Theme 4: Problems with eating and shoe storage furniture in the living room of Type B houses	10/10	30/30
Theam5: Problems of cooking furniture in the kitchen of Type B houses	10/10	30/30

5.2.1 Theme 1: Problems of Living Furniture in The Inner Room of Type A Houses

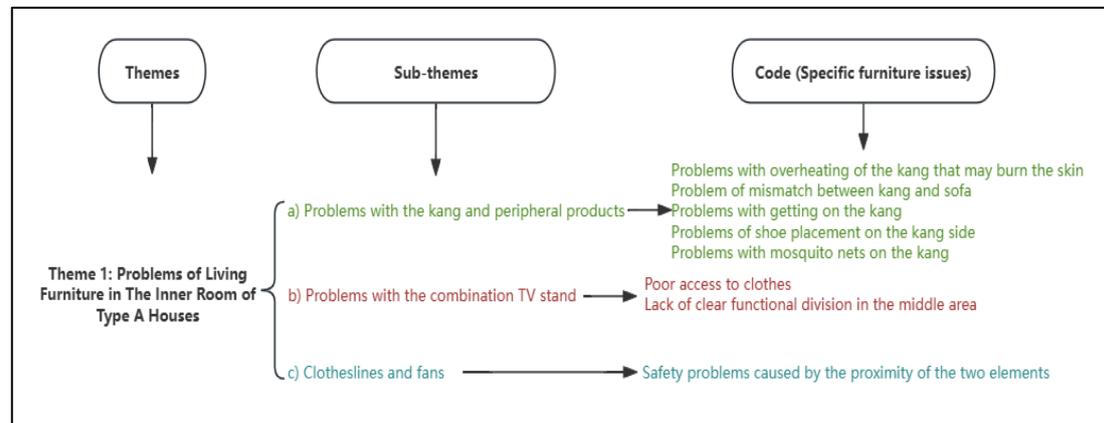


Figure 5.4 Detailed information on Theme 1 of Phase 3

Theme 1 primarily explores issues related to indoor furniture in Type A houses. Figure 5.4 presents the sub-themes within Theme 1 and their corresponding codes. Table 5.2 lists the number of households in which each of the three sub-themes was mentioned in the field notes, as well as the number of respondents who referenced these themes in the interview data. Figure 5.5 illustrates the frequency with which each code was mentioned across households in the field notes, as well as the frequency with which each code was discussed by the 10 respondents. Based on these data, it is evident that although each code was mentioned, there are notable differences in the number of households referencing these codes and the frequency with which they were discussed by respondents. The next subsections need to analyse these codes in detail.

Table 5.2 Sub-themes of Theme 1: Problems of living furniture in the inner room of Type A houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 1: Problems of living furniture in the inner room of Type A houses	10/10	28/28
a) Problems with the kang and peripheral products	10/10	28/28
b) Problems with the combination TV stand	10/10	28/27
c) Clotheslines and fans	10/8	28/27

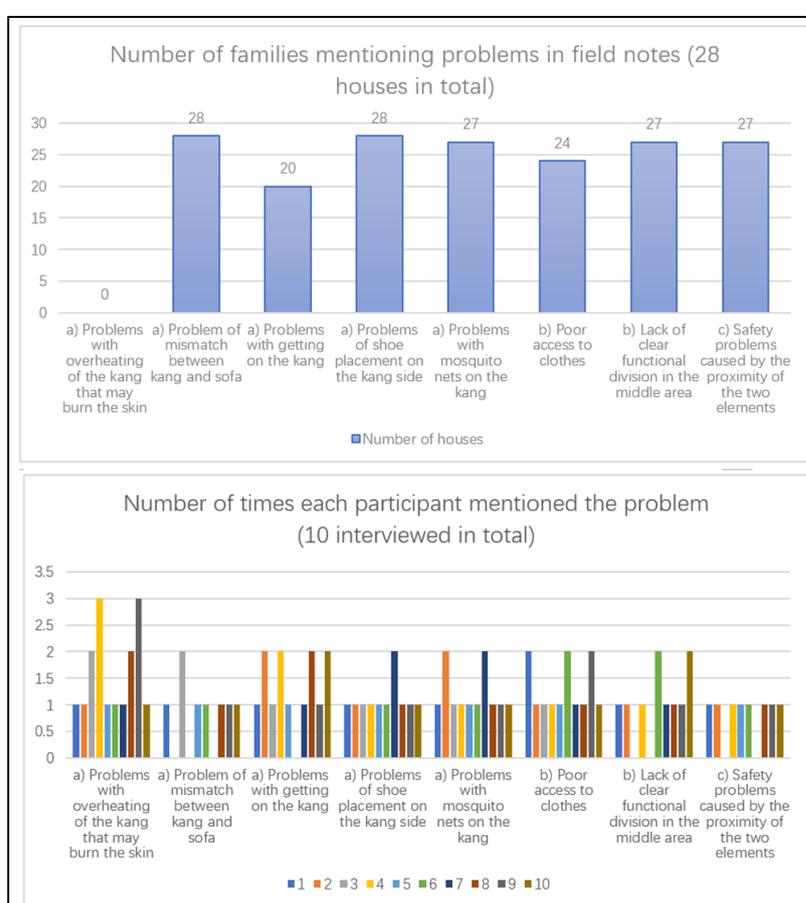


Figure 5.5 Coding of theme 1

a) Problems with the kang and peripheral products

The issues related to the use of the kang by villagers can be divided into five major problems. (Table 5.3).

Table 5.3 Statistics on the problems with kang and peripheral products

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
a) Problems with the kang and peripheral products	10/10	28/28
Problems with overheating of the kang that may burn the skin	10/10	0
Problem of mismatch between kang and sofa	10/7	28/28
Problems with getting on the kang	10/9	28/20
Problems of shoe placement on the kang side	10/10	28/28
Problems with mosquito nets on the kang	10/10	28/27

A common issue identified is skin burns caused by overheating of the kang. All 10 interviewees mentioned this issue. For example, the respondent from household Q92710 stated, *“We adults are fine, but it's mainly the children, who have delicate skin, so I put a thicker blanket on the kang to prevent the children from getting burned.”* Similarly, respondent Q92715 noted, *“Now that we have installed air conditioners and electric heaters in our house, the number of times we burn the kang has decreased significantly, but the electricity bill is very expensive, so I still burn the kang a bit more often.”* Respondent D93011 added, *“My daughter-in-law bought me water-heated blankets, which are fine, but I still get cold when I don't burn the kang.”*

To mitigate the problem of excessive heat on the kang surface, some households have implemented modifications. The respondent from household D93004 mentioned that they placed a blanket on the kang to lower its surface temperature. However, he noted that although the blanket is inexpensive, it only provides localized temperature control on the kang surface and does not effectively enhance the warmth of the entire room. In other interviews, nine respondents reported installing heating devices, such as air conditioners or electric heaters; however, due to high electricity costs, these devices are used sparingly. Additionally, field notes recorded that seven households

reinforced the kang surface with a layer of wooden boards to create an insulating layer to prevent burns from excessive heat. However, prolonged exposure to the kang's damp heat has led to mould growth on the wooden boards, raising hygiene concerns. This indicates that while these measures offer partial solutions, there are still limitations, suggesting a need for more scientifically informed design strategies to optimize the kang surface.

The second problem is that the mismatch between the kang and the sofa was mentioned by seven interviewees and was prominently recorded in the field notes. The researcher observed that when the kang and sofa are used together, one person sits on the sofa while another sits on the kang, resulting in a close distance but a significant difference in seating height. Prolonged sitting in this arrangement can cause discomfort due to the disparity in eye levels. Respondent S92915 remarked, *“Our sofa is lower than the kang, every time I sit on the kang and my husband sits on the sofa to talk, he always has to look up at me, and I look down at him, which is really hard on my neck after a long time, and sometimes my back and waist hurt.”* This highlights the inconvenience and physical discomfort caused by the height difference and proximity when the kang and sofa are used together. Therefore, adjusting the furniture layout or choosing a sofa with a matching height can effectively alleviate this issue and enhance comfort.

The third problem of difficulty in getting on the kang is mainly targeted at adults whose height is less than 1.55 meters, seniors, and children. Nine interviewees directly or indirectly mentioned this issue. Respondent F92606 noted, *“It's super hard for me to carry my child to the kang sometimes. I have bad knees and rheumatism, so I need to be very careful every time I get on the kang, and sometimes I really wish the kang could be a little bit lower.”* Field notes recorded a scenario where a teenager under 1.55 meters attempted to use the kang, *“First he put his hands on the edge of*

the kang, then he took off his shoes, jumped six times, and finally hit his foot on the edge of the kang.” The researcher also observed six elderly individuals preparing to get on the kang. They all required assistance from families to safely get on the kang.

These interviews and field notes indicate that adults shorter than 1.55 meters, seniors, and children face significant challenges when accessing the kang. These challenges affect their daily lives and increase their risk of injury, highlighting the need for attention to these issues from a design perspective.

The fourth issue is the shoes' placement on the kang side. Removing shoes before getting on the kang is a local tradition, but the disorganised placement of shoes on the floor near the kang poses an obstacle for those walking around. In all ten interviews, participants expressed serious concern about this issue. Respondent F92603 stated, *“My kid's tripped over shoes twice already, and the scar on his forehead is from hitting the edge of the kang after tripping.”* Respondent Q92708 mentioned, *“My father fell once because of the messy shoes when he got up at night. Later, I bought a night light.”*

Field notes frequently described this issue, with phrases and sentences like 'the floor near the kang is cluttered with 8 shoes' 'seven pairs of adult shoes and three pairs of children's shoes are scattered on the floor' and 'The mother reminds the children for the third time to watch the shoes on the floor when they get off the kang'.

These data suggest that while removing shoes before getting on the kang is a common tradition in many households, the resulting clutter creates inconvenience and safety hazards. To address this issue, two female heads of households, Q92708 and S92915,

suggested organizing the space around the kang for shoe storage, such as installing a fixed shoe rack to prevent the cluttered arrangement of shoes and reduce safety risks.

Fifthly, is the issue of mosquito nets on the kang was a common issue. Mosquito nets are hung over the kang mainly to prevent mosquito bites. The nets are secured at the four corners by ropes attached to ceiling beams or nails in the wall (Figure 5.6).

Before sleeping, the net is lowered, and when not in use, it is rolled up and hung at the top of the room, creating a suspended structure. In interviews, when showing the researcher how they use mosquito nets, all ten participants pointed out various issues with them.



Figure 5.6 F92607 mosquito nets

Respondent S92903 remarked, *“The most traditional mosquito net that I use at home, which is actually a window screen, I don't think it works well, its mesh is too big to keep mosquitoes out. I want to change it, but the mosquito nets on the market are not the right size and they are especially expensive.”* Respondent D93001 said, *“I bought a mosquito net from the Internet before, only enough to sleep three people, my family of six people, it is not sleeping, and then idle, now I use this is, I bought gauze from the Internet, the bracket is my own welding. I think it works pretty well.”*

The main problem with the current traditional mosquito nets is that they do not effectively prevent mosquitoes from entering, and the ones available on the market

are too small to cover the entire kang. This has led some families to create mosquito nets using wire and steel rods. Field notes recorded four such families but had safety problems. In two families with children, the mothers mentioned that the wire had scratched their children while crawling on the kang. Thus, while some families have attempted to solve the problem of unsuitable market-sized mosquito nets by making their own, this approach has various safety and practicality issues.

b) Problems with the combination TV stand

Table 5.4 Statistics on the problems with the combination TV stand

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems with the combination TV stand	10/10	28/27
Poor access to clothes	10/10	28/24
Lack of clear functional division in the middle area	10/8	28/27

The combination TV stand (Figure 4.44) is a multifunctional piece of furniture divided into three sections: left, centre, and right. The left and right sections are enclosed for storing clothes and bedding, while the centre section is an open display area that can hold a television as well as some wash items, with its mirror surface serving as a decorative element. The issues related to the combination TV stand can be categorised into two main aspects: poor access to clothes and lack of clear functional division in the middle area (Table 5.4).

Regarding the difficulty in retrieving clothes from the combination TV stand, all ten interview participants mentioned. S92915 commented, “*There are no compartments in this cupboard and all the clothes are piled up together, so when you take out the clothes at the bottom you always have to take out the ones on top, which is very*

troublesome.” Field notes also recorded numerous instances highlighting this issue, such as: “*Ms. Li first took out all the clothes on top, then found the white sweater she was looking for, and finally put the clothes back.*”

These data show that users need to bend or squat frequently to reach the clothes of the combination TV stand, which is especially challenging for seniors. So, it is necessary to improve the design of this type of stand.

Regarding the issue of the central section lacking functional zoning, eight participants explicitly mentioned this problem. F92603 remarked, “*My home is just this one big piece of furniture, everything is put here, I not only want to place the TV, charging cable, these scattered small objects, I also need to put some decorations.*”

In the field notes, when observing the combination TV stand in S92902's home, the researcher noted, “*The first impression was one of visual overload: the surface was covered with various items, leaving almost no space. Cable wires were tangled like snakes. The centre section housed the television, with a drawer underneath containing keys, nail clippers, medication, small metal boxes, and other miscellaneous items. The right display stand was used for storing books, and children's toys, while the left display stand held washing products such as mirrors, combs, tissues, toothbrushes, and toothpaste. The upper drawers were reserved for fragile and valuable items like tea sets, gourds, and inkstones. As Ms Liu complained to the researcher, 'I always forget where I put the remote; it's been days, and I still can't find it.'*”

These show that while the central section of the combination TV stand offers significant storage potential, the lack of clear functional compartmentalization results in disorganised item placement. It is crucial to address this issue.

c) Clotheslines and fans

Table 5.5 Statistics on the problems of clotheslines and fans

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Clotheslines and fans	10/8	28/27
Safety problems caused by the proximity of the two elements	10/8	28/27

In the village, it was found that it is common for villagers to hang clotheslines in the inner room (Figure 5.7). However, the close proximity of the clothesline to the ceiling fans resulted in potential safety hazards when using the fan. This issue was mentioned by eight respondents and by 27 families in the field notes (Table 5.5). F92606 stated, *“When the fan is on in my house, the clothes are always blown around, and once they were even rolled into the fan, which is particularly dangerous.”* Therefore, the clothes hanging on the clothesline may pose significant safety risks when using the ceiling fan. This issue needs to be addressed by adjusting the clothesline's position or designing more reasonable drying equipment.



Figure 5.7 Clotheslines and fans of F92607

5.2.2 Theme 2: Problems of Eating Furniture in The Hall of Type A Houses

Theme 2 focused on furniture issues in Type A houses, with six sub-themes and their corresponding codes (Figure 5.8). Table 5.6 presents the field notes and interview

data for the six sub-themes. Figure 5.9 presents the frequency of each code in field notes and respondent discussions. This suggests that even though each sub-theme or code was recorded, the frequency with which it was mentioned in the interviews produced variability.

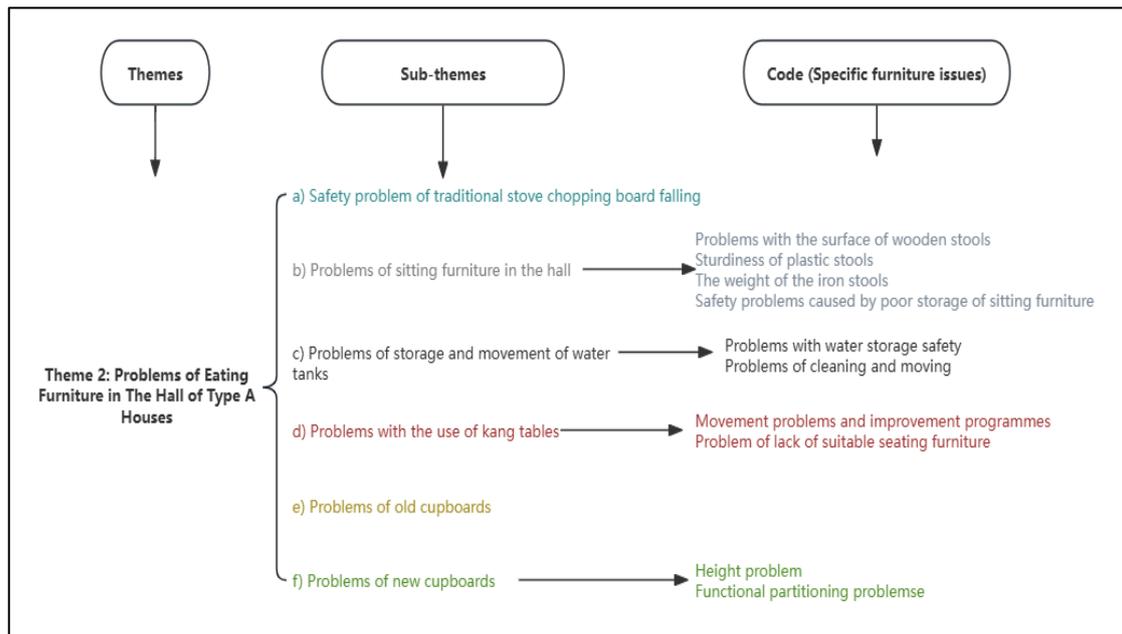


Figure 5.8 Detailed information on Theme 2 of Phase 3

Table 5.6 Sub-themes of Theme 2: Problems of eating furniture in the hall of Type A houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 2: Problems of eating furniture in the hall of Type A houses	10/10	28/28
a) Safety problem of traditional stove chopping board falling	10/10	28/28
b) Problems of sitting furniture in the hall	10/10	28/24
c) Problems of storage and movement of water tanks	10/10	28/28
d) Problems with the use of kang tables	10/8	28/27
e) Problems of old cupboards	10/10	28/28
f) Problems of new cupboards	10/7	28/28

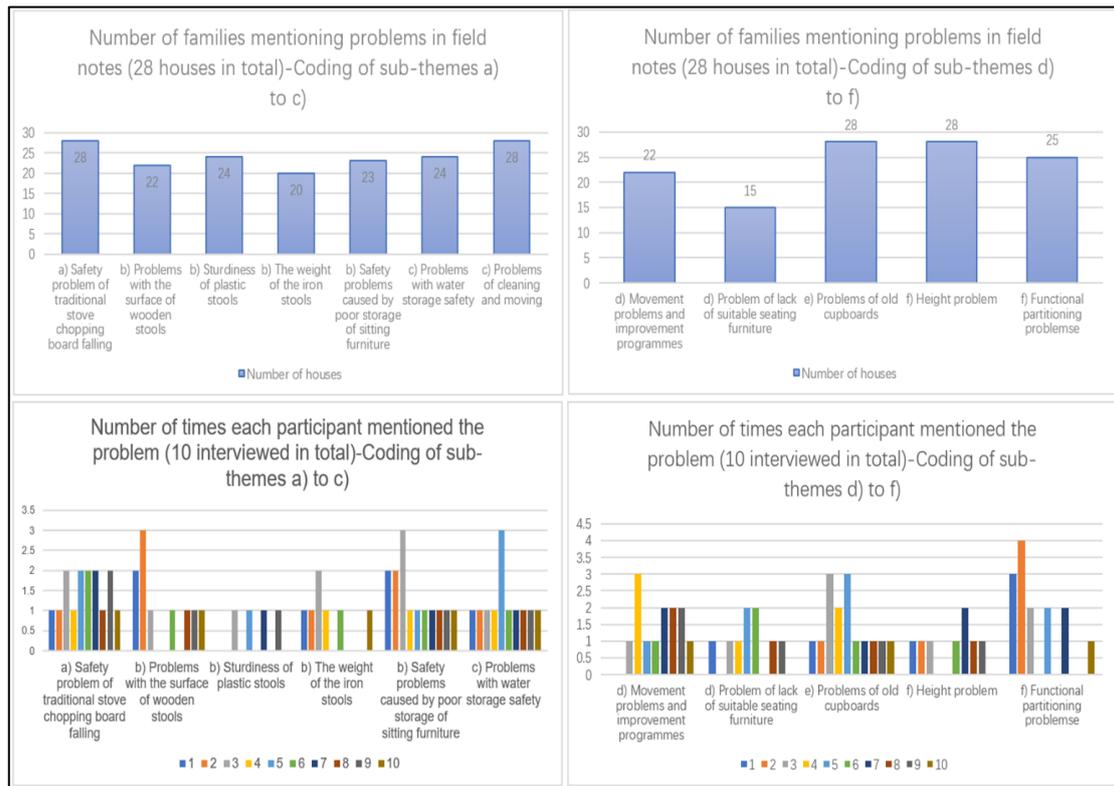


Figure 5.9 Coding of theme 2

a) Safety problem of chopping board falling

It is common for villagers to place a simple chopping board on top of the stove to extend the working surface, typically used for cutting vegetables (Figure 5.10). However, this makeshift board is not fixed and can easily slip, potentially leading to injuries. This issue was mentioned by all ten respondents and 28 families (Table 5.6). Q92712 remarked, “*The stove in our kitchen isn't big enough, so we put a wooden board on top to create more space for cutting vegetables. However, there have been several instances where the board slipped*” Q92710 shared a similar experience: “*One time, I was cutting vegetables when the board suddenly slid, and the cutting board and vegetables fell to the floor. The first toenail on my right foot was completely crushed.*” D93001 added, “*One time, the child touched the board and it fell and hit him, but it wasn't a big deal.*”



Figure 5.10 Simple chopping board of D93001

The above description indicates that while using a simple wooden chopping board on the stove as an additional working surface is convenient for daily life, its instability and tendency to slip can lead to falls, posing a risk of injury, particularly for seniors and children. Therefore, improving the stove design or finding a more stable solution for the chopping board is an urgent issue.

b) Problems of sitting furniture

Based on field notes, the researcher identified three types of sitting currently in the hall: poplar wooden stools, plastic stools, and iron ring stools (Figure 4.58). The villagers handcraft poplar wooden stools, which come in three forms: small, square, and small folding stools (Figure 5.11). The villagers commercially purchase plastic and iron ring stools (Figure 5.12). These two types of stools are stackable, which helps save space in the main room when stored together.



Figure 5.11 Small, square, and small folding stools in S92904 and S92910



Figure 5.12 Plastic and iron ring stools in D93009 and D93014

Table 5.7 Statistics on the problems of sitting furniture in the hall

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of sitting furniture in the hall	10/10	28/24
Problems with the surface of wooden stools	10/6	28/22
Sturdiness of plastic stools	10/4	28/24
The weight of the iron stools	10/6	28/20
Safety problems caused by poor storage of sitting furniture	10/10	28/23

In interviews, all ten respondents reported frequent use of these three types of stools, but they also raised concerns (Table 5.7). Six respondents mentioned that the seats of the wooden stools are too narrow, making them uncomfortable to sit on. Four respondents pointed out plastic stools are prone to breakage and lack sturdiness. Six respondents noted that iron ring stools are heavy and uncomfortable to sit on. These issues indicate that these stools do not adequately meet the villagers' needs.

Moreover, the field notes revealed that the researcher observed all three types of stools in every household, each with at least seven stools. In the interview data, all ten participants mentioned that these stools pose safety risks to their families, particularly seniors and children. Q92708 stated, *“Last year, my mum went to the toilet in the middle of the night and tripped over an iron ring stool in the hall.”* D93011 added, *“I have a young grandson who often bumps into stools while running around.”*

In summary, while villagers require a significant number of stools in their homes, the various types of stools are difficult to store, and these scattered stools pose a significant safety threat to seniors and children. To address this issue, six respondents expressed a desire to purchase stools that are easier to store and multifunctional, capable of being paired with taller square or round tables as well as desks or kangas. These insights provide important guidance for stool design.

c) Problems of storage and movement of water tanks

Table 5.8 Statistics on the problems of storage and movement of water tanks

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Problems of storage and movement of water tanks	10/10	28/28
Problems with water storage safety	10/10	28/24
Problems of cleaning and moving	10/10	28/28

Two main problems are associated with using water tanks (Figure 4.56) in the hall (Table 5.8). First, all 10 respondents pointed to safety issues with the tanks. Most rural households currently use old water tanks that have developed internal cracks. These cracks pose a significant risk during winter when the water inside freezes and expands, causing the cracks to widen. This expansion compromises the structural integrity of the water tanks, making them prone to breaking under even minor external

forces. F92606 noted, *“Last winter, a water tank in our home cracked due to a sudden drop in temperature and almost hit someone.”* This suggests that the new design must enhance the safety.

Second, all families in field notes involve the difficulty of cleaning and moving the water tanks. When filled with water, the tanks become extremely heavy, making them challenging to move and clean. A typical example from the field notes describes a daily water storage scene: *“Auntie Wang and her son busily catching water. They first cleaned the water tank, which was so heavy that it could only be tilted slightly, and scrubbed the inside with a rag... Then store the water. Auntie Wang said: ‘Every day we have to do this...It was very difficult to move a full tank. We only move the tank when it was not full.’”*



Figure 5.13 D93011 red plastic bucket

This example highlights the significant inconvenience associated with the weight and immobility of old water tanks when they are full. Four households in the village have switched to using red plastic buckets (Figure 5.13) as an alternative for water storage. However, the field notes reveal that this substitute has similar problems: when the water pressure is high, the plastic buckets are not strong enough and are prone to damage. Therefore, there is a pressing need to rethink the design of water storage tools.

d) Problems with the kang tables

Table 5.9 Statistics on the problems with the kang tables

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
d) Problems with the kang tables	10/8	28/22
Movement problems and improvement programmes	10/8	28/22
Problem of lack of suitable seating furniture	10/7	28/15

The kang table is widely used in the village. Although relatively small, it is commonly used as a dining table (Figure 4.110). When in use, it is placed in the centre of the hall, and when not in use, it is leaned against a wall. There are two issues associated with kang tables (Table 5.9).

First, the weight of the kang table makes it inconvenient to move. In interviews, eight respondents highlighted this problem. F92603 mentioned, “*When I was younger, it wasn't an issue, but now that I'm older, I always have to ask my son to move it.*” Additionally, two respondents suggested potential improvements, such as designing the table to be lighter or adding lockable wheels to the legs to address the mobility issue.



Figure 5.14 The kang table as a dining table in the F92607 hall

Second, seven respondents mentioned the lack of suitable seating furniture for the kang table. Designed initially as furniture for use on the kang, the table's height of 40 centimetres is ideal when used on the kang. However, the kang table is now commonly placed in the hall and used as a dining table (Figure 5.14). In this context, the lack of appropriate seating becomes a significant issue. One example recorded in the field notes reads: *“At Uncle Wang's house, I noticed that their kang table was placed in the centre of the living room, serving as the family's main dining table. The four family members sat around the table on small wooden stools. Uncle Wang explained, 'These chairs are indeed a little high, and the kang table is indeed too low to be uncomfortable after a long time.' The children sat on small stools, with their backs straight, but soon began fidgeting, looking restless. Uncle Wang's wife commented, 'I bend my back to eat, which is uncomfortable after a long time.’”*

Field notes show that many families used kang tables as dining tables, but because there were no well-designed chairs in the market that matched the height of kang tables, villagers had to use small stools, resulting in poor posture and physical discomfort. Therefore, it is necessary to design and provide seats that match the height of the kang table, thereby improving the dining experience of villagers.

e) Problems of old cupboards



Figure 5.15 Old cupboard in Q92718 and F92603

The figure 5.15 illustrates the old cupboards placed in the hall for storing dishes and food. This cupboard is mainly made of poplar wood and handmade by local craftsmen. The upper part of the cupboard includes a transparent glass section, with doors that typically open by sliding or using handles. The cupboard's surface is often decorated with themes of flowers, birds, fish, and insects, adding a certain aesthetic appeal.

In interviews, ten respondents mentioned the inadequacies of the old cupboard in storing tableware (Table 5.6). D93001 stated, *“We have a lot more tableware now than we did before, such as large bowls, small dishes, plates, and various cooking pots. The space in the old cupboard is simply not enough.”* However, when the researcher inquired about potential solutions, all 10 respondents and 28 families indicated they had already installed new cupboards in the hall. These new cupboards provide more storage space for tableware, addressing the storage limitations of the old cupboards.

f) Problems of new cupboards

Table 5.10 Statistics on the problems of new cupboards

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
f) Problems of new cupboards	10/7	28/28
Height problem	10/7	28/28
Functional partitioning problems	10/6	28/25

The new cupboard is a self-assembly unit purchased by the villagers. The upper part features a marble countertop for cooking and placing kitchenware, while the lower part is designated for storing kitchen utensils and tableware. It presents two primary issues when used in the hall (Table 5.10).



Figure 5.16 Cooking on the new cupboard in F92607

Cupboard height issues were documented in field notes for all 28 families. Currently, the new cupboards in the village are standardized at a height of 60 centimetres. For village women whose average height is between 150-155 centimetres, this height necessitates bending over during cooking (Figure 5.16). One case recorded in the field notes illustrates this problem: *“At Mrs Zhang’s home. I observed her bent over eight times while cooking with the new cupboard. The longest instance lasted 16 minutes while she was preparing ingredients. During the cooking process, she complained*

about back pain five times.” This observation highlights that the height of the new cupboards is unsuitable for most, villagers and needs to be adjusted to a more ergonomically appropriate level to improve the users' comfort and health.

The second issue is the new cupboard's lack of clearly defined functional compartments. This issue was documented in 25 families in the field notes. For example, *“The upper layer is filled with condiments, tableware, and miscellaneous items, while the lower layer is cluttered with pots and other kitchen utensils. Mrs Wang expressed frustration, saying that every time they cook, she has to search for what she needs, with condiments and pots all mixed, making it impossible to find anything...At Mrs Li's house, she rummages through the entire upper layer of the cupboard just to find a salt bottle.”* In these examples the current design only divides the cupboard into two simple layers, lacking rational functional zoning, which causes considerable inconvenience for the villagers during use. Therefore, new cupboard designs need partition design.

5.2.3 Theme 3: Problems of Living Furniture in The Bedroom of Type B Houses

Theme 3 documented furniture issues in Type B houses, categorised into three sub-themes (Figure 5.17). The corresponding field notes and interview data are summarized in Table 5.11, and Figure 5.18 shows the frequency with which they were recorded. These need to be analysed in detail next.

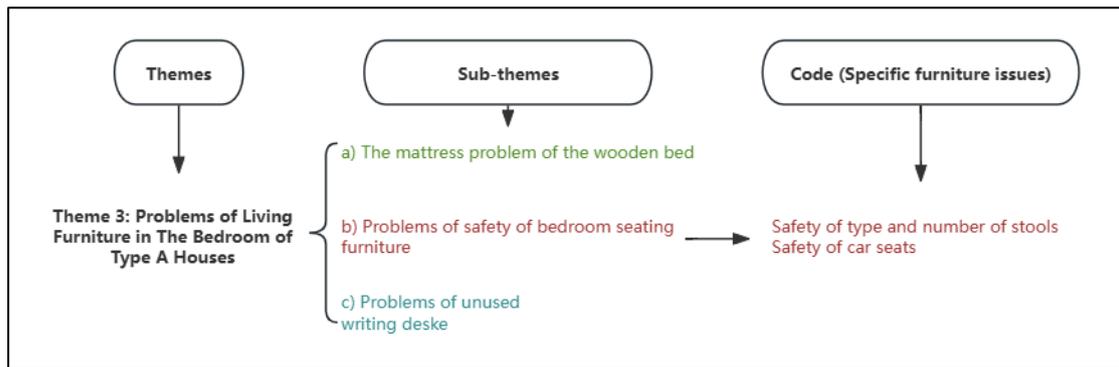


Figure 5.17 Detailed information on Theme 3 of Phase 3

Table 5.11 Sub-themes of Theme 3: Problems of living furniture in the bedroom of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 3: Problems of living furniture in the bedroom of Type B houses	10/10	30/30
a) The mattress problem of the wooden bed	10/10	30/27
b) Problems of safety of bedroom seating furniture	10/10	30/29
c) Problems of unused writing desk	10/10	30/30

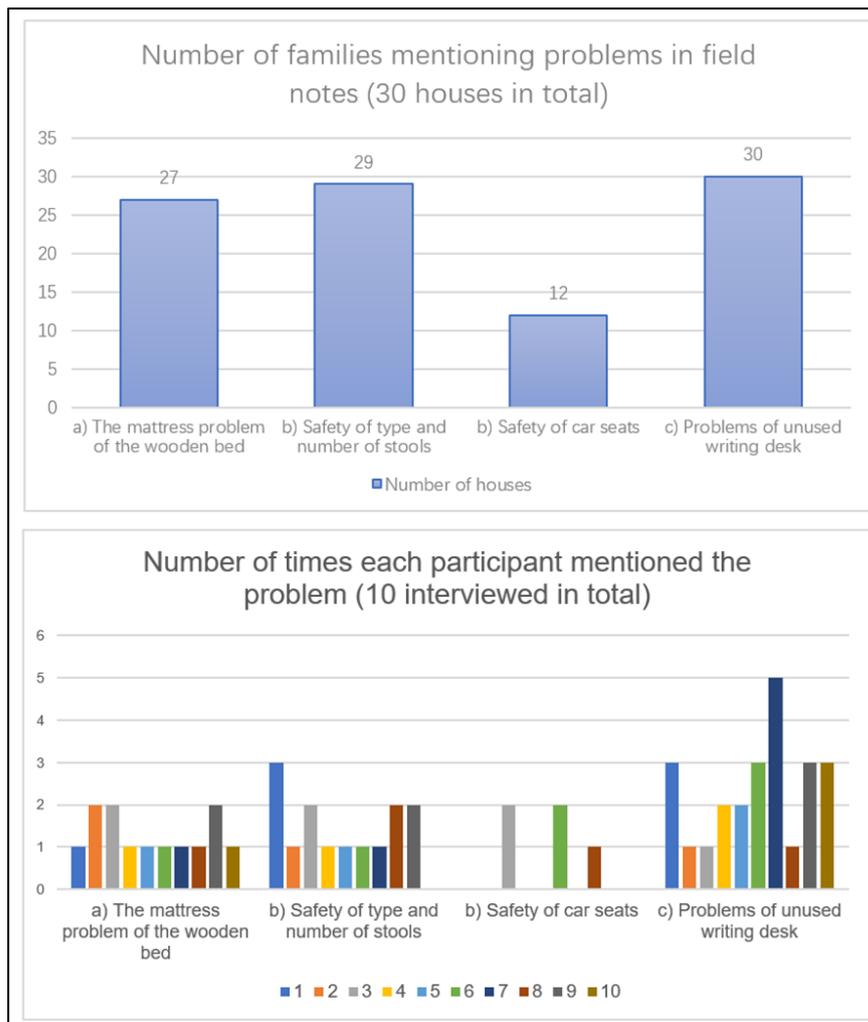


Figure 5.18 Coding of theme 3

a) The mattress problem of the wooden bed

The wooden bed, resembling a Japanese tatami mat, is a square-shaped piece of furniture with a side length of 2 meters. It is typically used in the secondary bedrooms of Type B houses, replacing traditional kang (Figure 5.19). This bed type is primarily utilised by newlywed couples and adolescents in the village. Influenced by traditional beliefs, many elderly villagers consider soft mattresses detrimental to health. Consequently, villagers do not place soft mattresses on the bed; instead, they spread 4 to 5 layers of old cotton quilts to achieve a moderately firm sleeping surface. However, this practice leads to unevenness in the bed surface, a problem mentioned by all ten interviewees (Table 5.11). For instance, respondent Q92715 stated: “*All our*

villages are like this, laying 4-5 layers of old quilts. My family spreads 4 layers and the hardness are just right, but it is a bit uneven underneath the body when you lie on it... Because the bed is big and the old quilts are small, the mattress is made of one small quilt after another, and when you sleep, you may lie in the gap between the two old quilts, which makes your body uneven ... The main reason is that there are no suitable firm mattresses on the market; they are all very soft mattresses, which are too soft for us and even more uncomfortable.”



Figure 5.19 The wooden bed in Q92711 and D93011, mattress(D93011) made of old quilts

Due to the lack of mattresses with suitable dimensions and firmness on the market, villagers resort to piecing together and layering old quilts to fit the bed's dimensions and adjust the surface's firmness. However, this approach results in an uneven bed surface, negatively impacting their sleep quality and comfort. Therefore, it is necessary for designers to develop a mattress with dimensions of 2 meters by 2 meters and a thickness of 3-4 centimetres (equivalent to the thickness of 4-5 layered old quilts) to enhance the comfort of the wooden board bed.

b) Problem of safety of bedroom seating furniture



Figure 5.20 Two wooden bedroom seating in S92912 and three wooden bedroom seating in Q92711



Figure 5.21 S92903 car seats as bedroom seating



Figure 5.22 Plastic woven tea table and chairs of D93012

Currently, there are no standardized seating arrangements in the bedrooms of Type B houses in the village, and the seating can generally be categorised into three types: two or three wooden bedroom seating (Figure 5.20), seating that villagers have modified themselves (Figure 5.21; Figure 5.22), and variously shaped sitting stools (Figure 4.58). Ten respondents reported that their homes typically have more than two types of seating. While none of the respondents raised issues with the first type of wooden chairs, there were significant concerns about the second and third types of seating (Table 5.12).

Table 5.12 Statistics on the safety problem of bedroom seating furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of safety of bedroom seating furniture	10/10	30/29
Safety of type and number of stools	10/10	30/29
Safety of car seats	10/3	30/12

Firstly, the large number of sitting stools with different shapes in the bedroom presents a safety hazard. This was unanimously mentioned by the ten respondents. Respondent S92912 stated: *“I’m very worried about the children tripping over them when they get up at night, so I move all the stools against the wall before going to bed.”* This indicates that the various sitting stools occupy considerable space and pose storage challenges, thereby increasing safety risks.

Secondly, the seating that villagers have modified themselves presents obvious safety hazards. For example, 11 households have repurposed discarded car seats as bedroom seating. Respondent F92610 noted: *“These seats were removed from scrapped cars and initially used as sofas, thinking it would save money, although the seat bases are not very stable, we are just careful.”* Additionally, the field notes recorded that an older adult had retrieved a plastic woven tea table and chairs from a discarded furniture factory (Figure 5.22). He reinforced the seating bases with wire, stating that the tea table could support lighter objects.

In addition, ten respondents expressed their hopes and suggestions for improving bedroom seating. Six respondents believed the seats should be standardized and preferred wooden seating. Five respondents mentioned that they hoped these seats could have storage functions to reduce clutter in the bedroom and enhance safety.

Therefore, designers must develop seating solutions that meet safety standards and fulfil villagers' economic and practical needs.

c) Problems of unused writing desk



Figure 5.23 Q92715 writing desk



Figure 5.24 S92903 computer desk

Writing desks are very common in the surveyed villages, typically ranging in height from 75 to 80 centimetres. They can be classified into two main types: firstly, those purchased by villagers as part of their wedding furniture around twenty years ago, crafted by local artisans (Figure 5.23), and secondly, computer desks acquired from the market in recent years, which are repurposed as writing desks (Figure 5.24).

S92903 noted that these computer desks are discarded furniture from urban areas and do not offer a satisfactory user experience.

These two types of desks were primarily used for children's studies a decade ago.

However, current research shows that, regardless of whether the household has

children, these desks are predominantly used to pile miscellaneous items, books, and household goods, leading to their underutilization. This issue was mentioned by 10 interviewees and recorded 23 times in the field notes (Table 5.11).

In families with children, three interviewees highlighted specific challenges. Q92715 stated: *“It is largely unused now. My children find the writing desk too high, and there is no matching chair to use it. Old Li and Old Wang's children have grown taller... There are no matching chairs, so they just use their own stools. Anyway, none of the children use desks.”* This clearly illustrates that there are currently no suitable chairs available for children, and that chair heights need to be adjustable to accommodate children of different heights.

In families without children, seven interviewees provided suggestions for repurposing writing desks. Two interviewees have already converted their writing desks into bedroom TV stands. Three expressed a desire to transform their desks into dressing tables. Additionally, two interviewees suggested converting writing desks into display cabinets for showcasing collectables, decorations, and photographs.

In summary, addressing the issue of underutilised writing desks involves two key recommendations: for families with children, the desk's height should be adjusted and appropriate chairs provided to make them more suitable for children's use; for families without children, writing desks can be repurposed into TV stands, dressing tables, or display cabinets based on specific needs. This approach not only enhances the utilization of desks but also improves the living quality of the villagers.

5.2.4 Theme 4: Problems with Eating and Shoe Storage Furniture in The Living Room of Type B Houses

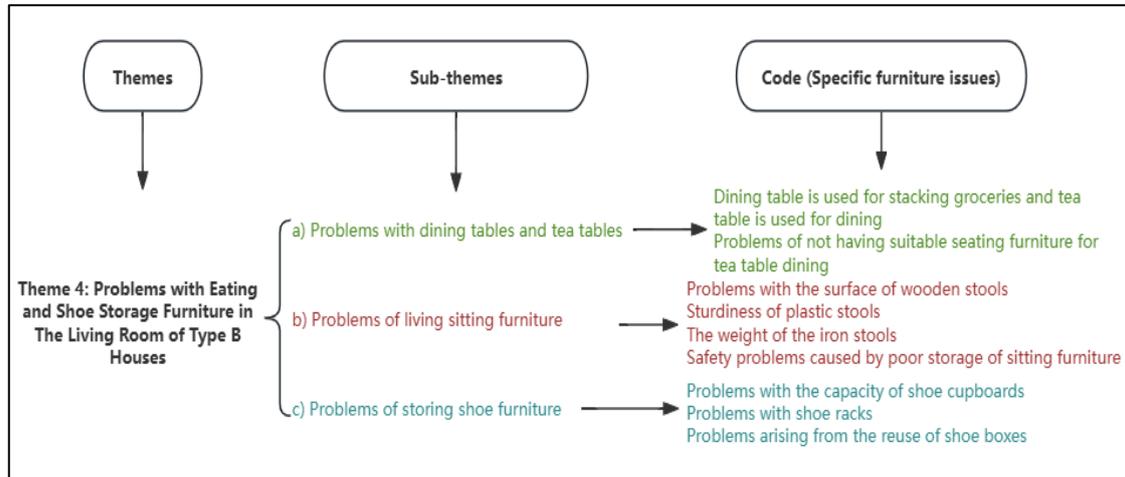


Figure 5.25 Detailed information on Theme 4 of Phase 3

Theme 4 comprises three sub-themes with corresponding codes (Figure 5.25). Table 5.13 summarizes the field notes and interview data, while Figure 5.26 presents the frequency of recorded codes across 30 households and their discussion frequency among the 10 interviewees. Despite differences in data coding, all identified furniture issues occurred with high frequency. These sub-themes and codes are analysed in detail next.

Table 5.13 Sub-themes of 4: Problems with eating and shoe storage furniture in the living room of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theme 4: Problems with eating and shoe storage furniture in the living room of Type B houses	10/10	30/30
a) Problems with dining tables and tea tables	10/9	30/30
b) Problems of living sitting furniture	10/10	30/30
c) Problems of storing shoe furniture	10/10	30/29

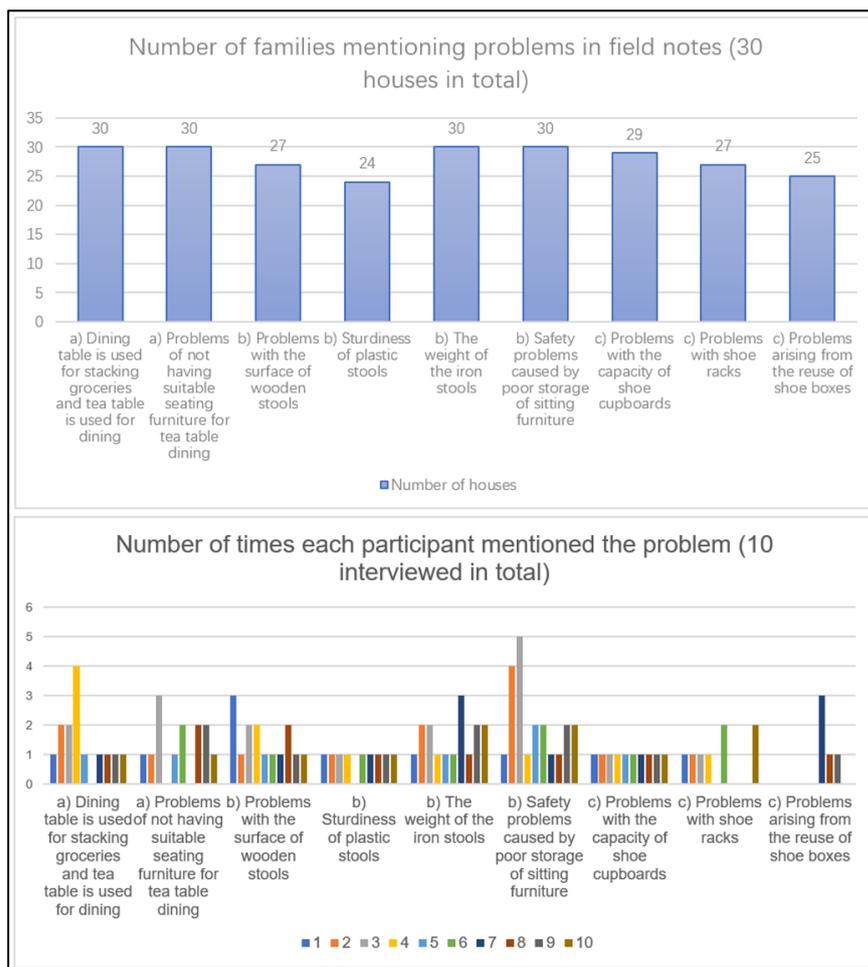


Figure 5.26 Coding of theme 4

a) Problems with dining tables and tea tables

Table 5.14 Statistics on the problems with dining tables and tea tables

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
a) Problems with dining tables and tea tables	10/9	30/30
Dining table is used for stacking groceries and tea table is used for dining	10/9	30/30
Problems of not having suitable seating furniture for tea table dining	10/8	30/30



Figure 5.27 Tea tables in the living room of Q92711 and Q92715

Currently, there are two types of dining furniture in rural households: wooden dining tables with matching chairs (Figure 4.68) and tea tables paired with sofas and small stools (Figure 5.27). Although wooden dining tables are designed for daily meals, interviews revealed that only one family uses the table for main meals. Most other families use the wooden dining table as a space for storing miscellaneous items, opting instead to dine on the tea table in the living room, which also serves as a food preparation area (Table 5.14). Q92715 said: *“We used to eat on the kang table, which is about the same height as the tea table... I bought this wooden table because I saw that other people had one, I thought we should have one too... But in fact, it is much more convenient to eat with a tea table, and it is more relaxing to sit on the sofa than the dining table... I don't think the habit of eating at a tea table will change. In fact, every household in the village is in this situation.”*

The interview notes indicate that villagers prefer dining on the tea table rather than the wooden dining table primarily because the tea table's height resembles that of the traditional kang table, aligning with the villagers' dining habits. Furthermore, purchasing a wooden dining table seems more influenced by a desire to follow trends than actual dining needs.

Additionally, the issue of dining on the tea table without suitable seating was mentioned by eight respondents and all 30 families. S92904 noted: *“We have more people, the position of the sofa is limited, we can only use small stools to match when we cannot sit. The sofa is relatively high, the small stool is low, everyone sits at different levels, and sometimes they block each other.”* One villager suggested that designers could create height-adjustable stools so that both adults and children could find a suitable height, thereby reducing height differences during meals and improving the dining experience.

b) Problems of living sitting furniture

The living room sitting furniture problem in Type B houses is the same as the sitting furniture problem in the hall of Type A houses mentioned in the previous section 5.2.2, which is mainly manifested in the narrow surface area of wooden stools, sturdiness of plastic stools, overly-heavy iron ring stools, and safety hazards brought about by the excessive number of different types of sitting furniture (Table 5.15). To solve these problems, the living room needs to be standardised in terms of the number of items of sitting furniture while simultaneously standardising the types of sitting furniture to avoid safety hazards.

Table 5.15 Statistics on the problems of living sitting furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
b) Problems of living sitting furniture	10/10	30/30
Problems with the surface of wooden stools	10/10	30/27
Sturdiness of plastic stools	10/9	30/24
The weight of the iron stools	10/10	30/30
Safety problems caused by poor storage of sitting furniture	10/9	30/30

c) Problems of furniture for storing shoes

In the surveyed villages, there are three types of furniture used for storing shoes: shoe cabinets, shoe racks, and old shoe boxes (Figure 4.69; Figure 4.70). These storage units are typically placed in the foyers of Type A houses, a practice that did not exist in Type B homes. The halls of Type A houses typically had cement or dirt floors, so there was no need to change shoes upon entering. However, Type B houses are built with tiled floors, prompting residents to pay more attention to cleanliness and neatness in the living room, leading to the practice of changing shoes indoors. The issues related to shoe storage furniture in Type B houses manifest in three aspects (Table 5.16).

Table 5.16 Statistics on the problems of storing shoe furniture

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
c) Problems of storing shoe furniture	10/10	30/29
Problems with the capacity of shoe cupboards	10/10	30/29
Problems with shoe racks	10/7	30/27
Problems arising from the reuse of shoe boxes	10/3	30/25

The capacity of the shoe cabinets was too small to meet the residents' demand for large-capacity shoe storage. All ten interviewed households had shoe cabinets, but they generally reported this issue. For instance, respondent Q92715 noted, *“My family was the first to buy the shoe cabinet... And again, I bought a cheap shoe rack.”* Similarly, respondent Q92711 mentioned, *“I collected the unwanted shoe boxes and stacked them next to the shoe cabinet, equivalent to shoe racks.”* These interviews indicate that the issue of inadequate shoe cabinet capacity has caught the attention of residents, who have adopted various coping strategies.

Seven respondents housed both a shoe rack and a shoe cabinet could be seen placed in the foyer, while the remaining three respondents had stacked old shoe boxes as a substitute for a shoe rack, alongside the shoe cabinet.

Among the seven respondents with shoe racks, six raised concerns about poor durability due to inadequate load-bearing capacity. Respondent S92903 remarked, *“Our plastic shoe rack has only been used for a month, and the bottom layer has begun to distort...My shoe rack was knocked over several times by the kids.”* It is evident that while plastic shoe racks are affordable and easy to disassemble, their load-bearing capacity and stability issues compromise their effectiveness.

The three families that chose to reuse old shoe boxes as storage containers for shoes also identified three issues with this cost-effective and environmentally friendly method. Firstly, the problem of shoe boxes not being moisture-resistant was mentioned by all three families in the interview data. Respondent S92912 stated, *“I put three pairs of leather shoes in a shoebox last spring, and I didn't wear them last winter. This spring opened to see, startled, the appearance of skin is off, there is a bit of mouldy taste, anyway cannot wear, a pity ah.”* Secondly, F92610's respondent also mentioned, *“Although storing shoes in old shoe boxes saves money, it's a hassle to rummage through them every time you find them.”* This suggests that shoe boxes do not make it easy for users to categorise and find shoes, which affects the experience. Lastly, field notes recorded the inconsistent sizes and colours of shoe boxes create a cluttered visual effect in the foyer.

This data suggests that all three types of shoe storage furniture have their drawbacks and that higher capacity, solid, durable and aesthetically pleasing options need to be considered when designing or choosing shoe storage furniture in the future.

5.2.5 Theme 5: Problems of Cooking Furniture in The Kitchen of Type B Houses

Theme 5 consists of one sub-theme with three coding categories. Table 5.17 summarizes the field notes and interview data, while Figure 5.28 presents the frequency of recorded codes across 30 households and their discussion frequency among the 10 interviewees. The consistently high frequency of identified furniture issues highlights the need for further detailed analysis in the following sections.

Table 5.17 Sub-themes of 5: Problems of cooking furniture in the kitchen of Type B houses

Name	Total number of semi-structured interviews / number of people mentioning problems	Total number of households with field notes / number of households with problems
Theam5: Problems of cooking furniture in the kitchen of Type B houses	10/10	30/30
a) Problems of new cupboards	10/10	30/30
Insufficient storage space	10/10	30/25
Functional partition problem	10/10	30/30
Height problem	10/10	30/30

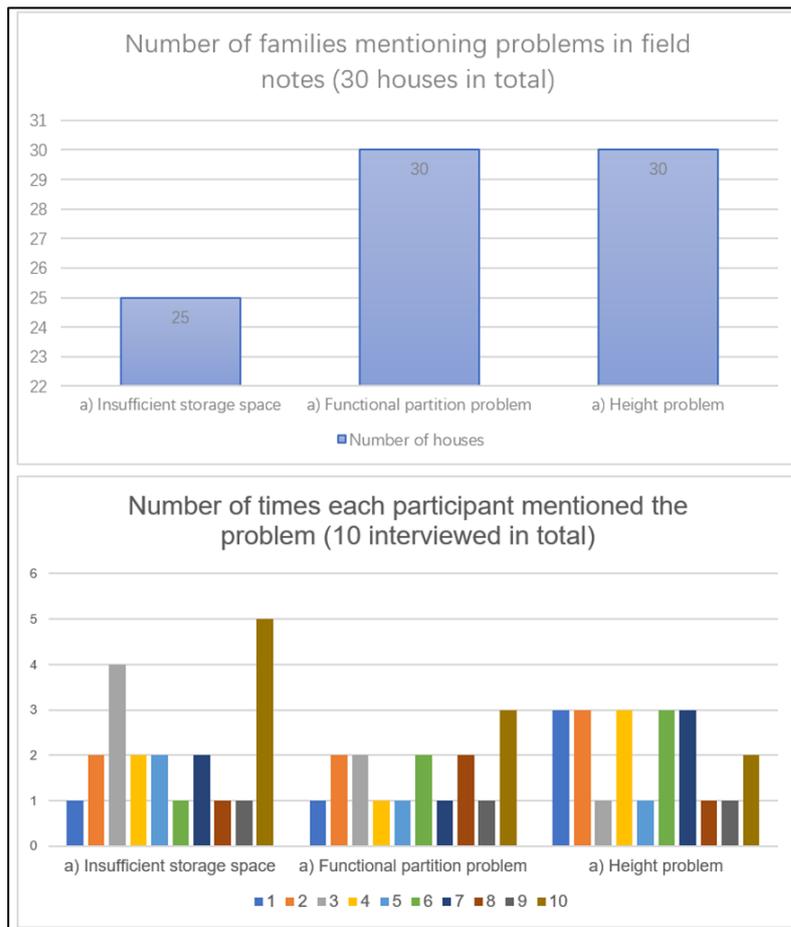


Figure 5.28 Coding of theme 5

a) Problems of new cupboards

In the surveyed villages, new cupboards were found not only in the halls of Type A houses but also in the kitchens of Type B houses. Unlike the two problems with new cupboards in Type A houses (lack of functional zoning and inappropriate height), the new cupboards in Type B houses had not only these two problems but also a lack of storage space (Table 5.17).

Firstly, the lack of functional divisions inside the cupboards and the inappropriate height for the height of the villagers were recorded by 10 respondents and 30 households. Secondly, all ten respondents mentioned that the upper countertop and lower storage spaces were inadequate, a problem also recorded by 25 households in

the field notes. Respondent Q92715 remarked, “*I usually use four pots, this small cupboard cannot be put, sometimes piled on the table, sometimes put into the sundries room, when used to take... This cupboard looks big, but it actually has too little space.*”

So, there is a need to improve the design of the new cupboards in the Type A houses by increasing the storage space, optimising the internal partitioning and adjusting the heights.

5.3 Participant Observation Notes

Table 5.18 Thematic analysis theme statistics: furniture problems in daily life (Participant observation notes)

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 6: Problems of socializing and entertainment furniture in the inner room of the Type A house and in the living room of the Type B houses	4/4	12/12	16/16
Theme 7: Problems of partitioning domestic spaces in Type A and Type B houses	4/4	12/12	
Theme 8: The need for display furniture in the living room of the Type B houses	2/2	6/4	
Theme 9: Problems in the private space of the male of the Type B houses	2/2	6/6	
Theme 10: Problems of cooking in the kitchen of the Type B houses	2/2	6/6	18/18

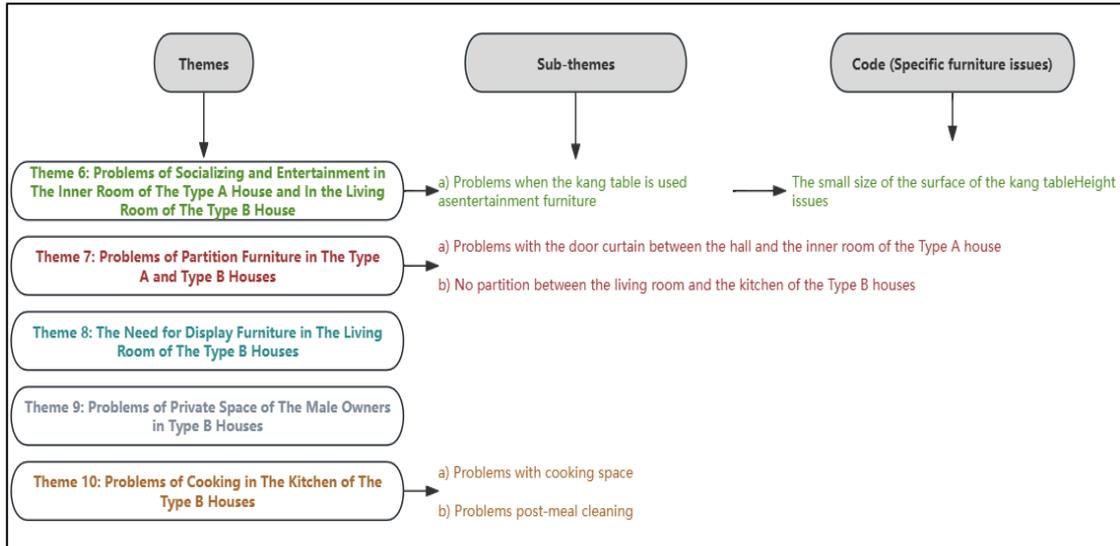


Figure 5.29 Detailed information on Theme 6 to Theme 10 of Phase 3

This section focuses on analysing the data from the participant observation notes and builds on the previous findings to identify five new themes (Table 5.18). The first two themes pertain to common furniture issues found in both Type A and Type B houses, while the latter three themes are supplemental to Type B house furniture issues. Each theme encompasses several sub-themes and codes (Figure 5.29). Figure 5.30 illustrates the types, number, and observation duration of participating households (2 families in Type B houses, 6 days; 2 families in Type A houses, 6 days).

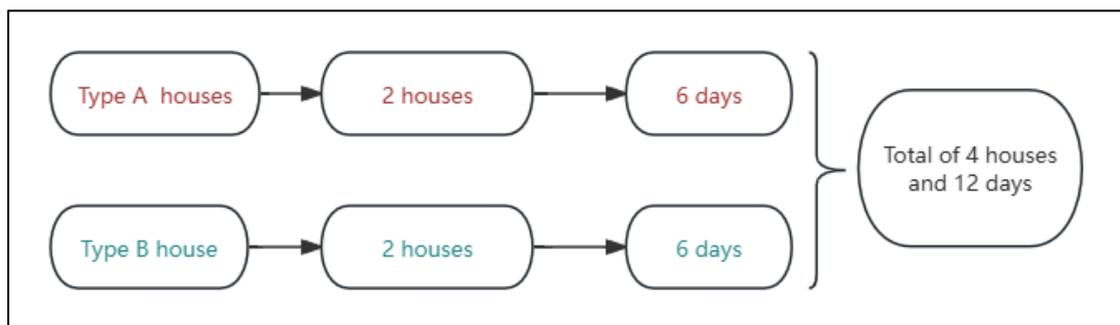


Figure 5.30 Composition of data for Phase 3 (Observation notes)

5.3.1 Theme 6: Problems of Socializing and Entertainment in The Inner Room of The Type A House and In the Living Room of The Type B House

a) Problems when the kang table is used as entertainment furniture

Table 5.19 Sub-themes of Theme 6: Problems of communication and recreation furniture in the inner room of the Type A house and in the living room of the Type B house.

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 6: Problems of socializing and entertainment furniture in the inner room of the Type A house and in the living room of the Type B houses	4/4	12/12	16/16
a) Problems when the kang table is used as entertainment furniture	4/4	12/12	16/16
The small size of the surface of the kang table	4/4	12/12	16/16
Height issues	4/4	12/12	16/16

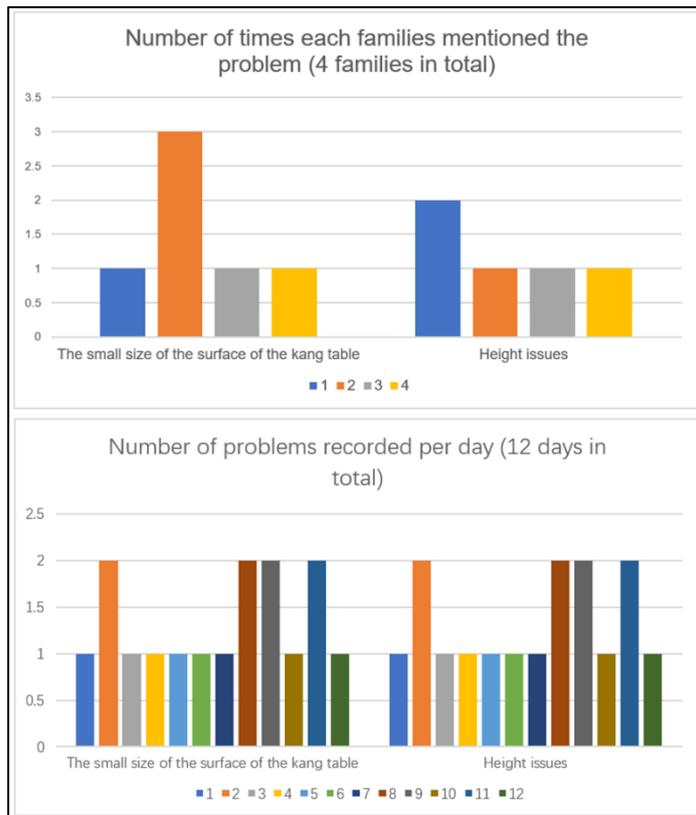


Figure 5.31 Coding of theme 6

In the studied villages, the kang table is not only used for daily meals but is also often repurposed as a mahjong table. During the twelve-day observation of Type B and Type A houses, the researcher recorded 12 days (16 instances) of the kang table being used for playing mahjong or cards. In these instances, two recurring problems were noted, which affected the overall experience of using the kang table (Figure 5.31 Table 5.19).



Figure 5.32 playing mahjong on a kang table of Q92715

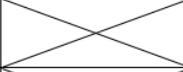
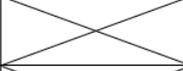
The first issue is the small size of the surface of the kang table (90 cm in length, 60 cm in width, and 40 cm in height). When used for mahjong, the table requires four people to sit around it, which leads to a cramped arrangement (Figure 5.32). The observation notes from household D93015 recorded a mahjong session: *“Aunt Wang's elbow bumped into Aunt Chen's arm... Mr. Li laughed and said, ‘The table's a bit small; it's a bit cramped.’... Brother Zhang accidentally hit Aunt Wang's arm.”* This reflects how the small size of the surface of the kang table disrupts the mahjong experience.

The second issue is the height of the table is relatively low, which forces players to sit cross-legged and bend over when playing games. For example, the notes (Q92715) stated: “*Aunt Wang said, 'Wait, I'll get up and walk around, my back hurts.'... Aunt Li said, 'My legs are numb, they're numb.'*” This clearly illustrates that sitting cross-legged for long periods to play mahjong on the kang table can lead to discomfort in the legs and back.

The kang table presents two problems when used for entertainment: its small size and inadequate height. These issues cause discomfort for users, impacting their physical well-being. Therefore, there is a need for more thoughtful design and improvements in the kang table, or choose other alternative furniture to meet the needs of villagers.

5.3.2 Theme 7: Problems of Partition Furniture in the Type A and Type B Houses

Table 5.20 Sub-themes of Theme 7: Problems of partition furniture in the Type A and Type B houses

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 7: Problems of partition furniture in the Type A and Type B houses	4/4	12/12	
a) Problems with the door curtain between the hall and the inner room of the Type A house	2/2	6/6	
b) No partition between the living room and the kitchen of the Type B houses	2/2	6/6	

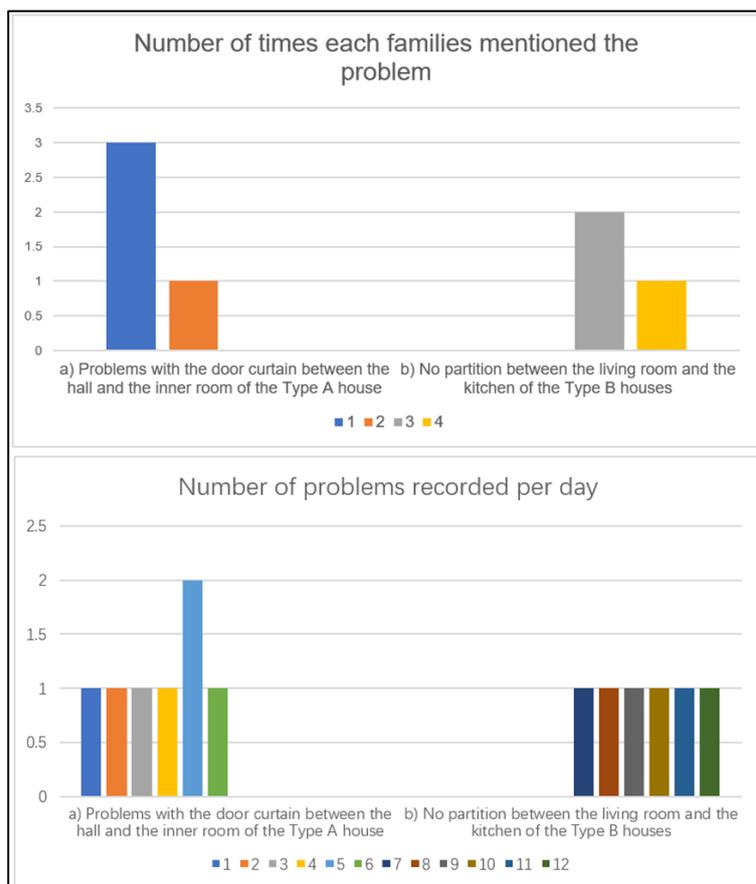


Figure 5.33 Coding of theme 7

In the studied villages, the spaces within Type A houses are connected by curtain doors rather than conventional doors. The curtain doors serve multiple functions, including blocking light, restricting airflow, providing wind proofing and insulation, and protecting privacy (Figure 4.52). Villagers change the curtain depending on the season and temperature (thin fabric or bead curtains are used in summer, while cotton fabric is chosen in winter). Currently, when used as partitions within indoor spaces, these curtain doors fail to protect the privacy of family members. During the observation of two Type A houses, the researcher recorded instances of privacy violations every day (Table 5.20; Figure 5.33). For example, in the F92607 household: *“At 12:03 PM, the female householder was resting on the kang in the east room while the researcher was sitting on a stool in the room organizing data. Suddenly, the male householder returned home with three friends, speaking loudly,*

and directly lifted the curtain door. When they saw the situation inside, the female householder was startled, and the male householder's friends appeared very embarrassed. The group then moved to the west room. As the curtain door was lifted, it quickly closed again. The little boy inside the room said, 'Dad, wait a minute, I'm getting dressed, please wait before coming in.'”

In addition, the researcher observed that there is no partition between the living room and kitchen in Type B houses. This results in the kitchen being directly connected to the living room, with cooking fumes from the kitchen entering the living room and even spreading to the bedroom, affecting the health of family members.

In summary, whether in Type A or Type B houses, the partitioning issues of household spaces urgently need to be addressed to improve privacy protection and the health of the living environment.

5.3.3 Theme 8: The Need for Display Furniture in The Living Room of The Type B Houses

In the observation notes, the researcher found a significant latent demand for display furniture among male owners in the two Type B households (Table 5.18). This problem was first noted in the Q92711 household, where the male owner and a male guest repeatedly expressed a desire for a display cabinet in the living room to showcase family photos, children's awards, and various crafts. Subsequently, the male owner of Q92715 expressed, *“I plan to buy a bigger TV cabinet to showcase my gourds, along with decorative items, books, vases, and children's awards.”* This indicates that male owners have a strong demand for additional display furniture in the living room. This demand reflects villagers’ pursuit of quality-of-life following

improvements in their economic conditions, as well as their emphasis on family culture and aesthetics.

5.3.4 Theme 9: Problems of Private Space of The Male Owners in Type B Houses

During the research process, it was found that most male villagers are engaged in work outside the home during the day, with their time at home typically concentrated in the evenings, posing certain challenges to the study. However, through six days of observation in two Type B households, it became evident that the demand for private space among male owners was particularly pronounced (Table 5.18).

In the observation of the Q92715 household, the researcher noted that tools such as pliers, hammers, unfinished stools, and various forms of gourds were placed on the living room sofa and tea table. The female owner said that this area served as the main site for the male owner's handicraft activities after work. she would carefully avoid these tools when cleaning the house, but because these tools are messier and more difficult to clean, she repeatedly complained about the male owner's untidy habits. She also mentioned that she had sorted out the items when the male owner was not at home, but there were many arguments over it.

In contrast to the Q92715 household, the Q92711 household provided a more defined private space for the male owner. In this household, the male owner had constructed a small shed in the front yard specifically for storing repair tools and fishing equipment. His alone time was concentrated between 7:00 PM and 8:00 PM. The field notes recorded by the researcher state: *“At 7:00 PM, after a simple dinner, the male owner walked directly to the shed to organise the tools and equipment inside. The shed was tidy and well-organised, with various tools and equipment classified and arranged. At 7:15 PM, he began repairing a fishing rod, meticulously checking each component.*

During this process, he appeared very focused, seemingly immersed in his own world without saying a word to me. At 7:45 PM, he organised his tools and made a list of items to purchase at a nearby workbench. By 8:00 PM, he completed the day's organization and repairs and closed the shed door." In discussions with the researcher, the male owner emphasised the importance of this solitary space, viewing it as a means to escape daily trivialities and stress, as well as a necessary place for contemplation and planning future tasks.

Through the situations observed in these two households, further observations during subsequent field investigations revealed that in other households, the tools or preferred items used by male owners lacked a designated storage location, often appearing in the living room, utility rooms, or even corners of the yard. This problem stemmed mainly from the absence of a dedicated private space for male owners to store these items within the family living environment, leading to frequent dissatisfaction among female owners regarding the haphazard placement of tools. Therefore, it is particularly important to reserve a private space for the male owners.

5.3.5 Theme 10: Problems of Cooking in The Kitchen of The Type B Houses

Table 5.21 Statistics on the problems of cooking in the kitchen of the Type B houses

Name	Total number of households with observation notes / number of households with problems	Total number of days of observation/number of days with problems	Total number of incident scenarios observed/number of times problems occurred
Theme 10: Problems of cooking in the kitchen of the Type B houses	2/2	6/6	18/18
a) Problems with cooking space	2/2	6/6	18/18
b) Problems post-meal cleaning	2/2	6/6	18/18

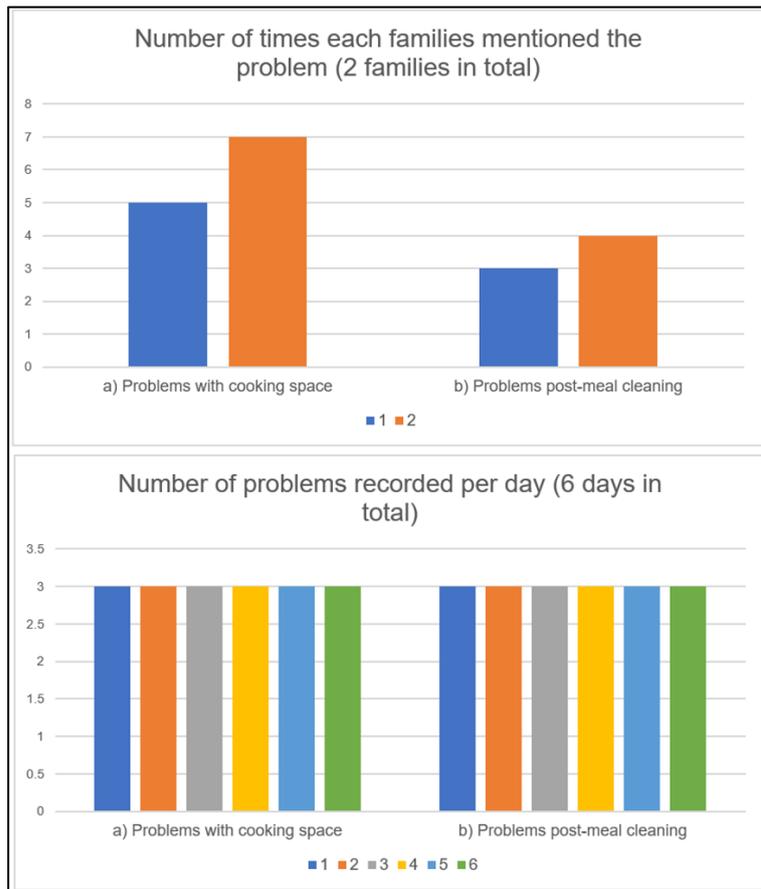


Figure 5.34 Coding of theme 10

During a six-day participatory observation of kitchen activities among family members in Type B houses, the researcher recorded 6 days (Three meals per day, for a total of 18 instances over 6 days) of cooking processes and identified two significant problems: the limited space in the cooking area and the difficulties in post-meal cleaning (Table 5.21; Figure 5.34).

The problem of restricted space in the cooking area was evident in each cooking instance. For example, during the observation of the Q92711 household, the research records detail the female owner's actions while preparing dinner: *“The female owner began preparing dinner, placing the necessary ingredients and seasonings on the kitchen cupboard, floor, and stools...She could not operate both cooking vessels simultaneously in the kitchen. She decided to stir-fry in the kitchen while moving the*

steamer to a corner of the living room, plugging it in to begin steaming the dumplings (the living room became a temporary cooking area). From 5:11 PM to 5:30 PM, she toggled between the kitchen for stir-frying and the living room to check on the steamer, adeptly navigating between the two areas six times. She told the researcher that such scenarios occurred almost daily due to the kitchen being too small to accommodate multiple cooking tools at once.” This scene illustrates the limitations of kitchen space design, forcing some cooking activities to occur in the living room. Thus, future kitchen space design needs to prioritise reasonable layout and optimization of tool storage to enhance space utilization.

Regarding post-meal cleaning, it was discovered that the inadequate allocation of space for the kitchen sink severely impacted cleaning efficiency. This problem was observed in the 18 cooking instances, primarily occurring after lunch and dinner each day. In the observation diary for the Q92715 household, it was noted: *“After finishing dinner at home, the female owner first attempted to wash one large frying pan that had not been properly cleaned after lunch. This large pan could not fit entirely in the sink, so she had to place part of it in the sink while the other part remained outside. She first cleaned the interior of the pan in the sink, then flipped it over to scrub the bottom, splashing water everywhere, leaving the floor tiles under the sink soaked. She temporarily placed the cleaned frying pan on the floor and sequentially placed eight bowls, five plates, six pairs of chopsticks, and four spoons into the sink for cleaning... She placed the cleaned bowls and plates on the edge of the sink, but the dirty water she was rinsing often splashed onto the clean dishes.”* This indicates that the small sink space forced the female owner to adopt inconvenient methods, resulting in splashing water that made the floor slippery. More seriously, during cleaning, due to insufficient sink space, the already cleaned dishes had to be temporarily placed on the sink's edge, making them susceptible to contamination by dirty water, significantly lowering cleaning hygiene standards.

In summary, improvements need to be made in the future design concerning the layout of the kitchen cooking space and the post-meal cleaning area.

5.4 Summary table of Problems and Demands Relating to Currently Used Furniture in Daily Life

Sections 5.2 and 5.3 provided a comprehensive analysis of the challenges associated with the currently used furniture in the context of daily life in rural Jidong. This section organises the findings in Table 5.22, enabling a systematic examination of furniture issues and needs across the different spaces in Type A and Type B houses.

Table 5.22 Problems and demands relating to currently used furniture in daily life

Home space	Currently used furniture	Specific problems/use scenarios	Demand transformation
Inner room (Type A houses)	kang and peripheral products	Overheating of the kang may cause skin burns, which are especially dangerous for children.	Effectively control the temperature of the kang surface; provide long-term stable heat-insulating material for the kang surface
		The mismatch between the height of the kang and the sofa	Height-matched sofa furniture design; reasonable furniture layout adjustment, so that both sides of the conversation can maintain a comfortable distance and eye level
		Adults under 1.55 metres in height, adolescents, children and persons over 65 years of age have difficulty getting on the kang.	Provision of kang-side aids: A design is needed that can help a person get on and off the kang easily, ensuring safety and convenience.
		Cluttered shoes on the side of the kang are disruptive to walking and increase the risk of tripping and	Reasonable storage space: Shoe racks or storage areas are needed to avoid shoe clutter.

		falling.	Safety and security: the design needs to be trip-proof, with special consideration for children and the elderly.
		Problems of mosquito nets on the kang. Traditional mosquito nets: the mesh is too big to effectively prevent mosquitoes. Commercially available mosquito nets: the size is not suitable for the bed, the price is expensive. Homemade mosquito nets: wire bracket is a potential safety hazard, especially for children.	Functional requirements: need smaller mesh, can effectively prevent mosquitoes. Suitable size: able to cover the whole kang. Structure, material and safety: avoid using dangerous materials such as wire.
	The combination TV stand	Poor access to clothing in the wardrobe area. Lack of layering design: clothes are stacked together, making it inconvenient to access them. Excessive depth: bending or squatting is required to fetch the clothes on the bottom layer, which is especially unfriendly to the elderly. Insufficient lighting: poor lighting inside the cabinet makes it difficult to find clothes.	Increased layering: allows clothes to be sorted and arranged for easy access. Optimise depth: reduce the frequency of bending or squatting to improve comfort. Improved visibility: enhances interior lighting.
		The functional zoning in the centre is not clear enough, resulting in cluttered placement of items.	Functional partition: easy to categorise and store items. Storage design: suitable for different types of items.
	Clotheslines and fans	The proximity of the clothesline to the electric fan is a safety hazard.	Avoiding contact between the fan and the items to be dried provides a flexible solution for drying clothes without disrupting daily life.
The hall (Type A houses)	Chopping board	Stovetop casework drop boards are unstable and tend to slide or fall, which can cause smashes or cuts.	Improved stability, safety and ease of handling of boards

	Water tank	<p>Water storage safety issues: old tanks are at risk of breakage due to cracks and icing.</p> <p>Difficulty in cleaning and moving: the heavy weight of the tank when full of water makes it very difficult to clean and move.</p> <p>Plastic buckets are insufficiently load-bearing and easily damaged.</p>	<p>Improvement of safety:</p> <p>Improvement of the material and structure of the tank is needed to enhance the low temperature resistance and structural strength.</p> <p>It needs to be easy to clean and move, and also to improve load-bearing capacity</p>
Bedroom (Type B houses)	Wooden beds	<p>There is a lack of mattresses with the right firmness and size.</p> <p>The surface of the mattress is not flat.</p>	<p>Suitable firmness: need to design a mattress with a firmness equivalent to 4-5 layers of old quilts.</p> <p>Suitable size: 2 metres x 2 metres</p> <p>Suitable material: flat and comfortable</p>
	Bedroom seating	<p>Safety hazards: bedroom seating is not enough to sit on, villagers use different kinds of sitting tools in the bedroom; in order to reduce the cost of purchasing, villagers make their own improved seating tools</p> <p>Diversity of needs: they want the seats to have a storage function.</p>	<p>Harmonise sitting specifications: eliminate the safety hazards of different types of seating.</p> <p>Unify bedroom seating specifications: control material and cost price so that villagers can afford to buy.</p> <p>Functional design of bedroom seats: storage function.</p>
	Writing desk	<p>Families with children: The high height of the writing desk and the lack of a matching chair discourage children from using it.</p> <p>Families without children: the writing desk is stacked with sundries and under-utilised.</p>	<p>Child-friendly design: complementary amenities to improve chairs. chair heights need to be adjustable.</p> <p>Functional needs: multi-functional renovation programme to improve furniture utilisation.</p>
Living room (Type B houses)	Problems with the male master's private space	<p>Lack of private space: the tools and belongings of male hosts are placed randomly, affecting the tidiness of the household and easily triggering family conflicts and clashes.</p> <p>Irregular placement of tools: No</p>	<p>Private space needs: male masters need a fixed private space.</p> <p>Tool storage needs: need an orderly tool storage space or cabinet, easy to manage and keep tidy.</p>

		special storage space for tools, which is inconvenient to manage and affects aesthetics and safety.	
	Shoe furniture (shoe cabinets, shoe racks, shoe boxes)	Shoe cabinets have insufficient capacity to meet family shoe storage needs. Plastic shoe racks have poor load-bearing, easy to deform, and are a potential safety hazard. Old shoeboxes are not moisture-proof, difficult to classify and messy in appearance.	Storage demand: shoe loading furniture needs large capacity Load bearing and stability: durability should be high Practicality: moisture-proof, convenient storage and classification.
	Display furniture	The living room lacks display furniture: it is used to display the collection of the man of the house. The display furniture needs to be aesthetically pleasing and practical.	Demand for display furniture: need display cabinets, display cabinets should not only have the function of display, but also with the overall design of the living room to harmonise, beautify the environment.
	Eating Furniture (dining tables and tea tables)	Wooden dining table: Although the wooden dining table is designed to be used for formal meals, villagers mostly use it for stacking sundries, and the actual meals are mainly held on the tea table in the living room. Adaptability of the height of the coffee table: The height of the tea table is similar to that of the traditional kang table, which is in line with the villagers' dining habits, but there is no suitable sitting furniture.	The dining habits of villagers should be preserved and adapted to the use of tea tables for meals. Optimise the design of seating: design seating or sofas that fit the height of the tea table (kang table) to meet the dining needs of a large number of family members.
Common furniture (Type A and Type B houses)	Kang tables as dining tables and entertainment furniture	Difficulty of movement and use: kang tables are heavy and difficult to move. Lack of matching sitting furniture makes it uncomfortable to use. The size and height of the table are not suitable for use as	Improve mobility: Design lighter or with lockable wheels for ease of movement. Provide matching seating: Design specialised seating to match the height of the table to ensure comfort.

		entertainment furniture.	Regarding the length, width and height of the kang table, as it is a continuation of traditional furniture, it is best not to adjust the size and height of the kang table and choose other products to use as entertainment furniture.
	New cupboards (halls and kitchens)	No functional zoning: pots and pans, cutlery, spice bottles, etc. are mixed, making them more difficult to access and risking breakage. Uncomfortable height: the height of the cupboards is not ergonomic, causing villagers to bend or squat frequently, resulting in physical discomfort. Insufficient storage space: the upper countertop and lower storage space cannot meet villagers' needs, leading to accumulation of items and kitchen clutter.	Increase storage space Optimise functional zoning Adjust cupboard height
	New cupboards and sinks (Problems with cooking space in type B kitchens)	Unreasonable cooking space leads to inefficient cooking. Problems with post-meal cleaning using the sink	Cooking space rationality needs: Ensure flow and co-ordination between cooking areas (e.g. hob, chopping area, sink, etc.) in newer cupboards to improve cooking efficiency. Post-meal cleaning needs: Setting up an effective post-meal cleaning programme, including sensible sink zoning design.
	Sitting furniture (stools) (Every space in the house) (wooden stools, plastic stools and iron ring stools)	Wooden stools: narrow surface, uncomfortable to sit on. Plastic stools: easy to break, not strong enough. Iron ring stools: bulky and uncomfortable to sit on. Safety Hazard: the various types of stools scattered in the hall are a safety threat to the elderly and children. Space Occupancy: Many stools piled up in the house makes the	Improvement of comfort, durability and safety (stability and anti-slip) of the seating, redesigning the seating to be more ergonomic. Stacking design reduces space occupied in the hall

		house look cluttered and disordered, and the space utilisation rate is low.	
	Partition	Privacy problem: Type A houses have curtains instead of doors, resulting in poor privacy and frequent offence. Health problem: Type B houses have no partition between the kitchen and living room, spreading fumes into the living room and bedrooms, affecting health.	Privacy protection needs: better partition design is needed to improve the privacy of the house. Health protection needs: partition is needed to solve the problem of spreading grease and smoke from the kitchen and to improve indoor air quality.

Type A houses:

In the inner room, overheating the kang surface poses a significant risk of skin burns. Addressing this requires effective temperature regulation. The height disparity between the kang and the sofa disrupts visual alignment. It causes physical discomfort, necessitating the design of height-compatible sofas and the optimization of furniture arrangements to facilitate comfortable social interactions. The difficulty of getting on the kang calls for developing safe and practical assistive tools to accommodate people under 1.55 metres in height. The clutter of shoes near the kang increases tripping hazards, highlighting the need for secure and convenient shoe storage solutions. In addition, for mosquito nets that are ineffective against mosquitoes, in appropriate sizes and safety hazards, there is a need to design safe, kang-sized and affordable anti-mosquito mosquito net solutions.

Regarding the combination TV stand, difficulties in accessing items from wardrobe areas and poorly defined functional partitions in the middle area. It is necessary to design a wardrobe with reasonable layering and moderate depth, and to optimise the functional zoning to improve the efficiency of sorting and storing items and visual cleanliness. Moreover, safety concerns arise from the proximity of clotheslines to

electric fans, necessitating designs that ensure safe distances or provide flexible and efficient drying solutions.

In the halls, the design of stable and easy-to-use chopping boards is required to reduce the risk of injury from sliding and falling. In addition, to address the safety hazards and difficulties in cleaning and moving water tanks, the materials and structure of water tanks need to be improved to enhance safety and to design lightweight and easy-to-clean tanks.

Type B houses:

The main problem in the bedroom is the lack of mattress firmness in the wooden beds, which needs to be designed with moderate firmness (equivalent to 4-5 layers of old quilts) to ensure a size of 2 metres by 2 metres. Meanwhile, the safety hazards and functional needs of bedroom seating require the development of standardised wooden seating and the design of seating with storage functions to reduce costs. For families with children, child-friendly writing desks and matching chairs need to be designed; for families without children, multifunctional retrofitting solutions should be provided to increase the utilisation of unused writing desks.

In the living room, the male owner needs a dedicated private space for storing tools and belongings to improve household tidiness and reduce family conflicts. For shoe furniture, shoe cabinets, shoe racks and shoe boxes have their drawbacks, therefore, in terms of design strategy, shoe furniture needs to be redesigned to meet the storage needs, load-bearing capacity and stability of the villagers. In addition, the design of the display cabinet needs to display the male collectibles and family honours, while balancing aesthetics and practicality. For the unused dining table and the tea table for dining, the analysis showed that the wooden dining table did not meet the living

habits of the villagers. In contrast, the height of the tea table was like that of a traditional kang table, and matching sitting furniture needed to be provided.

Furniture common to both Type A and Type B houses:

kang tables face issues related to poor mobility and a lack of height-compatible seating when used as dining or entertainment furniture. This necessitates the design of lightweight, portable kang tables, accompanied by seating solutions that align with ergonomic standards. New cupboards in the halls or kitchens present challenges in cleaning, storage capacity, and height adaptability, necessitating improved functional zoning, increased storage space, and height adjustments to align with ergonomic principles. Issues with sitting stools in Type A halls and Type B houses highlight the need to minimize the variety and quantity of sitting to reduce tripping risks. Finally, partition furniture in both house types lacks the functionality to ensure privacy and mitigate the spread of kitchen fumes, emphasising the need for effective partition designs that enhance privacy protection and improve indoor air quality.

5.5 Summary of Phase Three

In this chapter, this analysis was carried out through semi-structured interviews, field notes, and participant observation notes, integrating both the perspectives of respondents and the researcher. Utilizing NVivo software for systematic data processing and coding, the study identified 10 themes and 21 sub-themes.

Based on these data, the researcher has successfully analysed the current problems and needs related to furniture in daily life in rural Jidong. Figure 5.35 shows the current furniture with serious problems in its use summarised in this chapter: the furniture of type A houses, the furniture of type B houses, and the furniture used in

both types of houses. The corresponding design principles for this problem furniture are given in Chapter 8.

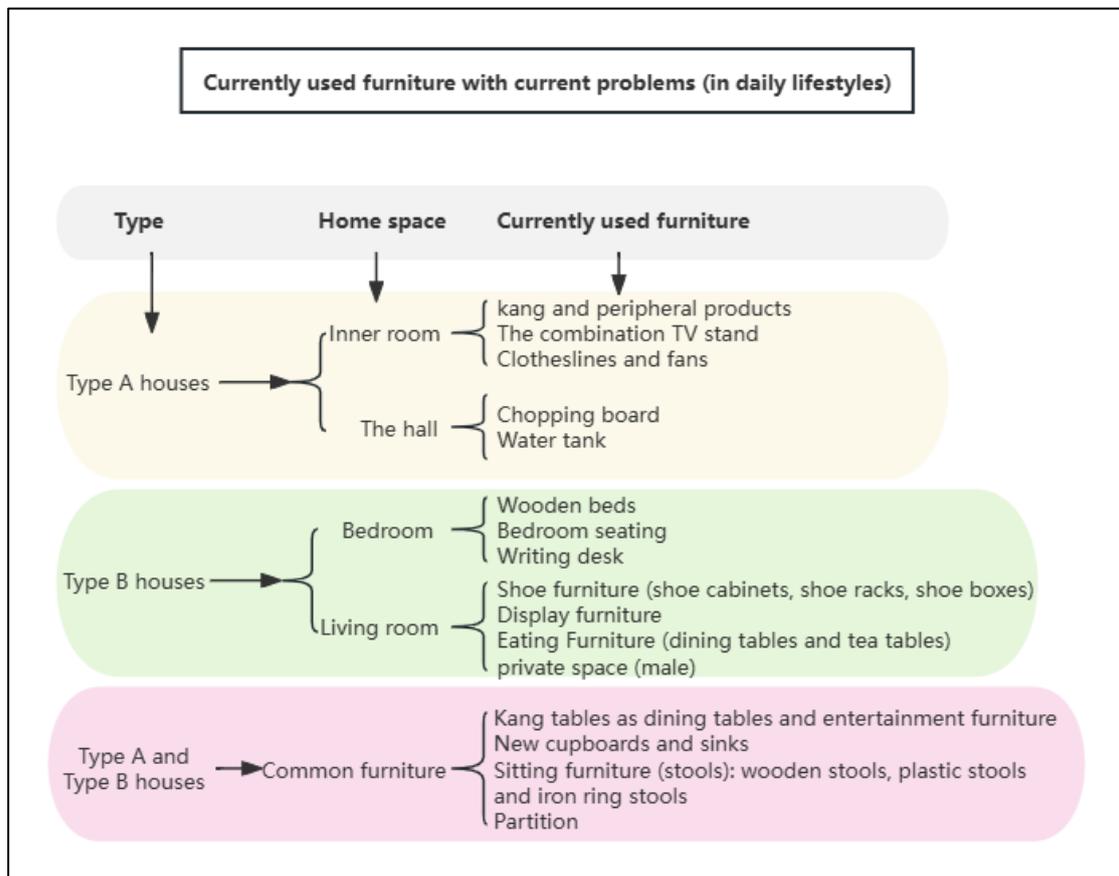


Figure 5.35 The current furniture with serious problems in daily lifestyles

6 Findings and Analysis from Phase Four

6.1 Introduction

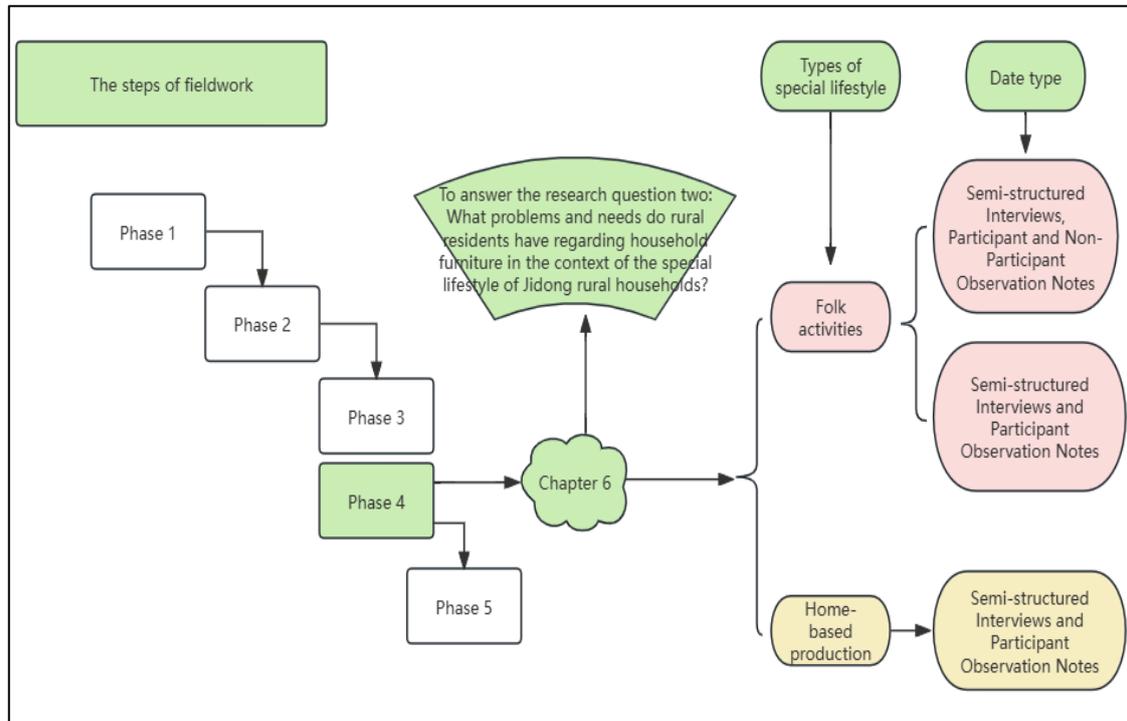


Figure 6.1 Introduction to chapter 6

To answer the research question of ‘the problems and needs of the furniture used nowadays in the special lifestyle of Jidong villages’, the researcher collected two types of data (Figure 6.1). Firstly, interview data, participant observation notes and non-participant observation notes were collected on the problems and needs of furniture when Jidong villagers organise folk festivals (such as weddings and New Year) at home. Secondly, interview data and participant observation notes were collected on the problems and needs that arise for furniture when Jidong villagers are home-based production (as exemplified by the village shop, mahjong parlour and processing factory). This chapter goes through a systematic thematic analysis of these data.

A total of 19 main themes were generated in this phase (Figure 6.2). Of these, the first eight themes were based on data analyses of furniture used to host folklore events at home in special lifestyles, while the last eleven themes were specific to data analyses of furniture used for home-based production at home in special lifestyles. These analyses provide an important theoretical basis for the design principles in the subsequent chapters.

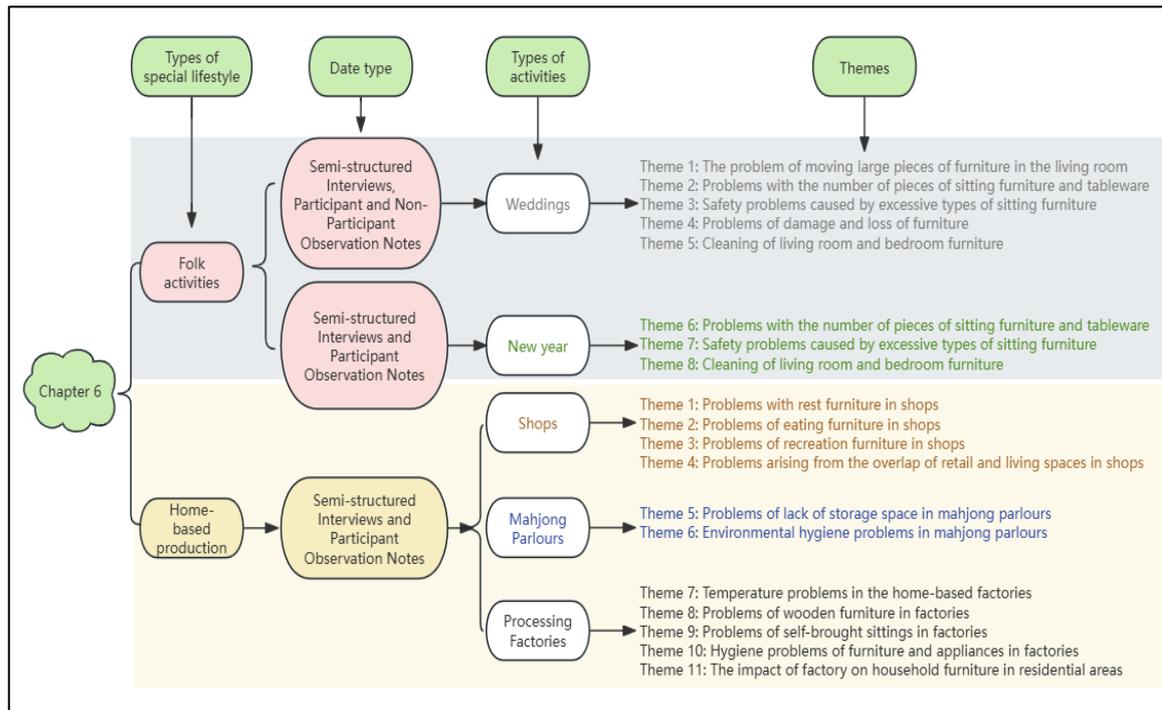


Figure 6.2 Themes of phase 4

6.2 Semi-structured Interviews, Participant and Non-Participant Observation Notes

Table 6.1 Thematic analysis theme statistics: furniture problems during weddings

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households at weddings/ number of households with problems	Total days of participant observation/ number of days with problems	Number of times questions appeared in participant observation notes	Total days of non-participant observation/ number of days with problems	Number of times issues arose in non-participant observation notes
Theme 1: The problem of moving large pieces of furniture in the living room	5/5	27	4/4	9/9	9		
Theme 2: Problems with the number of pieces of sitting furniture and tableware	5/5	22	4/4	9/9	35	3/3	12
Theme 3: Safety problems caused by excessive types of sitting furniture	5/5	6	4/4	9/9	13	3/3	5
Theme 4: Problems of damage and loss of furniture	5/5	10	4/4	9/9	52	3/3	23
Theme 5: Cleaning of living room and bedroom furniture	5/5	7	4/4	9/9	22	3/3	17

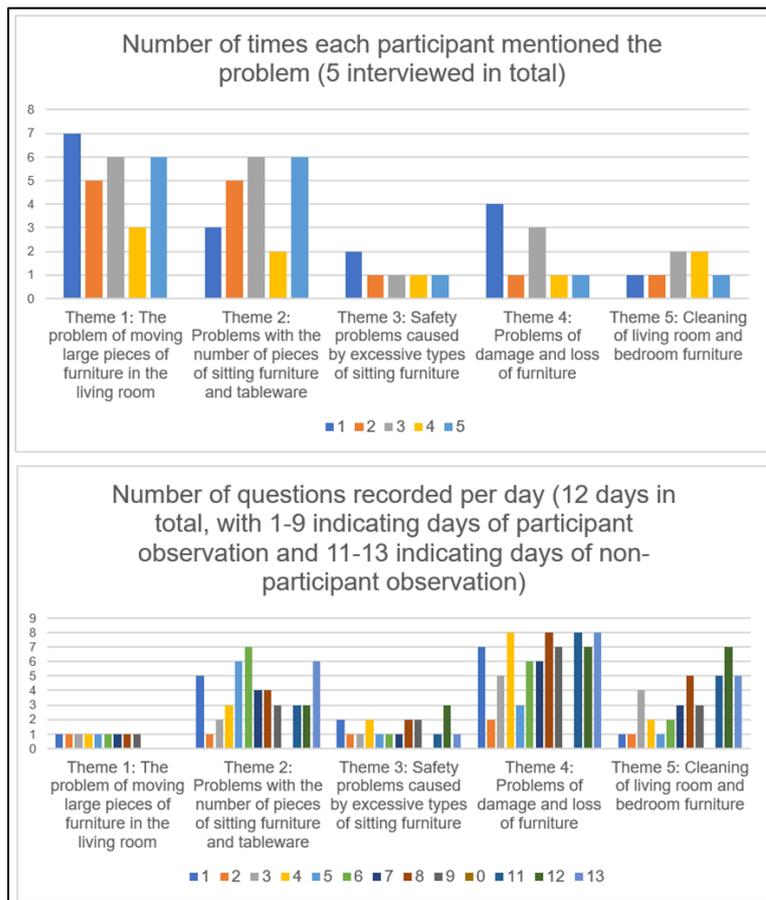


Figure 6.3 Coding of themes one to five (weddings)

All observed weddings took place in Type B houses, with feedback collected from 5 interviewees through semi-structured interviews. The study spanned 12 days across four families, including 9 days of participant observation and 3 days of non-participant observation (Figure 6.4; Table 6.1). Figure 6.3 illustrates the frequency of each issue mentioned by respondents, all of which were high. It also details the furniture-related problems encountered under both observation modes and their daily occurrence rates.

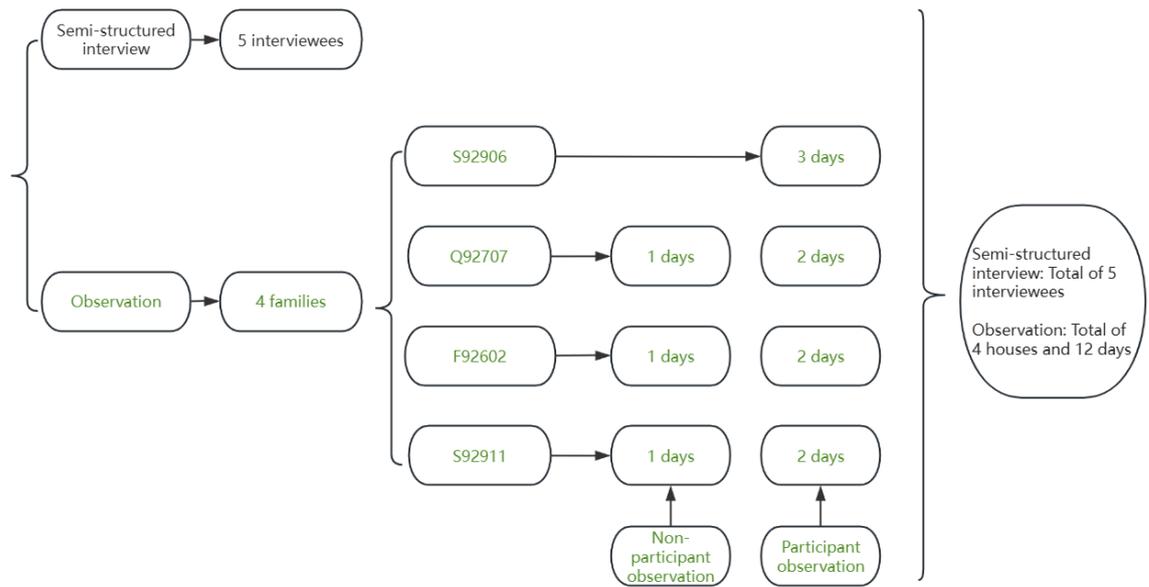


Figure 6.4 Composition of data for Phase 4 (Weddings)

6.2.1 Theme 1: The Problem of Moving Large Pieces of Furniture in The Living Room

In rural Jidong, wedding ceremonies last for three days, during which limited rural household space must accommodate approximately 40 guests. As a result, all living room furniture must be moved to storage rooms on the eve of the wedding and then returned to its original place after the event (Figure 6.5). While moving small furniture pieces is relatively easy, relocating and rearranging large items such as sofas, tea tables, TV cabinets, and refrigerators pose significant challenges.



Figure 6.5 Living room furniture in the grocery room and as a living room for feasting guests during the wedding in S92906

This problem was mentioned by all interviewees and was repeatedly noted in the researcher's 9-day observation notes during the weddings (Table 6.1). For example, during the wedding at the S92906 household, the day before the wedding was described as follows: *“Three neighbours helped move all the living room furniture to the storage room. The sofa was moved by three people to the storage room...The TV cabinet and refrigerator were moved by two people... Li carried the tea table into the storage room. The entire process took three hours.”* The day after the wedding, the Aunt Wang, the son, the daughter-in-law, and the researcher spent four hours moving the items back to the living room. Villagers also shared similar experiences, such as during Uncle Wang's funeral when the living room furniture was moved to the storage room to create space for a mourning hall.

In summary, moving and rearranging large living room furniture is a common and serious challenge for rural households with limited space during weddings (or funerals), necessitating design interventions.

6.2.2 Theme 2: Problems with The Number of Pieces of Sitting Furniture and Tableware



Figure 6.6 Kitchen and living room scene for entertaining guests during the wedding in F92602

In rural Jidong, weddings usually last three days, with 40 to 200 people eating each meal at the home where the wedding is being held. Forty guests are usually arranged to eat in the living room and bedrooms first, and the rest eat in the yard or on the street. To accommodate such a large crowd, wedding families need numerous tables, chairs, benches, and table wares¹³ from their storage rooms for guest use (Figure 6.6).

However, the number of sittings and table wares was insufficient. This problem was mentioned by all five interviewees and was observed in all four households (Table 6.1). For instance, On the day of F92602's wedding, participant observation notes recorded: *"Many guests couldn't find seats (sits)... Uncle Chen was busy entertaining guests while asking the younger members of the family to borrow more benches from neighbours... Seven young men stood by the tables, eating with one hand holding a bowl and the other holding chopsticks... Aunt Chen noticed that all the household tableware had been used up, but there were still dishes to be served... Uncle Chen said, 'I'll go borrow some from the eldest aunt's house.' At 11:41, Uncle Chen returned with plates from a neighbour."*

This indicates that there are not enough sitting furniture and table wares for weddings because there are too many guests. To solve these problems, villagers usually borrow them from their neighbours. However, this is not a permanent solution; there are many other traditional festivals similar to weddings that are held at home throughout the year, and the same need to accommodate a large number of guests makes it necessary to have a sufficient number of sitting furniture and table wares prepared in advance for these festivals.

¹³ Table wares refer to the utensils and appliances used to ingest food, including knives, forks, bowls, plates, and pots.

6.2.3 Theme 3: Safety Problems Caused by Excessive Types of Sitting Furniture

The issue of safety hazards caused by different types of sitting furniture that can be scattered in the room arose not only in daily life, but also in special life during the organisation of weddings. It was mentioned in the records of five interviewees and in four households (Table 6.1). On the wedding day at Q92707, non-participant observation notes recorded: *“Six children were running around the living room, and a little girl tripped over a bench, knocking it over. The little girl fell onto the boy in front of her, and they both tumbled to the ground, with the boy hitting his head on the corner of the round table.”* D93013 respondent mentioned a temporary solution: he used a makeshift carpet to divide the living room into a rest area and a dining area, but it was ineffective as guests neither noticed nor followed the division. The movable carpet only increased the cleaning burden. This clearly demonstrates that, as with the sitting furniture issues studied in daily lifestyles, the large number and variety of types of sitting furniture during weddings present safety hazards and require design intervention.

6.2.4 Theme 4: Problems of Damage and Loss of Furniture

The problem of damage and loss of furniture during the preparation and organisation of weddings in the Jidong region was particularly prominent during weddings, and was mentioned by five interviewees and four households (Table 6.1). In the case of household Q92707, the day before the wedding, large household furniture, such as sofas, coffee tables, and TV cabinets, were moved to the storage room temporarily to make space for the banquet setup. The researcher observed one side of the TV cabinet hit the door frame during the move, causing the paint on the cabinet corner to peel off. One leg of the tea table had become loose due to frequent movement.

In addition, on the day of S92906's wedding, the researcher recorded: *“At 2:27 PM, a woman at the table beside the west wall placed two pairs of chopsticks and three bowls into a plastic bag and then left.”* After the wedding the researcher counted the lost items in the four families. For example, the S92906 household lost seven bowls, twenty-seven pairs of chopsticks, and six wooden stools; the Q92707 household lost thirty pairs of chopsticks, four bowls, five plates, and four plastic stools.

These data indicate that damage to furniture and loss of items are two issues of concern during wedding organisations in the Jidong region. In future wedding preparations, families need to pay more attention to protective measures for furniture and make prior arrangements for the safekeeping of items to reduce damage and loss.

6.2.5 Theme 5: Cleaning of Living Room and Bedroom Furniture

During wedding guests' meals in rural Jidong, furniture surfaces are often accidentally spilled with oil, drinks or food residues by guests, leaving stains that are difficult to remove. Four households and five respondents mentioned this problem (Table 6.1). For example, on the wedding day of S92906, where non-participatory observation notes recorded: *“Seven children were playing in the living room, and they knocked over a bottle of drink for the third time... After the villagers finished eating, the entire living room and bedroom were in disarray. The aunt briefly cleaned the dining table in the bedroom with a cloth and broom... The aunt swept the candy wrappers and sunflower seed shells from the kang onto the floor... This was the fourth time the aunt tidied up the scattered stools and trash in the living room today.”*

These observation records reveal that the cleanliness problems during wedding ceremonies are not limited to the living room; bedroom furniture is also affected. The

difficult-to-remove stains, scattered trash, and frequent cleaning tasks impose a significant burden on the household. To alleviate this burden, protective measures could be taken for furniture before the wedding, or furniture design could incorporate materials that are easier to clean and maintain, better catering to the demands of rural weddings.

6.3 Semi-structured Interviews and Participant

Observation Notes



Figure 6.7 Composition of data for Phase 4 (New Year)

This section presents data collected from two perspectives: respondents and the researcher. The study included six semi-structured interviews and a four-day participant observation of one household (Figure 6.7). The findings highlight furniture-related issues encountered by villagers in rural Jidong during the New Year, with problem types and frequencies detailed in Figure 6.8 and Table 6.2. These data form a crucial basis for the proposed design principles.

Table 6.2 Thematic analysis theme statistics: furniture problems during the new year

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of families in the New Year / number of families with problems	Total days of participant observation/number of days with problems	Number of times questions appeared in participant observation notes
Theme 6: Problems with the number of pieces of sitting furniture and tableware	6/6	11	1/1	4/4	13
Theme 7: Safety problems caused by excessive types of sitting furniture	6/6	9	1/1	4/3	13
Theme 8: Cleaning of living room and bedroom furniture	6/6	17	1/1	4/3	17

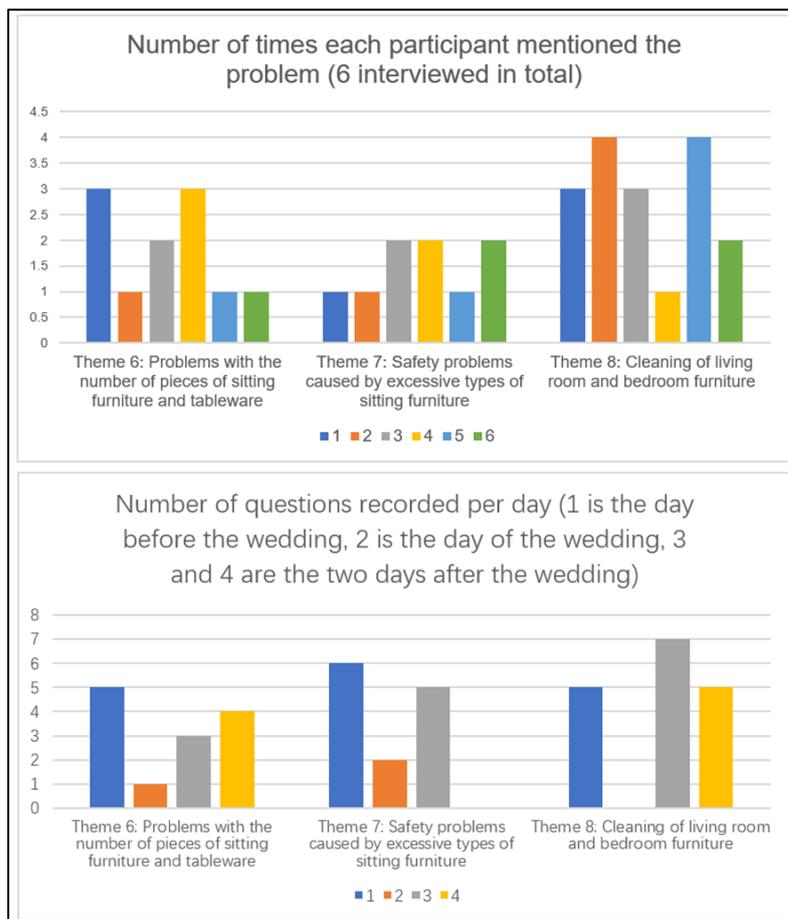


Figure 6.8 Coding of themes six to eight (new year)

6.3.1 Theme 6: Problems with The Number of Pieces of Sitting Furniture and Tableware



Figure 6.9 Q92706 New Year's Eve gathering in bedroom and living room

As in the case of Jidong village weddings, during the organisation of New Year's events, not only the gathering of family members on New Year's Day, but also relatives and friends need to be gathered at their homes to pay their respects and have meals for 10 days after the New Year, and the number of people can reach up to 40 (Figure 6.9). As in the case of weddings, the problem of insufficient seating and tableware also arises when celebrating the New Year. Six interviewees and one observed family mentioned this problem (Table 6.2).

Therefore, in rural Jidong, during large gatherings, whether for weddings or New Year's celebrations, the problem of insufficient seating and tableware becomes particularly prominent when the number of diners far exceeds that of the household members, directly affecting the dining experience.

6.3.2 Theme 7: Safety Problems Caused by Excessive Types of Sitting Furniture

Similar to weddings, during the New Year, the problem of various stools scattered around the living room and bedroom causing safety hazards arises due to the need to accommodate guests and family members within a limited home space. This problem

was mentioned by all six respondents, but in the observation notes, it was only recorded on the 3 days when 40 guests were received (Table 6.2). Therefore, how to rationally arrange and store a wide variety and a large number of sitting furniture needs attention not only in daily life but is also a design issue that deserves attention during special folk events.

6.3.3 Theme 8: Cleaning of Living Room and Bedroom Furniture

During the New Year, cleanliness problems with living room and bedroom furniture were mentioned by six people and recorded in the four-day observation, except on New Year's Day (Table 6.2). This is mainly due to the traditional culture of needing to clean the entire room to welcome the God of Wealth on the day before the New Year. Cleaning the house is not allowed on New Year's Day, so the dirtied furniture is then cleaned on the two days after the New Year, which mainly consists of the living room eating furniture and the bedroom tables, chairs and seating furniture. This issue is also seriously mentioned during weddings and is an urgent issue that needs to be addressed.

6.4 Summary table of Problems and Demands Relating to The Currently Used Furniture in Folklore Activities

Sections 6.2 and 6.3 provided a detailed analysis of the furniture-related problems encountered by villagers in rural Jidong when hosting folklore activities such as weddings and New Year's celebrations at home. The findings are presented in Table 6.3.

Table 6.3 Problems and demands relating to the currently used furniture in organising folklore events at home

Home space/ activity	Currently used furniture	Specific problems/use scenarios	Demand transformation
Living room/wedding	Large pieces of furniture (sofa, TV stand, tea table)	Inconvenient moving of large pieces of living room furniture: household space is limited, but large pieces of living room furniture need to be moved during events, even though narrow doorways and walkways.	Lightweight and modular furniture that is easy to move and reassemble for placement.
Living room and kitchen/Wedding	Large pieces of living furniture (sofas, TV cabinets, tea tables)	Large pieces of furniture in the living room are not effectively protected during handling, resulting in frequent damage problems.	The need to protect large pieces of furniture in the living room: protective measures need to be taken to prevent bumps and scratches to furniture during wedding preparations and moving of furniture.
	Small pieces of tableware (bowls, chopsticks, plates), and sitting furniture	Loss of kitchen tableware in the home is particularly serious and can be taken away by guests, either intentionally or unintentionally.	Anti-take-away measures for small furniture
Living room and bedroom / Wedding and New Year	Living room furniture and bedroom furniture	Difficulty in cleaning: Furniture surfaces are stained with grease, drinks and food residues and are not easy to clean.	Furniture materials need to be easy to clean/ Stain protection: furniture needs to be protected from staining before the folklore event.
	Household tableware	Insufficient number of tableware: insufficient plates and bowls for serving dishes, temporary borrowing of neighbours.	Expansion of tableware stock
	Sitting furniture	Insufficient sitting utensils: During weddings, the	Increase in the number of sitting utensils

		<p>number of sitting utensils is insufficient for the reception of guests, and they need to be borrowed from neighbours.</p> <p>there are too many types of sitting furniture in the home and they are not well organised, causing safety problems.</p>	<p>Unify the types of sitting furniture</p>
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According to the table, three common problems typically arise when rural households organise folklore activities like weddings and New Year celebrations: insufficient sittings and tableware, safety hazards caused by various stool types, and the challenge of cleaning the living room and bedroom furniture.

In addition, two additional problems emerge in the weddings: the difficulty of moving and rearranging large pieces of living room furniture, and the furniture damage and loss. Since the number of participants in wedding activities far exceeds the number of household members, with not only relatives and friends attending but also villagers and even strangers. This results in the complete transformation of the private space of the living room into a public space, where furniture not only needs to be moved to create more activity space but is also prone to damage or loss due to frequent use. Although large folklore activities like weddings are infrequent, typically occurring every 5-6 years, their impact on furniture management is significant and requires special attention.

6.5 Semi-structured Interviews and Participant Observation Notes

When researching problems related to furniture in home-based production in rural

Jidong, data was collected from 18 semi-structured interviews and participant observation of 18 production scenarios (Figure 6.10). Specifically, this research first interviewed 8 village shops, 2 mahjong parlours and 8 processing factories, and then observed the working scenes of each.

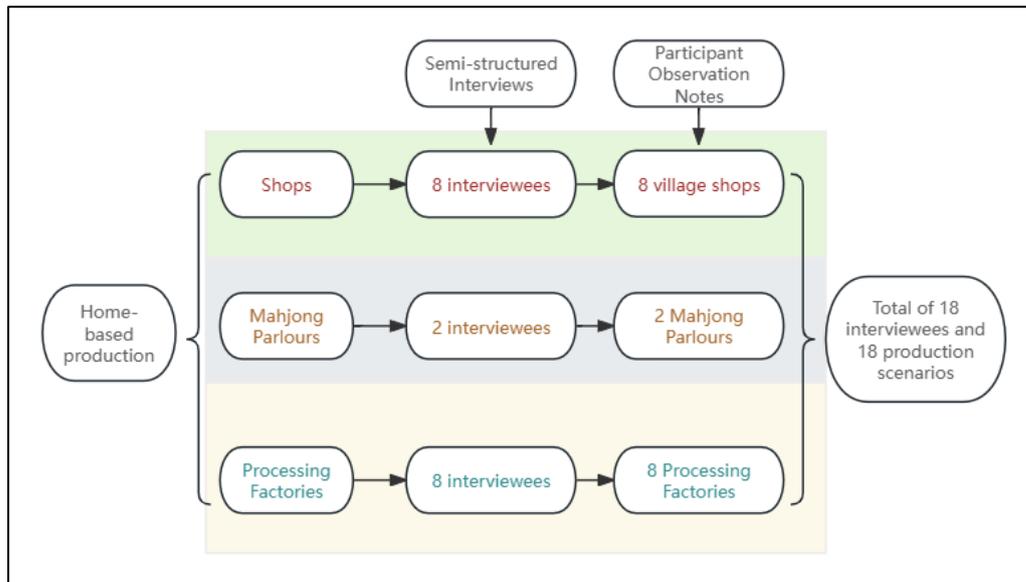


Figure 6.10 Composition of data for Phase 4 (Home-based production)

This subsection's thematic analysis is divided into three parts (Figure 6.11). First, Themes 1 to 4 focus on data from interviews and observations in village shops, highlighting common furniture problems. Interviews primarily reflect the views and ideas of shop owners, while observation notes document customer behaviour and interactions from the researcher's perspective. Second, Themes 5 and 6 concentrate on two mahjong parlours, analysing common furniture problems through interviews with parlour owners and observations of customer behaviour. Finally, Themes 7 to 11 address three types of processing factories, including sheet metal workshops, breakfast processing factories, vegetable shed factories, and animal breeding factories. Interview data reflect the perspectives of factory owners, while observation records illustrate the work behaviour of factory employees, revealing common furniture problems in production environments.

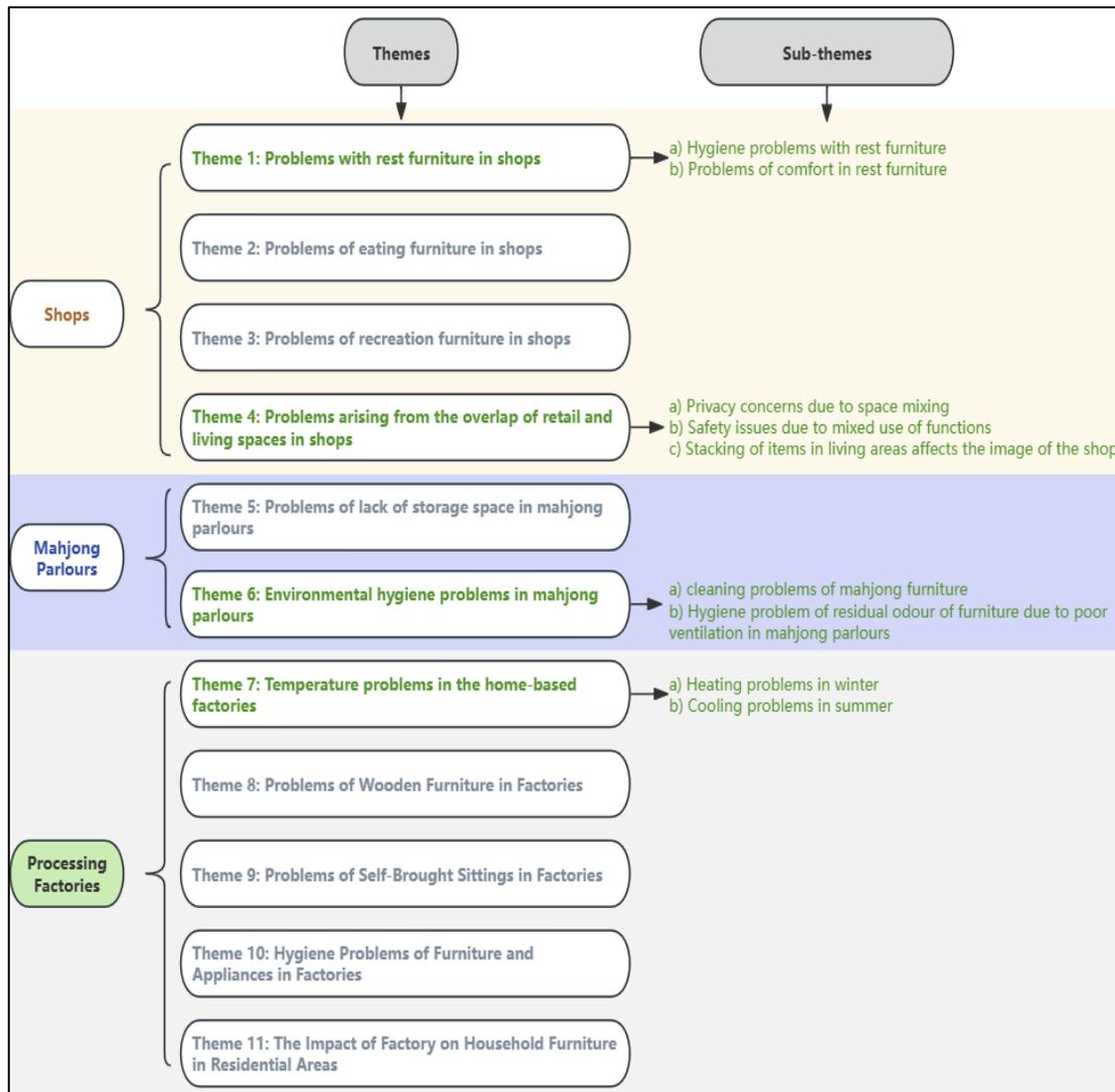


Figure 6.11 Detailed information on Theme 1 to Theme 11 of Phase 4

Table 6.4 presents 11 themes related to furniture in household production environments. Figure 6.12 illustrates the frequency with which each theme or sub-theme was mentioned by eight respondents from village shops during interviews, as well as its occurrence in eight instances of participant observation. The number of mentions ranges from 1 to 5, with a consistently high overall frequency. Figure 6.12 also shows the frequency of these themes mentioned by two interviewees from village mahjong parlours and recorded in the researcher's observations of these locations. It also displays the frequency of mentions by eight respondents from the village and

eight processing plants. While variations exist, all themes were referenced, underscoring their significance. The following sections provide a detailed analysis of each theme.

Table 6.4 Thematic analysis theme statistics: furniture problems during home-based production

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 1: Problems with rest furniture in shops	8/8	27	8/8	32
Theme 2: Problems of eating furniture in shops	8/8	24	8/8	23
Theme 3: Problems of recreation furniture in shops	8/8	11	8/8	10
Theme 4: Problems arising from the overlap of retail and living spaces in shops	8/8	31	8/8	32
Theme 5: Problems of lack of storage space in mahjong parlours	2/2	2	2/2	6
Theme 6: Environmental hygiene problems in mahjong parlours	2/2	7	2/2	17
Theme 7: Temperature problems in the home-based factories	8/8	25	8/8	25
Theme 8: Problems of wooden furniture in factories	8/8	11	8/8	13
Theme 9: Problems of self-brought sittings in factories	8/7	14	8/8	17
Theme 10: Hygiene problems of furniture and appliances in factories	8/8	8	8/8	19
Theme 11: The impact of factory on household furniture in residential areas	8/8	19	8/8	21



Figure 6.12 Coding of themes one to eleven (shop, mahjong parlours, processing factories)

6.5.1 Theme 1: Problems with Rest Furniture in Shops

During the second phase of fieldwork, three types of villages shops were identified based on the time of their conversion. These shops were converted from Type A yards and Type B yards around 1994, 2015, and 2020, respectively. There have been significant changes in the layout of rest areas and the configuration of rest furniture in these three types of shops.

In the earliest shops, a private rest area was specifically designated and equipped with kang furniture, providing a relatively spacious and comfortable rest space. Over time, the rest areas in shops gradually shrank, and the rest furniture evolved from kang to sofas, beds built from cement or bricks, and even simple sittings. Currently, village shops no longer have independent private rest areas, with only a single wooden bed for the staff or owner placed behind the cashier's desk, and household seating (sitting furniture) scattered in the selling area for customers to use. Regardless of the type of shop, there are two problems with the rest furniture (Table 6.5).

Table 6.5 Sub-themes of Theme 1: Problems with rest furniture in shops

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 1: Problems with rest furniture in shops	8/8	27	8/8	32
a) Hygiene problems with rest furniture	8/8	13	8/8	11
b) Problems of comfort in rest furniture	8/8	14	8/8	21

Firstly, the hygiene of the rest furniture in shops is difficult to maintain. This problem was widely mentioned by eight interviewees and was detailed in the participatory observation of eight shops. The types of rest furniture placed in shops are consistent with those mentioned in the residential house, including wooden stools, iron stools, plastic stools, wooden seats and sofas, among which the sofa problem is particularly prominent in the shop. For example, D93005's observation diary shows that several fabric sofas placed near the window of the shop had become visibly discoloured, with yellowing, water stains, oil stains, and dust on the fabric, emitting a slight odour. Although the shop owner occasionally cleans with a broom, thorough cleaning of the sofas is rarely carried out, leading to unsatisfactory hygiene conditions. Customers often wipe the sofa's surface before use, and some customers even leave early due to discomfort.

Secondly, regarding the comfort of rest furniture in shops, the study found that this problem needs to be explored from two perspectives. On the one hand, the comfort of rest furniture provided by shops for customers' needs to be improved. This problem was mentioned by only one interviewee, but observation notes revealed that five out of eight shops had this problem. Among these shops, three provided sofas as rest furniture. For example, in the observation record of the S92916 shop, *"I chose to sit on the sofa in the corner, casually picked up a magazine, pretending to read it, but was actually observing the behaviour of customers in the shop. In about half an hour, five customers came in, four of whom walked towards the sofa area after checkout and sat down. They had no intention of leaving immediately. They started chatting with each other, discussing recent village news, and even picked up a few snacks from the table, apparently intending to buy more. Meanwhile, the shop owner also joined their conversation, and the whole atmosphere was very relaxed. After 20 minutes, they got up to check out, bought a few snacks and a bottle of drink, and left, saying they would come back another day."* In contrast, in the five shops that used ordinary sittings, customers had shorter stays, and only one instance was recorded where a customer used a small stool to briefly organise items. This demonstrates that comfortable seating, such as sofas, can extend customers' stay in the shop and increase their desire to purchase.

On the other hand, the comfort of seating or reclining furniture provided for shop owners or employees also needs improvement. This problem was mentioned in all eight interviewees' responses and recorded in the observation notes of all eight shops. Shop owners and employees are different from customers in that they use the rest furniture for a longer period, more frequently, and have higher requirements for the comfort of the rest furniture. S92917 respondents reported that sitting on a store stool for a long time often felt poor blood circulation in the legs and numbness in the feet.

Regarding reclining furniture, the main problem centres on the wooden bed behind the counter. Q92714 observation records show that during a 2-hour nap on the wooden bed, the shop owner frequently changed positions 59 times. He explained that the wooden beds currently in use are too hard, and prolonged leaning or lying on them can easily cause discomfort in the waist and back.

In summary, there are clear problems with the rest furniture in the shop in terms of hygiene and comfort, and there is an urgent need for design intervention.

6.5.2 Theme 2: Problems of Eating Furniture in Shops

The issues related to eating furniture in shops are primarily reflected in two aspects: insufficient quantities of tableware and sitting, and safety hazards caused by the excessive variety of sitting types. These issues were mentioned by eight respondents and documented during field observations in eight shops (Table 6.4).

In prior research on the currently used furniture during traditional festivals hosted at home, these problems were similarly highlighted. Moreover, during the third phase of this research, which examined issues with currently used furniture in daily life, these problems frequently reappeared. This indicates that these issues are both widespread and representative, deeply embedded in various aspects of people's lives, and have become pressing problems that urgently require resolution.

6.5.3 Theme 3: Problems of Recreation Furniture in Shops

The problem of recreation space in shops mainly revolves around the use of televisions. In village shops renovated around 1994, televisions were typically mounted on the walls, serving as a source of entertainment and attracting customers.

However, starting from 2015 and in subsequent years (including shops renovated from old and Type B yards in 2020), televisions are no longer placed in shops. Shop owners (F92601, D93005, S92919) provided two reasons to explain this change. First, the presence of a television may distract customers, leading them to overlook their shopping needs, thereby reducing shopping efficiency. Second, television programs divert the shop owner's attention from customers, affecting the quality of service and shop management.

Based on the above reasons, since 2015, shops that have undergone renovations decided not to set up televisions in the selling area. The social and entertainment space in shops has either completely disappeared or been merged with the dining space. This change reflects an adjustment in the shop's function to better meet customer needs and improve operational efficiency.

6.5.4 Theme 4: Problems Arising from The Overlap of Retail and Living Spaces in Shops

In the layout of rural shops, the retail area is often closely integrated with the living space, sometimes even sharing the same area. While this mixed-use layout provides convenience for daily operations and living, it also gives rise to the following three problems (Table 6.6).

Table 6.6 Sub-themes of Theme 4: Problems arising from the overlap of retail and living spaces in shops

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 4: Problems arising from the overlap of retail and living spaces in shops	8/8	31	8/8	32
a) Privacy concerns due to space mixing	8/8	8	8/8	8
b) Safety issues due to mixed use of functions	8/7	7	8/8	10
c) Stacking of items in living areas affects the image of the shop	8/8	16	8/8	14

Firstly, the unclear boundary between the retail and living areas leads to privacy concerns. Customers may inadvertently enter the family living space, disrupting household activities. This problem was mentioned by eight interviewees and recorded in all eight shops observed. For example, a respondent from S92917 mentioned: *“Last week, while I was preparing dinner in the kitchen, a customer walked straight into the kitchen looking for goods... Sometimes we have family activities at home, such as a child's birthday party or gatherings with friends. These activities are sometimes seen or interrupted by customers.”* Such situations highlight that the lack of clear boundaries between the retail and living areas can easily infringe on family privacy. To address this problem, it is recommended to design reasonable spatial partitions within the shop, such as setting up screens or marking areas, to ensure the privacy of family activities while enhancing the shopping experience for customers.

Secondly, the shared passageways or spaces between the living area and the retail area pose safety hazards. Seven interviewees raised this concern, and it was observed in all shops. For instance, in the S92916 shop, the kitchen shares a passageway with the retail area. The respondent stated: *“Hot water and cooking fumes from the kitchen can easily splash onto goods in the retail area.”* Additionally, in the Q92714 shop, the bedroom shares a passageway with the retail area, and the respondent noted: *“My child often runs around the shop and has bumped into customers several times.”*

These instances indicate that shared passageways and spaces increase safety risks. Therefore, it is recommended to consider separating the living area from the retail area during the design process, planning traffic flow lines more reasonably, and installing partitions and safety railings to reduce potential safety risks.

Lastly, the disorganised placement of household items in the retail area affects the shop's cleanliness and professional image. This problem was mentioned by eight interviewees and recorded in all eight shop households. Observation notes from S92916 indicate: *“Some cleaning supplies for the kitchen, such as brooms and mops, are placed in the corners of the retail area. Children's toys and some clothing are also placed in the shop's corners...Two customers entered the shop, saw the scattered household items on the floor, and one said: 'I feel like the stuff sold here might have already been used by the shop owner, it's not clean.’”*

All eight interviewees pointed out that the root of this problem lies in the limited space of living area, forcing the owner to place some household items in the retail area. One respondent directly stated: *“We eat and sleep in this shop, so it's impossible to completely clear out these household items from the shop.”* So, it is suggested that future designs include additional storage cabinets or storage spaces to organise and concentrate household items, ensuring they are reasonably placed in either the retail area.

6.5.5 Theme 5: Problems of Lack of Storage Space in Mahjong Parlours

In the two observed mahjong parlours, there is a recurring problem of customers' items being left in disarray, which not only affects the cleanliness of the space but also leads to the loss of valuable items. This problem was mentioned by both interviewees and was recorded multiple times in the observation notes (Table 6.4).

The observation diary for S92908 noted: *“At the entrance of the mahjong parlour, seven bags and a bucket were already piled up...Fourth customer: she navigated around the items at the entrance and casually placed her bag there... The sixth customer came in and hung his jacket carelessly in a gap near the cash register, pulled out his keys and wallet from his pocket, placed them in a plastic bag, walked to the mahjong table, sat down, and left the plastic bag at his feet as he started to play.”*

These records indicate that there is a lack of designated storage areas in the mahjong parlour, resulting in customers’ items being placed haphazardly, which leads to poor cleanliness, difficulty in movement, and even loss of belongings. To address this problem, it is recommended that the mahjong parlours provide small storage cabinets or hooks for customers to store personal and valuable items, thus maintaining cleanliness around the mahjong tables and seating, and alleviating movement obstacles.

6.5.6 Theme 6: Environmental Hygiene Problems in Mahjong Parlours

Table 6.7 Sub-themes of Theme 6: Environmental hygiene problems in mahjong parlours

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 6: Environmental hygiene problems in mahjong parlours	2/2	7	2/2	17
a) cleaning problems of mahjong furniture	2/2	5	2/2	10
b) Hygiene problem of residual odour of furniture due to poor ventilation in mahjong parlours	2/1	2	2/2	7

The environmental hygiene problems in mahjong parlours primarily involve two aspects (Table 6.7). Firstly, mahjong tables and chairs frequently come into contact with food, beverages, or cigarette ashes, leading to stains that make the furniture dirty and difficult to clean, particularly for upholstered seats or fabric furniture. This problem was mentioned by both interviewees and was recorded in the two mahjong

parlours. For instance, a respondent from S92908 noted: *“Customers often snack, drink, or smoke while playing mahjong. Many times, beverages spill on the table, and ashes fall onto the chairs, making it hard to clean. Oil stains and dirt can remain on the table and seep into the wood grain, making cleaning particularly laborious... After each customer leaves, we need to spend a lot of time wiping down the tables and chairs, and sometimes we need to use detergent to get the grease out.”* To address this problem, the respondent from D93016 suggested using waterproof and stain-resistant tablecloths or table materials and considering removable chair covers or more durable materials to enhance cleaning convenience.

Secondly, mahjong parlours are typically enclosed spaces, especially in winter, where the odours of smoke, sweat, and food can easily linger on the furniture, impacting environmental quality and customer experience. This problem was mentioned by one respondent and observed in the two mahjong parlours. The observation diary for S92908 records: *“As soon as I entered the mahjong parlour, a strong, pungent smell hit me, accompanied by a warm draft. I found that during mahjong games, everyone was continuously smoking, and the smell permeated the air, adhering to the upholstered chairs and tables. Even after the shop owner placed four air fresheners, the strong odour of smoke was still palpable. Then there was the smell of sweat; the whole mahjong parlour was very warm, the windows were tightly closed, and there was no airflow. The indoor temperature reached 29 degrees Celsius, and I was sweating even without playing mahjong; those who were excited about the games were sweating profusely, taking off their clothes and leaning close to the game tables, which had a very strong smell of sweat. Finally, there was the smell of food; eight customers had eaten quite a bit of fried food at the table, leaving greasy odours on the tables and chairs.”* Although the shop owners tried using air fresheners to mask the odours, it only had a short-term effect. They also considered installing a better ventilation system, but due to space constraints and high costs, it was difficult to implement. Therefore, in future designs, it may be beneficial to replace furniture

materials with those that are easy to clean and do not retain odours, such as waterproof and stain-resistant tablecloths and washable chair covers.

In summary, the environmental hygiene problems in mahjong parlours primarily focus on the difficulty of cleaning mahjong furniture and odour retention in enclosed environments. Future designs should address these two aspects.

6.5.7 Theme 7: Temperature Problems in The Processing Factories

Table 6.8 Sub-themes of Theme 7: Temperature problems in the home-based factories

Name	Total number of semi-structured interviews / number of people mentioning problems	Number of times questions were mentioned	Total number of households participating in observation/ number of households with problems	Number of times questions appeared in participant observation notes
Theme 7: Temperature problems in the home-based factories	8/8	25	8/8	25
a) Heating problems in winter	8/8	8	8/8	10
b) Cooling problems in summer	8/8	17	8/8	15

In the Jidong region, winter temperatures are relatively low, making it crucial to employ heating devices to maintain an appropriate temperature in production spaces. However, due to the large area of the factories, the effectiveness of heating devices is uneven, particularly near doors and windows, where temperatures are notably lower. This problem has been observed in all eight factories and confirmed by respondents (Table 6.8). For instance, an employee from the F92605 noted, *“We use four electric heaters and two coal stoves, but the factory is too large...My desk is near the window, and it's super cold in winter, and it's common for my upper body to freeze.”* The owner of D93003 proposed improvements, planning to install insulated curtains and door curtains to stabilize indoor temperatures.

The high temperatures in summer also present significant challenges for production environments in factories. In the Jidong summer, when outdoor temperatures approach 35°C, the indoor temperatures are often even higher. Observations indicate that all eight factories in the village suffer from oppressive heat in the workshops, and none are equipped with air conditioning. The owner of the S92909 steamed bun factory commented, “*We originally had seven ceiling fans in the workshop, and now we’ve bought four large floor fans, but the effect is minimal; it’s practically useless... Opening the windows only brings in hot, stuffy air, and we can directly place fresh eggs on the floor in the morning, and they’re cooked by noon, saving on electricity.*” An employee from the F92605 sheet metal workshop mentioned, “*Initially, we tried opening several large windows to ventilate, but the hot air coming in made the workshop even stuffier, so we stopped.*” The owner of the F92605 mentioned future strategies to install cooling machines, but they are currently in the planning stage due to high equipment costs. The owner of D93003 home-based farming is also considering adding heat insulation facilities, such as insulated curtains or coatings, to reduce external heat influence and ensure a stable production environment.

In conclusion, future improvement strategies for processing plants must address the dual challenges of winter heating and summer cooling to enhance worker comfort and maintain production efficiency.

6.5.8 Theme 8: Problems of Wooden Furniture in Factories

In rural processing factories, furniture is commonly made from discarded wooden furniture sourced from households. However, these wooden pieces exhibit various problems in the complex work environment characterised by high humidity, high temperatures, and splattering metal debris, particularly concerning durability and safety. This phenomenon has been noted in all eight factories (Table 6.4). A worker from the D93012 vegetable shed factory stated, “*In summer, when it rains, the air is*

full of moisture, and the wood absorbs water, causing deformation; some stool legs have even started to mould, making them unreliable to sit on. The cabinets are also starting to mould inside, giving off a strong odour.” Moreover, observations from the F92605 sheet metal workshop indicate that wooden furniture cannot withstand the dangers posed by high temperatures and metal debris in the work environment. When workers operate machines, metal fragments can splash and embed into wooden sitting, causing instability in the chairs. Some wooden stools have accumulated a significant amount of metal debris on their legs, requiring workers to repeatedly check the stability of the furniture before sitting down to prevent accidents.

In conclusion, to address the problems above, it is recommended that factories gradually phase out wooden furniture in favour of materials that are heat-resistant, wear-resistant, moisture-proof, and corrosion-resistant. If conditions necessitate continued use of wooden furniture, effective measures must be taken to extend its lifespan and ensure safety during operation.

6.5.9 Theme 9: Problems of Self-Brought Seating in Factories

In the factory working environment, employees commonly use self-brought seats. However, these chairs do not always meet specific work requirements, affecting work efficiency. This problem was recorded from seven respondents and eight factories (Table 6.4). For instance, notes from observations at the S92909 steamed bun factory revealed that an employee pointed out, *“We all brought our stools from home...Since our wages are calculated based on the number of buns produced, moving the sitting wastes time.”* Similarly, an employee from the D93002 sheet metal workshop noted, *“We have to change machines six times a day. Each time we switch, we have to move the stools to match the position of the machines. Self-brought sittings are not easy to adjust, and aligning them with the machines is particularly troublesome.”*

To address these problems, it is recommended to set up a designated seat on each device or work area, so that employees can switch between different machines without moving their own seats, improving work efficiency.

6.5.10 Theme 10: Hygiene Problems of Furniture and Appliances in Factories

In the study of eight factories, the researcher found that all factories faced hygiene problems related to furniture and appliances. This problem was recorded from seven respondents and eight factories (Table 6.4). For example, at the S92909 steamed bun factory, the researcher observed that the surfaces of the furniture tended to accumulate flour, dirt, and other stains. One employee remarked, *“Since the food is processed at high temperatures, I think it’s not a big problem; after all, it’s more convenient to buy buns here than to make them ourselves.”* Conversely, another employee disagreed: *“Since I started working here, I haven’t bought any buns from the factory because the machines are too dirty, and the buns are dirty as well; it’s simply unacceptable.”* Similar problems were observed in other factories. The owner of the F92605 sheet metal workshop noted, *“The new floor fan we bought a few days ago has already accumulated a thick layer of dust on the surface after just three days of use as if it had never been cleaned.”*

To address these problems, it is suggested that factories adopt materials with waterproof and oil-proof properties for surface treatment of furniture and equipment to minimize dirt accumulation. Additionally, increasing the frequency of cleaning and conducting regular deep cleaning also helps improve the hygiene conditions of the factories, thereby enhancing product quality.

6.5.11 Theme 11: The Impact of Factory on Household Furniture in Residential Areas

Workers and owners of processing factories often engage in jobs that are heavily polluting, leading them to bring dirt from their workplaces into their homes, which results in the living spaces, especially the living rooms, becoming extremely dirty. This problem has been repeatedly mentioned in participatory observations of eight processing factories and corroborated by feedback from eight respondents. A worker from the F92605 sheet metal workshop stated, *“When I usually get home, I really like to sit on the sofa. My wife always says that as soon as I come home, the living room is filled with dirt, sand, and mud.”* The factory owner also mentioned that because factory is located in the yard, the furniture in the main house often accumulates dust and dirt, particularly in the living room. Neighbours near the factory reported similar problems. One neighbour living next to the D93002 commented, *“In the summer when we open the windows to ventilate, the humidity, metal scraps, and iron dross from the factory often get blown into our home. Dust accumulates on the surfaces of our furniture and in the gaps in the windowsills, and I have to use cleaning agents and a damp cloth almost every day to remove this dirt. Even with daily cleaning, the effectiveness is still limited.”*

This phenomenon indicates that the working environment of factories significantly affects the household furniture of workers, owners, and their neighbours. To improve this situation, it is recommended that the living area choose furniture materials that are easier to clean and more dirt-resistant. Additionally, installing air purifiers can help reduce dust and pollutants in the air, thereby improving the cleanliness of the living environment.

6.6 Summary table of Problems and Demands Relating to The Furniture Used in Home-based Production

This section presents the findings of the study on the problems arising from the currently used furniture in the context of the special lifestyle in rural Jidong. Table 6.9 focuses on furniture problems and needs in three main scenarios: village shops, mahjong parlours, and processing factories.

Table 6.9 Problems and demands relating to currently used furniture in in home-based production

Space/ activity	Currently used furniture	Specific problems/use scenarios	Demand transformation
Resting space in the village shop	Sitting furniture (sofas, benches)	Problems of poor hygiene: Sitting furniture in shops, especially fabric sofas, are difficult to clean thoroughly and tend to accumulate dirt and odours. Low comfort level of sitting furniture	The hygiene and comfort of the sitting furniture needs to be improved.
	Lying equipment	The boardwalk beds used by shop owners and clerks in the resting area behind the counter are not sufficiently comfortable.	Improve the comfort of the wooden beds in the resting area, e.g. by using wooden beds with soft mattresses
Eating space in the village shop	Household tableware	Insufficient number of tableware: insufficient plates and bowls for serving dishes, temporary borrowing of neighbours.	Expansion of tableware stock
	Sitting furniture	Insufficient sitting utensils: During weddings, the number of sitting utensils is insufficient for the reception of guests, and they need to be borrowed from neighbours. there are too many types of	Increase in the number of sitting utensils Unify the types of sitting furniture

		sitting furniture in the home and they are not well organised, causing safety problems.	
Recreational spaces in the village shop	Merger or disappearance of spaces	The shop's recreation space disappears completely or merges with the eating space.	The problems that arise in mergers are similar to those in the shop's eating space.
Retail and living spaces in the village shop	Intersection of spaces	Poorly defined boundaries between retail and living areas make it easy for customers to unintentionally enter domestic spaces, disturbing family activities and affecting family privacy. Kitchen, bedroom and retail area share the passageway, which is easy to cause oil splash, fall and other dangers when customers choose goods.	Safety and privacy needs: the access to the living area and retail area needs to be reasonably planned to reduce customer safety hazards.
	Storage system	Living goods are stacked randomly in the retail area, affecting the shop's tidiness and aesthetics.	Need to improve the storage capacity of daily necessities in the selling area of the shop, such as storage cabinet design.
Mahjong Parlour	Storage cabinets or storage area	Lack of storage area leads to customers' belongings being left lying around, obstructing walking and even causing customers' valuables to be lost.	Provide clear storage areas or storage cabinets with safety belt locks for customers to store their belongings.
	Mahjong tables and chairs	Mahjong furniture is difficult to clean: Mahjong tables and chairs are easily contaminated by food, drinks, and cigarette ash, making cleaning difficult.	Mahjong Furniture Cleaning Needs: Mahjong tables and chairs need to be water and stain resistant, easy to clean and dismantle or hard-wearing materials.
	Odour problems	Poor ventilation: closed space leads to residual smoke, sweat and food odour making the air quality poor and affecting the customer	Odour control needs

		experience.	
Processing factory	Production environment improvement measures	Cold in winter and hot in summer	Using cost-effective warming and cooling equipment or wall materials.
	Wooden furniture	Wooden furniture is prone to warping and mould, and workers are concerned about its safety. Metal shavings can become embedded in wooden seats, causing instability and requiring frequent inspections by workers.	Durability: Furniture needs to withstand the effects of humidity and temperature. Safety: Ensuring the stability of the furniture. Maintenance: Effective maintenance strategies to prolong service life.
	Seats	Employees need to move the sitting device when switching between equipment, which affects work efficiency.	Fixed seat devices should be next to each piece of equipment to reduce movement.
	Furniture and appliances	Furniture and appliance surfaces tend to accumulate flour and dust, making them difficult to clean and affecting product quality and hygiene.	Increase cleaning frequency and efficiency. Use furniture and appliance materials that are easy to clean and durable.
	Furniture in residential areas	Workplace dirt brought into the home: Processing plant workers and owners bring in workplace dirt when they return home, resulting in a dirty home environment. Processing plants generate dust during production, which affects the air quality in living areas.	Household furniture should be made of materials that are easier to clean and resistant to dirt to reduce the cleaning burden. Air purification needs

Firstly, the problems in village shops are mainly focused on four aspects. Regarding rest furniture, hygiene and comfort of sitting issues are particularly prominent, along with requests for improved comfort in lying furniture. Eating furniture lacks sufficient tableware and sittings, and the diverse designs of stools raise safety concerns. This

problem also arises in home-based folk activities. Social and entertainment furniture primarily involves using appliances (televisions). As the social and entertainment spaces in shops gradually disappear or merge with eating spaces, the problems arising from merged space can reference the relevant solutions for eating space problems. The boundary between the retail area and the living space is blurred, which affects the shopkeeper's privacy and customers' safety. Moreover, living supplies are often haphazardly placed in the retail area, necessitating storage furniture design to optimize space utilization and enhance orderliness.

Secondly, the furniture problems in mahjong parlours mainly focus on storage space and cleanliness. Unlike village shops, the storage problem in mahjong parlours primarily concerns the lack of storage space for customers' personal belongings, creating an urgent need for specially designed storage furniture. Meanwhile, the mahjong tables and chairs present challenges in cleanliness, especially regarding material selection and maintenance. Closed space leads to residual smoke, sweat, and food odour, affecting air quality and the customer experience.

Finally, the furniture problems in processing factories are concentrated in five aspects. The production environment is too cold in winter and hot in summer, and it is urgent to improve the environmental conditions to improve workers' comfort and work efficiency while controlling energy costs. The durability and safety of wooden furniture are inadequate, requiring redesign or improvement to meet modern production needs. The adaptability and stability of sittings are insufficient, impacting employee work efficiency and operational safety. Implementing fixed seat designs is recommended to resolve the frequent movement of sittings and their mismatch with production equipment. Furniture and appliances easily accumulate dirt, necessitating the use of dirt-resistant materials and improved hygiene through increased cleaning frequency. The dirt brought in by the factories often leads to a dirty household

furniture environment around the factories and affects the hygiene of the neighbourhood.

6.7 Summary of Phase Four

In this chapter, the researcher employed semi-structured interviews, participatory observation notes, and non-participatory observation notes, along with dual perspectives from respondents and researchers, to conduct an in-depth analysis of furniture problems and needs in the context of the unique lifestyle in rural Jidong using NVivo software. Through systematic data processing and coding, eight main themes regarding household celebrations and eleven themes related to in home-based production were summarized. Figure 6.13 summarises all the furniture where problems have arisen from the themes in this chapter. The corresponding design principles for this problem furniture are given in Chapter 8.

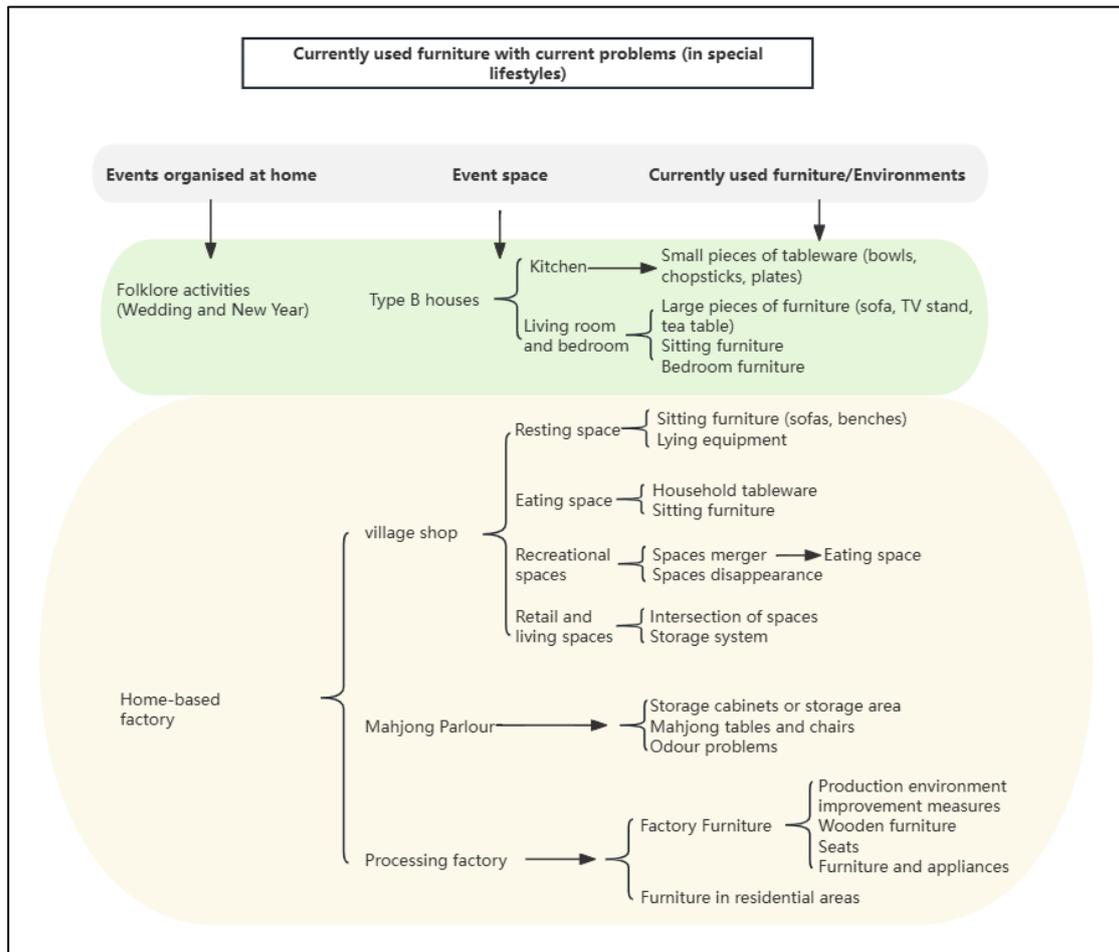


Figure 6.13 The current furniture with serious problems in special lifestyles

7 Findings and Analysis from phase Five

7.1 Introduction

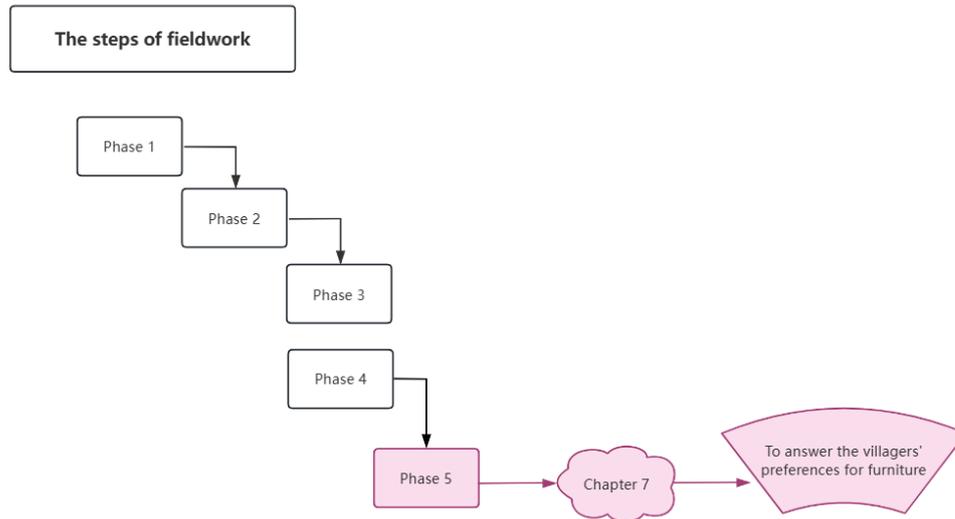


Figure 7.1 Introduction to chapter 7

This chapter analyses the data collected during phase five, aims to comprehensively address furniture design principles by collecting data on the preferences of Jidong rural villagers regarding household furniture (Figure 7.1). Under the researcher's guidance, 232 questionnaires were distributed offline, with 203 valid responses collected, which were then manually imported into SPSS for quantitative analysis. This section's data analysis primarily utilizes descriptive analysis and cross-analysis.

7.2 Demographic Characteristics of the Sample

The statistical variables covered in the questionnaire include gender (Question 1), age (Question 2), height (Question 3), number of family members (Question 4), total monthly household income (Question 6), and the main source of household income

(Question 5, multiple choices). The following are each variable's statistical results and analysis (Figure 7.1).

Table 7.1 Frequency analysis results

Name	Option	Frequency	Percentage (%)
Gender	Male	65	32.02
	Female	138	67.98
Age	Under 20 years old	36	17.73
	20-40 years old	57	28.08
	40-60 years old	96	47.29
	Over 60 years old	14	6.90
Height	Below 150cm	5	2.46
	150-175cm	169	83.25
	175cm or above	29	14.29
Family members	1 person	2	0.99
	2-3 persons	74	36.45
	3-5 persons	109	53.69
	More than 5 persons	15	7.39
	Other	3	1.48
Family's total monthly income	Less than 5000	56	27.59
	5000—10000	71	34.98
	10000—15000	18	8.87
	15000—22000	11	5.42
	Not convenient to discuss	47	23.15
Total		203	100.0

Gender

The survey data indicates that among the participants, 65 were male, accounting for 32.02%, while 138 were female, accounting for 67.98%. Although the proportion of females is higher, this does not imply that the total number of females exceeds the

number of males in the region. The survey results were greatly influenced by the specific context during the distribution of the questionnaires. In Jidong rural families, women typically take on more household duties and spend more time at home. Therefore, the researcher was more likely to engage female respondents during the survey process, leading to a higher proportion of female samples.

Age

The respondents of this questionnaire were mainly middle-aged individuals, with the 40-60 age group accounting for 47.29% of the total sample. The 20-40 age group accounted for 28.08%, while those under 20 and over 60 accounted for 17.73% and 6.9%, respectively.

Height

The participants' height data showed that the majority (83.25%) were between 150 and 175 cm. This data reflects the general height standard in rural Jidong and suggests that this height range should be considered in furniture design strategy.

Number of Family Members

The number of family members in rural Jidong households is mainly concentrated in the 3-5 persons range (53.69%), followed by 2-3 persons (36.45%). This result is consistent with the previous qualitative survey data, indicating that rural families in the region are typically extended or nuclear families. Only a very small proportion of families (0.99%) are single-person households.

The number of family members determines the amount of furniture used in daily life. The questionnaire data suggests that in daily life the need for the number of furniture

will not be high, but in the previous study it was found that the number of furniture, especially tableware and sitting stools, is high in terms of type and quantity, and there is even a problem of insufficient quantity in special lifestyles. This paradoxical conflict in the design strategy needs to be resolved.

Household Income

The survey results show that 27.59% of households have a monthly income below 5,000 yuan, while 34.98% earn between 5,000 and 10,000 yuan per month. Overall, the economic situation of rural households in Jidong is sufficient to meet basic furniture purchasing needs, but certain price constraints remain on high-consumption items. Therefore, furniture design principles should consider the economic constraints of this income level.

Main Source of Household Income

In the survey on the main source of household income (Table 7.2), nearly half of the participants (43.95%) stated that they primarily rely on income from nearby employment, followed by income from home-based production (36.32%). In contrast, income from agriculture accounted for a relatively low proportion (13.90%). This suggests that the economic model of rural households in Jidong area has shifted from traditional agriculture to off-farm work and self-sufficient home-based production.

Table 7.2 Response rate and popularization rate of main source of household income

Item	Responses		Popularization Rate (n=203)
	<i>n</i>	Response Rate	
Farming	31	13.90%	15.27%
Home-based production	81	36.32%	39.90%
Other	13	5.83%	6.40%
Work near home	98	43.95%	48.28%
Total	223	100%	109.85%

Note: Goodness-of-fit test: $\chi^2=87.224, p=0.000$

7.3 Analysis of the Currently Used Furniture and Factors Influencing Purchase

This section conducts a descriptive analysis of the questionnaire results from questions 7 to 12, exploring the current state of furniture usage among villagers, evaluations of convenience, and the driving factors behind purchasing new furniture.

Table 7.3 Villagers' length of stay in different rooms

Name	Option	Frequency	Percentage (%)
7. Where do you spend the most time in a day?	Bedroom	120	59.11
	Living room (hall)	65	32.02
	Kitchen	10	4.93
	Bathroom	7	3.45
	Side room	1	0.49
Total		203	100.0

Regarding the analysis of the time villagers spend in various house rooms, the results in Table 7.3 indicate that most participants primarily spend time in the bedroom and living room, accounting for 59.11% and 32.02%, respectively. This demonstrates that the bedroom and living room are the villagers' core spaces of daily life, while the kitchen and bathroom are used relatively less, mainly for specific activities.

Regarding furniture convenience (Table 7.4), over 59% of participants perceive the furniture in the bedroom and living room as “average” or “inconvenient.” Similarly, 58% of participants find kitchen furniture to be insufficiently convenient. These results indicate that the current furniture design in rural households in Jidong is inadequate, failing to fully meet the practical needs of villagers.

Table 7.4 Furniture convenience in different rooms

Item	Very inconvenient	Somewhat inconvenient	Neutral	Somewhat convenient	Very convenient
Bedroom (Inner room)	8.37%	12.32%	20.2%	38.92%	20.2%
Living room (Hall)	9.36%	12.32%	19.21%	38.92%	20.2%
Kitchen	9.85%	13.3%	18.72%	36.95%	21.18%

Table 7.5 Evaluations of furniture usage status

Name	Sample Size	Minimum	Maximum	Mean	Standard Deviation	Median
The furniture itself is of poor quality	203	1.000	5.000	2.463	1.026	2.000
Don't know how to use furniture	203	1.000	5.000	2.350	1.010	2.000
Furniture design is not reasonable, it is difficult to use	203	1.000	5.000	2.498	1.026	2.000
Furniture can be insufficient during festivals	203	1.000	5.000	2.749	1.126	3.000
Normally, there are unused furniture in the house	203	1.000	5.000	2.882	1.133	3.000

Among the five evaluations of furniture usage status (Table 7.5), respondents rated the quality of furniture as average, with a mean score of 2.463, close to neutral, indicating that most respondents consider the quality of their furniture to be fair, yet they still express notable dissatisfaction. Next, regarding the statement “Don't know how to use furniture,” the average score was 2.350, suggesting that while most respondents understand how to use their furniture, a considerable proportion still feels confused. The evaluation of furniture design (average score of 2.498) similarly reflects dissatisfaction among respondents. Regarding the perspective that there is insufficient furniture during festivals, the score was 2.749, indicating that villagers generally feel a shortage of furniture for special occasions. Finally, the evaluation of unused furniture at home (2.882) reveals that many villagers experience furniture being left idle, suggesting an unreasonable allocation of household resources. These findings are consistent with the results of qualitative analyses presented earlier, indicating a substantial need for improvement in the design of furniture used by villagers in Jidong.

Table 7.6 Motivations for purchasing new furniture

10. Under what circumstances would you buy furniture? (multiple choices)			
Item	Responses		Popularization Rate (n=203)
	<i>n</i>	Response Rate	
When building a new house or renovating a house	124	29.95%	61.08%
When the existing furniture is outdated	51	12.32%	25.12%
When the existing furniture is damaged	104	25.12%	51.23%
When furniture is on sale	33	7.97%	16.26%
When you have a child or get married	67	16.18%	33.00%
Other	35	8.45%	17.24%
When building a new house or renovating a house	414	100%	203.94%

Note: Goodness-of-fit test: $\chi^2=101.884, p=0.000$

In terms of motivations for purchasing new furniture (Table 7.6), building a Type B house or renovating an existing one is the primary driving factor, accounting for 61.08%, followed by damage to existing furniture (51.23%). Special family events, such as weddings, also influence furniture updates, with 33% of participants indicating they would purchase new furniture. In contrast, the impact of outdated styles and store promotions on villagers' purchasing decisions is relatively minor, suggesting that there is not a high demand for furniture design updates among villagers, and promotional activities have limited appeal, reflecting a stronger emphasis on practicality and thriftiness.

Table 7.7 The internal factors influencing furniture purchases

Option	First Choice Count	Second Choice Count	Third Choice Count	Fourth Choice Count	Fifth Choice Count	Sixth Choice Count	Comprehensive Score (Mean)	Rank
Material	84	35	25	17	7	3	4.953	1
Functionality	23	66	23	18	12	18	4.100	2
Comfort	39	14	51	26	20	6	4.051	3
Environmental friendliness	33	22	15	14	22	48	3.260	4
Size	17	20	19	26	50	22	3.104	5
Design and style	7	20	20	44	28	34	2.902	6

Regarding the internal factors influencing furniture purchases (Table 7.7), material and functionality are considered the most important criteria, receiving comprehensive scores of 4.953 and 4.100, respectively, reflecting the villagers' high regard for the quality and practicality of furniture. Comfort (4.051) is also important, particularly among younger demographics. Environmental considerations (3.260) and size (3.104) received lower scores, indicating that these factors are relatively less significant in purchasing. Design and style ranked last with a score of 2.902, demonstrating that villagers place lower importance on aesthetic aspects.

Table 7.8 The external factors influencing furniture purchases

Option	First Choice Count	Second Choice Count	Third Choice Count	Fourth Choice Count	Comprehensive Score (Mean)	Rank
Price	101	37	24	10	3.331	1
Brand	40	56	28	29	2.699	2
After-sales service	46	42	54	23	2.673	3
Purchase channel	16	23	30	60	1.961	4

When ranking the importance of external factors in furniture purchasing decisions (Table 7.8), price emerges as the most significant external factor, scoring 3.331, demonstrating the substantial influence of price on villagers' purchasing decisions.

Brand (2.699) and after-sales service (2.673) are also important factors, though their influence is less than price. The score for purchasing channels was the lowest (1.961), indicating that the channel choice has relatively low significance in villagers' purchasing decisions.

Overall, villagers emphasise the quality, functionality, comfort, and price of furniture. The design principles proposed must prioritise these factors.

7.4 Analysis of Furniture Styles and Preferences

This section provides a descriptive statistical analysis and cross-analysis of questions 13 to 21. It primarily discusses respondents' preferences for furniture styles and types in bedrooms, living rooms, and kitchens, revealing tendencies in furniture selection among rural households.

7.4.1 Furniture Styles

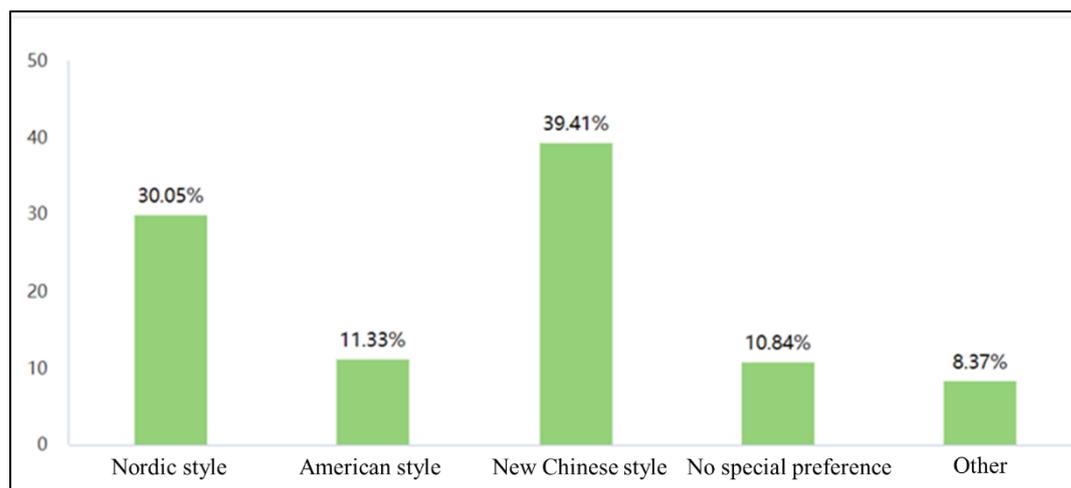


Figure 7.2 Bar chart of furniture style preferences

The survey of furniture style preferences among villagers in Jidong (Figure 7.2) shows that the New Chinese style is the most popular choice, accounting for 39.41%. This reflects the residents' recognition and acceptance of a blend of traditional culture and modern life. The Nordic style follows closely with a share of 30.05%, indicating a preference for practicality and minimalist design among villagers. In contrast, the American style occupies only 11.33%, and 10.84% of respondents indicated no particular preference. This outcome suggests that the style choices in East Hebei lean towards New Chinese and Nordic styles.

Table 7.9 Cross-analysis of furniture style preferences

Cross-analysis Results								
Title	Item	2. Age: (%)				Total	χ^2	<i>p</i>
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
13. Which of the following styles of furniture do you prefer?	Nordic style	14(38.89)	23(40.35)	20(20.83)	4(28.57)	61(30.05)	44.595	0.000**
	American style	5(13.89)	9(15.79)	7(7.29)	2(14.29)	23(11.33)		
	New Chinese style	11(30.56)	16(28.07)	52(54.17)	1(7.14)	80(39.41)		
	No special preference	2(5.56)	6(10.53)	13(13.54)	1(7.14)	22(10.84)		
	Other	4(11.11)	3(5.26)	4(4.17)	6(42.86)	17(8.37)		
	Total	36	57	96	14	203		

* $p < 0.05$ ** $p < 0.01$

Additionally, cross-analysis reveals significant differences between age groups in furniture style preferences (Table 7.10). The Nordic style is more popular among individuals under 20 and those aged 20-40, with respective preferences of 38.89% and 40.35%, indicating that younger groups favour minimalist designs. Conversely, the 40-60 age group shows a pronounced preference for the New Chinese style, reaching

54.17%, suggesting a stronger demand among adults for furniture designs that incorporate traditional elements. This result further validates the residents' inclination towards New Chinese and Nordic styles, providing valuable references for future furniture design principles.

7.4.2 Bedroom Furniture

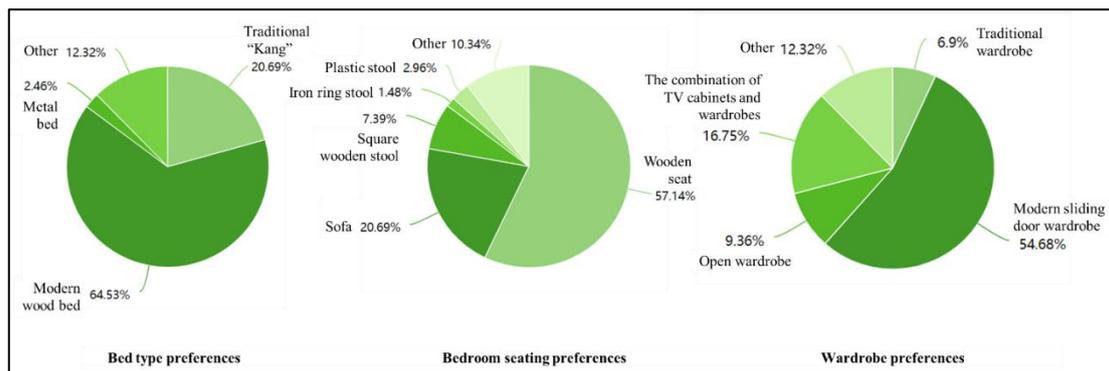


Figure 7.3 Pie chart of bedroom furniture

In the survey of bed type preferences (Figure 7.3), modern wooden beds emerged as the most favoured choice, accounting for 64.53%, reflecting residents' preference for comfort and traditional design. The traditional kang, as a regionally distinctive option, occupies 20.69%, indicating some respondents' acknowledgment of traditional living habits. In contrast, metal beds account for only 2.46%, while 12.32% of respondents selected "other" types, potentially reflecting a pursuit of individuality or special needs.

Furthermore, cross-analysis of age and bed type preferences reveals (Table 7.10) that 57.14% of respondents over 60 prefer traditional kang. In contrast, 73.96% of those aged 40-60 prefer modern wooden beds. This indicates that the design of kang needs to cater to seniors, modern wooden beds should be designed with adult users in mind. The cross-analysis of household monthly income and bed type preferences also shows significant differences (Table 7.11). Specifically, among those who prefer "traditional

kangs," 32.14% come from households with incomes below 5000 yuan, reflecting that economically disadvantaged families tend to favour earthen kang. In contrast, preference for modern wooden beds reaches 76.06% in the 5000–10000-yuan income group, suggesting that households with better economic conditions are more inclined to choose modern wooden beds (with a preference of 72.22% in the 10000–15000-yuan group). Additionally, metal beds perform poorly across all income levels, accounting for only 4.26% among those unwilling to disclose their income. This indicates that in lower-income households, traditional and economical earthen kang are more popular, while as income levels rise, modern-style beds become the choice for more families.

Table 7.10 Cross-analysis of age and bed furniture

Cross-analysis Results								
Title	Item	2. Age: (%)				Total	χ^2	<i>p</i>
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
14. Which type of bed do you prefer?	Traditional "Kang"	8(22.22)	7(12.28)	19(19.79)	8(57.14)	42(20.69)	29.757	0.000**
	Modern wood bed	21(58.33)	36(63.16)	71(73.96)	3(21.43)	131(64.53)		
	Metal bed	1(2.78)	4(7.02)	0(0.00)	0(0.00)	5(2.46)		
	Other	6(16.67)	10(17.54)	6(6.25)	3(21.43)	25(12.32)		
	Total	36	57	96	14	203		
16. What type of wardrobe do you prefer?	Traditional wardrobe	3(8.33)	2(3.51)	5(5.21)	4(28.57)	14(6.90)	31.863	0.001**
	Modern sliding door wardrobe	16(44.44)	25(43.86)	66(68.75)	4(28.57)	111(54.68)		
	Open wardrobe	4(11.11)	9(15.79)	6(6.25)	0(0.00)	19(9.36)		
	TV stand and wardrobe combination	7(19.44)	13(22.81)	9(9.38)	5(35.71)	34(16.75)		
	Other	6(16.67)	8(14.04)	10(10.42)	1(7.14)	25(12.32)		
Total	36	57	96	14	203			

* $p < 0.05$ ** $p < 0.01$

Table 7.11 Cross-analysis of household monthly income and bed type preferences

Cross-analysis Results									
		6. Family's total monthly income (%)					Total	χ^2	p
Title	Item	Less than 5000	5000—10000	10000—15000	15000—22000	Not convenient to discuss			
14. Which type of bed do you prefer?	Traditional “Kang”	18(32.14)	9(12.68)	4(22.22)	4(36.36)	7(14.89)	42(20.69)	32.58	0.001**
	Modern wood bed	34(60.71)	54(76.06)	13(72.22)	7(63.64)	23(48.94)	131(64.53)		
	Metal bed	1(1.79)	2(2.82)	0(0.00)	0(0.00)	2(4.26)	5(2.46)		
	Other	3(5.36)	6(8.45)	1(5.56)	0(0.00)	15(31.91)	25(12.32)		
	Total	56	71	18	11	47	203		

* $p < 0.05$ ** $p < 0.01$

These data show that compared with other types of beds, Jidong villagers are more satisfied with wooden beds and kang, but they should pay attention to the needs of different groups in the later design strategy of these two kinds of furniture.

In the survey of preferences for bedroom seating (Figure 7.2), the results indicate that wooden chairs, with a preference rate of 57.14%, are the most popular choice. Sofas follow as the second most preferred option at 20.69%. In contrast, square wooden stools, iron ring stools and plastic stools account for 7.39%, 1.48% and 2.96%, respectively. These data reveal that the most popular wooden furniture needs to be modified according to the problems and needs of the bedroom seat in the previous phase.

The survey results of wardrobe type preferences (Figure 7.2) indicate that the modern sliding door wardrobe is the most favoured choice at 54.68%. The combination of TV

cabinets and wardrobes follows at 16.75%. In contrast, traditional wardrobes, open wardrobes, and other types account for 6.9%, 9.36%, and 12.32%, respectively.

Significant differences were found in the analysis of age and wardrobe type choices (Table 7.10). Among the 40-60 age group, the preference for the modern sliding door wardrobe reaches 68.75%, while this rate drops to 28.57% in the over-60 age group. In contrast, the choice for traditional wardrobes in the over-60 group is 28.57%, significantly higher than in other age groups, indicating a more pronounced preference for traditional styles among older adults.

These data indicate that middle-aged individuals are more likely to choose modern sliding-door wardrobes, while elderly individuals prefer traditional wardrobes. This conclusion aligns with the findings from earlier field observations of different types of residences. In the previous survey, the researcher noted the presence of both wardrobe styles across various households, and no significant issues or discomfort were reported during their use. Both styles meet the needs and preferences of different age groups. Therefore, no design modifications are necessary for the current wardrobes.

7.4.3 Living Room Furniture

The results of the respondents' preferences for sofa types (Figure 7.4) indicate that fabric sofas are the most popular choice, accounting for 48.77%, reflecting residents' emphasis on comfort and diverse designs. Leather and wooden sofas account for 25.12% and 18.23%, respectively, suggesting that while some residents pursue fashion and durability, they still favour traditional materials.

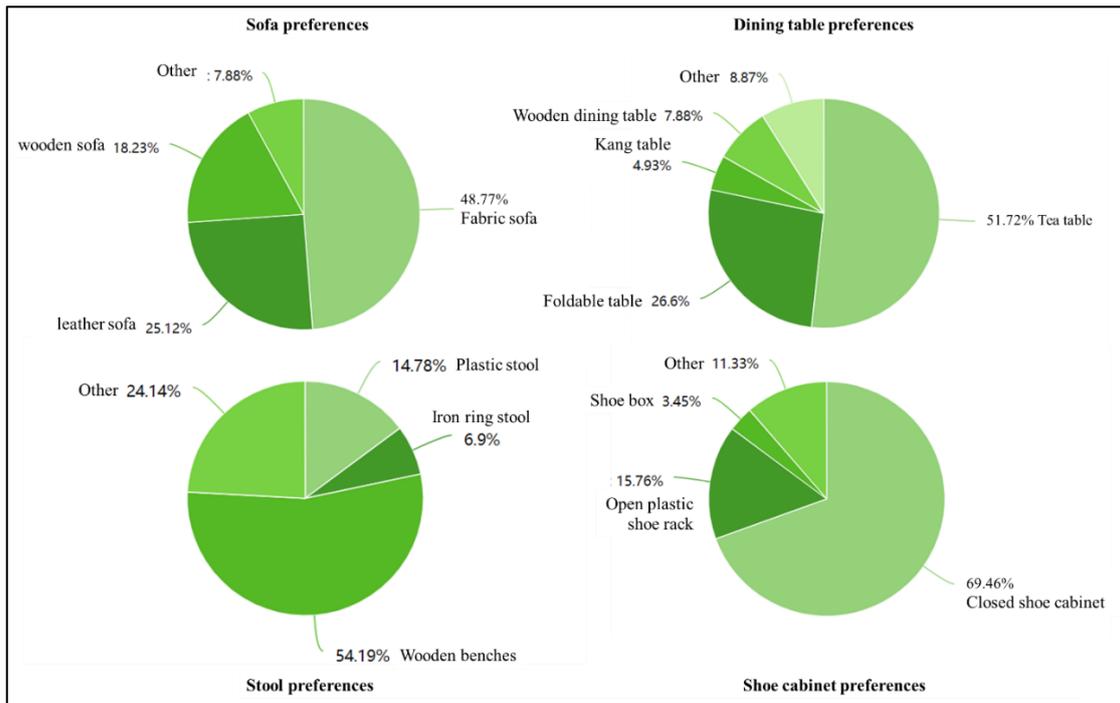


Figure 7.4 Pie chart of living room furniture

The cross-analysis reveals significant differences in the choice of sofa types (Table 7.12). Notably, among respondents under 20 and 40-60, the preference rate for fabric sofas is as high as 58.33% and 55.21%. Preference for leather sofas reaches 43.86% in the 20-40 age group, while wooden sofas are favoured in seniors' group, with a preference rate of 50.00%.

Although different age groups have different preferences for sofa materials, fabric sofas are still the most popular. This unresistant dirty material causes cleaning problems in daily life, which need to be solved in the design strategy.

Table 7.12 Cross-analysis of age and living room furniture

Cross-analysis Results								
Title	Item	2. Age: (%)				Total	χ^2	<i>p</i>
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
17. What type of sofa do you prefer?	Fabric sofa	21(58.33)	23(40.35)	53(55.21)	2(14.29)	99(48.77)	36.056	0.000**
	Leather sofa	7(19.44)	25(43.86)	18(18.75)	1(7.14)	51(25.12)		
	Wooden sofa	5(13.89)	6(10.53)	19(19.79)	7(50.00)	37(18.23)		
	Other	3(8.33)	3(5.26)	6(6.25)	4(28.57)	16(7.88)		
	Total	36	57	96	14	203		
18. What type of dining table do you prefer?	Tea table	14(38.89)	25(43.86)	61(63.54)	5(35.71)	105(51.72)	47.977	0.000**
	Foldable table	9(25.00)	19(33.33)	24(25.00)	2(14.29)	54(26.60)		
	Kang table	1(2.78)	0(0.00)	5(5.21)	4(28.57)	10(4.93)		
	Wooden dining table	8(22.22)	7(12.28)	1(1.04)	0(0.00)	16(7.88)		
	Other	4(11.11)	6(10.53)	5(5.21)	3(21.43)	18(8.87)		
Total	36	57	96	14	203			
19. What kind of stool do you prefer?	Plastic stool	8(22.22)	9(15.79)	11(11.46)	2(14.29)	30(14.78)	17.339	0.044*
	Iron ring stool	3(8.33)	6(10.53)	5(5.21)	0(0.00)	14(6.90)		
	Wooden benches	11(30.56)	27(47.37)	64(66.67)	8(57.14)	110(54.19)		
	Other	14(38.89)	15(26.32)	16(16.67)	4(28.57)	49(24.14)		
Total	36	57	96	14	203			
20. What type of shoe cabinet do you prefer?	Closed shoe cabinet	16(44.44)	36(63.16)	83(86.46)	6(42.86)	141(69.46)	35.399	0.000**
	Open plastic shoe rack	8(22.22)	13(22.81)	8(8.33)	3(21.43)	32(15.76)		
	Shoe box	3(8.33)	3(5.26)	0(0.00)	1(7.14)	7(3.45)		
	Other	9(25.00)	5(8.77)	5(5.21)	4(28.57)	23(11.33)		
	Total	36	57	96	14	203		

* $p < 0.05$ ** $p < 0.01$

Table 7.13 Cross-analysis of household monthly income and living room furniture

Cross-analysis Results									
		6. Family's total monthly income (%)					Total	χ^2	p
Title	Item	Less than 5000	5000—10000	10000—15000	15000—22000	Not convenient to discuss			
18. What type of dining table do you prefer?	Tea table	24(42.86)	39(54.93)	14(77.78)	8(72.73)	20(42.55)	105(51.72)	31.626	0.011*
	Foldable table	15(26.79)	21(29.58)	3(16.67)	1(9.09)	14(29.79)	54(26.60)		
	Kang table	9(16.07)	0(0.00)	0(0.00)	0(0.00)	1(2.13)	10(4.93)		
	Wooden dining table	4(7.14)	5(7.04)	1(5.56)	1(9.09)	5(10.64)	16(7.88)		
	Other	4(7.14)	6(8.45)	0(0.00)	1(9.09)	7(14.89)	18(8.87)		
	Total	56	71	18	11	47	203		
19. What kind of stool do you prefer?	Plastic stool	13(23.21)	10(14.08)	3(16.67)	1(9.09)	3(6.38)	30(14.78)		
	Iron ring stool	2(3.57)	7(9.86)	0(0.00)	1(9.09)	4(8.51)	14(6.90)		
	Wooden benches	31(55.36)	43(60.56)	11(61.11)	5(45.45)	20(42.55)	110(54.19)	21.003	0.050
	Other	10(17.86)	11(15.49)	4(22.22)	4(36.36)	20(42.55)	49(24.14)		
	Total	56	71	18	11	47	203		

* $p < 0.05$ ** $p < 0.01$

Regarding the choice of dining table types (Figure 7.3), Tea tables emerge as the most popular option, accounting for 51.72%, and foldable dining tables account for 26.6%. Although there are noticeable differences in the cross-analysis (Table 7.12; Table 7.13), no matter what age group or income group, the preference for tea tables is very high. Among them, the preference for tea tables in the age group of 40-60 years old reaches 63.54%, and the preference for tea tables in the income group of 10,000-15,000 yuan reaches 77.78%.

These data show that the tea table is the most satisfactory dining table for middle-aged villagers in Jidong. As income increases, the respondents' preference for tea tables significantly strengthens. Therefore, appropriate design principles should be given

according to the problems and needs obtained from the qualitative research on the tea table.

The survey on stool preferences reveals that wooden benches (Square wooden stools) are the most popular choice, accounting for 54.19% (Figure 7.3). The cross-analysis results indicate that preference for wooden benches in the middle-aged reaches 66.67%, while it is only 30.56% among younger respondents (Table 7.12). However, compared with other types of stools, young people's preference for wooden benches, ranking third, is still high. Furthermore, there is also a notable difference in stool preferences across income levels (Table 7.13), with wooden benches being widely recognised across all income brackets, particularly in the 5000–10000-yuan group, where the preference rate reaches 60.56%. This shows that the residents of rural Jidong are more inclined to choose the durable traditional wooden stool; according to the problems found in the previous phase, it is urgent to improve the design strategy of wooden stools to accommodate people of different heights.

Regarding shoe cabinet preferences, closed shoe cabinets are the most popular choice at 69.46% (Figure 7.3). Although the cross-analysis results (Table 7.12) showed noticeable differences, no matter which age group, the closed shoe cabinet is the most satisfied, with the 40-60 age group's preference reaching 86.46%. This result shows the need to redesign the closed shoe cabinet according to the problems and needs of the shoe furniture drawn from the previous phase.

7.4.4 Kitchen Furniture

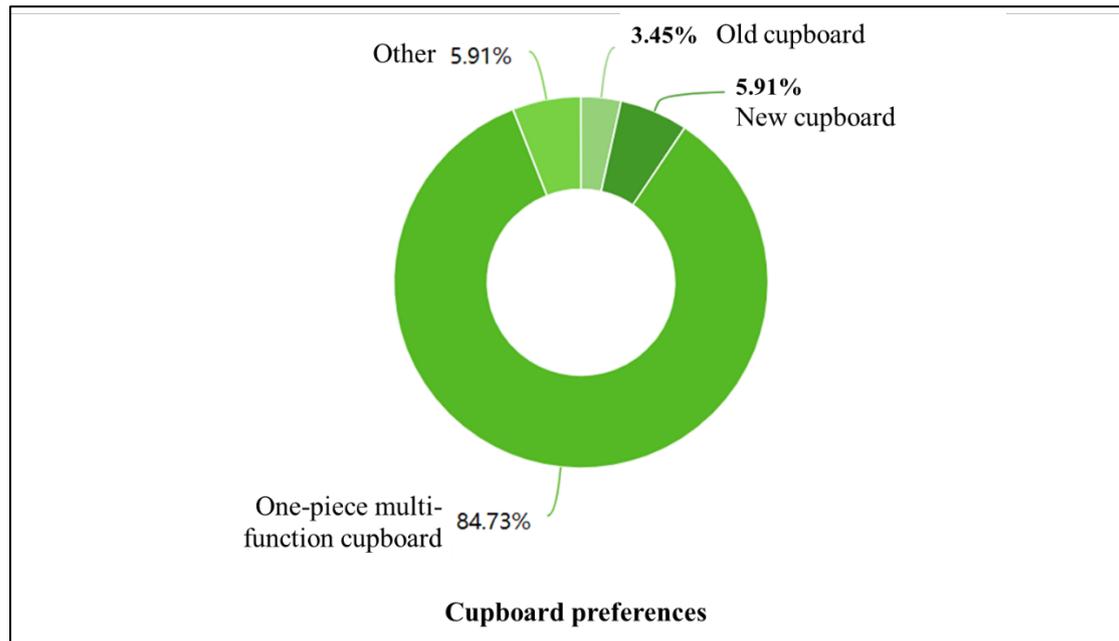


Figure 7.5 Pie chart of kitchen furniture

Table 7.14 Cross-analysis of age and kitchen furniture

Cross-analysis Results								
Title	Item	2. Age: (%)				Total	χ^2	p
		Under 20 years old	20-40 years old	40-60 years old	Over 60 years old			
21. What type of cupboard do you prefer?	Old cupboard	1(2.78)	0(0.00)	3(3.13)	3(21.43)	7(3.45)	32.992	0.000**
	New cupboard	0(0.00)	1(1.75)	9(9.38)	2(14.29)	12(5.91)		
	One-piece multi- function cupboard	30(83.33)	53(92.98)	82(85.42)	7(50.00)	172(84.73)		
	Other	5(13.89)	3(5.26)	2(2.08)	2(14.29)	12(5.91)		
Total		36	57	96	14	203		

* $p < 0.05$ ** $p < 0.01$

The survey of respondents' preferences for cupboard types (Figure 7.5) indicates that one-piece multi-function cupboards are the most popular choice, accounting for 84.73%. In contrast, new cupboards and other types are considerably less preferred, each at 5.91% and old cupboards account for only 3.45%. Furthermore, in the cross-

analysis (Table 7.14; Table 7.15), One-piece multi-function cupboards are favoured across all age groups, particularly in the 20-40 age range, where the preference rate is as high as 92.98%. Similarly, this cupboard exhibits high selection rates across income groups, especially in the 5000–10000-yuan income group, where the preference rate reaches 94.37%. This indicates that people of different income levels and age groups prefer modern and practical cupboards to traditional ones. Therefore, the design strategy should favour modern one-piece multi-functional cupboard designs.

Table 7.15 Cross-analysis of household monthly income and kitchen furniture

Cross-analysis Results									
6. Family's total monthly income (%)									
Title	Item	Less than				Not convenient to discuss	Total	χ^2	p
		5000	5000—10000	10000—15000	15000—22000				
21. What type of cupboard do you prefer?	Old cupboard	5(8.93)	0(0.00)	0(0.00)	0(0.00)	2(4.26)	7(3.45)	23.50	0.024*
	New cupboard	7(12.50)	1(1.41)	1(5.56)	0(0.00)	3(6.38)	12(5.91)		
	One-piece multi-function cupboard	42(75.00)	67(94.37)	17(94.44)	10(90.91)	36(76.60)	172(84.73)		
	Other	2(3.57)	3(4.23)	0(0.00)	1(9.09)	6(12.77)	12(5.91)		
Total		56	71	18	11	47	203		

* $p < 0.05$ ** $p < 0.01$

7.5 Summary of Phase Five

Table 7.16 Summary of household furniture preferences

Section	Key Findings	Furniture Preferences / Needs
Demographic Characteristics	Majority female respondents (67.98%) due to household roles; age concentrated in 40–60 group; most height 150–175 cm; families usually 3–5 members; household income mostly	Furniture should suit middle-aged users, female perspectives, height range 150–175 cm. Affordability important due to income constraints. Designs must balance

	5,000–10,000 yuan; income sources shifting from agriculture to nearby work and home production.	practicality with multi-member households.
Current Furniture Use & Purchase Factors	Villagers spend most time in bedrooms (59.11%) and living rooms (32.02%). Many rate current furniture as only “average” in quality, convenience, and design. Lack of furniture during festivals but also idle furniture in homes. Main reasons for buying new furniture: building/renovating house, damage, weddings. Most valued criteria: material, functionality, comfort; external factor: price.	High demand for practical, durable, functional furniture. Bedroom and living room furniture need improved convenience. Affordability is crucial; style/design less prioritised. Need flexible solutions to handle festivals/special events without excess idle furniture.
Furniture Styles	New Chinese style (39.41%) and Nordic style (30.05%) most popular. Younger groups prefer Nordic; 40–60 group prefers New Chinese. American style and “no preference” much lower.	Strong preference for culturally rooted but modern aesthetics (New Chinese) and minimalism (Nordic). Different age groups require differentiated design strategies.
Bedroom Furniture	Wooden beds most popular (64.53%), kang still used (20.69%), metal beds rare. Age/income differences: seniors & low-income prefer kang; middle-aged and higher-income prefer modern wooden beds. Wardrobes: sliding door wardrobes popular among middle-aged; seniors still prefer traditional wardrobes. Wooden chairs (57.14%) most preferred for seating.	Wooden beds and wardrobes dominate; kang should be adapted for seniors; sliding wardrobes best for middle-aged. Need to address comfort and practicality in bedroom seating. Design should cater to different income/age groups.
Living Room Furniture	Fabric sofas most popular (48.77%), followed by leather (25.12%) and wooden sofas (18.23%). Age variation: younger prefer fabric; middle-aged like leather; seniors prefer wooden. Tea tables most popular dining table (51.72%); foldable dining tables secondary. Wooden benches/stools strongly preferred, especially by middle-aged. Closed shoe cabinets most popular (69.46%).	Preference for comfort-oriented, affordable sofas (but fabric poses cleaning issues). Tea tables and wooden stools are indispensable; need ergonomic improvements for stools. Closed shoe cabinets should be redesigned for rural needs.

Kitchen Furniture	One-piece multifunctional cupboards overwhelmingly preferred (84.73%). Consistent across all ages and income levels. Traditional cupboards rarely chosen.	High demand for modern, multifunctional cupboards. Strong emphasis on practicality and integration of storage functions.
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This chapter provides a detailed analysis of the furniture preferences of rural households in Jidong. It reveals the current use of household furniture, purchasing factors, and villagers' furniture preferences in each household space.

Table 7.16 summarises the preferences of rural residents in Jidong for household furniture. Firstly, overall, Jidong villagers rated the currently used household furniture as average. This indicates that the existing furniture design still needs to be improved, a finding that is consistent with the results of the qualitative analysis. Secondly, respondents emphasised the need for furniture materials, functionality, price and comfort. Finally, Jidong villagers preferred simple and traditional furniture styles. For the kang, wooden beds, fabric sofas, tea tables, sitting furniture (wooden benches or square wooden stool), closed shoe cabinets and one-piece multi-function cupboards that Jidong villagers preferred, the researcher needs to make Chapter 8 design improvements based on the problems identified in the previous qualitative study.

These results complement the shortcomings of previous qualitative data and lay a foundation for formulating design principles.

7.6 Summary Table of Phases One to Five

Table 7.17 Summary of Findings from Five-phase Fieldwork

Phase of Fieldwork	Key Findings	Corresponding Sections / Tables
Phase One	1. Rural household furniture in Jidong remains strongly shaped by local lifestyles, including daily lifestyles (household composition, income and consumption, socialising and entertainment) and special lifestyles (folk activities, home-based production).	Section 4.2;
	2. Identified three main types of rural yards: (1) Pre-earthquake Yard, (2) Residential Yard, (3) Production-type Yard.	Section 4.3 (summary table in 4.3.4)
Phase Two	1. Categorized furniture types and spatial arrangements across three house types: (1) Pre-earthquake House, (2) Residential House, (3) Production-type House.	Section 4.5 (summary table in 4.5.4);
	2. Documented and analysed traditional furniture identified in the fieldwork.	Sections 4.6–4.7 (summary table in 4.6.8)
Phase Three	Analysed problems and needs of household furniture in relation to daily lifestyles in rural Jidong; Extracting design factors.	Chapter 5 (summary table in 5.4)
Phase Four	Analysed problems and needs of household furniture in relation to special lifestyles in rural Jidong; Extracting design factors.	Chapter 6 (summary tables in 6.4 and 6.6)
Phase Five	Documented and analysed villagers' furniture preferences; Extracting design factors.	Chapter 7 (summary table in 7.5)

8 Design Factors and Design Principles

8.1 Introduction

Building on the findings presented in Chapters 4 - 7, this chapter synthesises the empirical evidence collected across all five phases of fieldwork to identify the core factors shaping furniture design in rural Jidong. The synthesis integrates insights from spatial and functional analyses in Chapter 4, material and ergonomic findings in Chapters 5 and 6, and user preferences and behavioural patterns in Chapter 7. These data were analysed thematically to distil the recurring cultural, spatial, and practical considerations that underpin the proposed design factors and principles.

8.2 Design Factors

To systematically define the design factors relevant to household furniture in rural Jidong, the researcher categorised and synthesised furniture requirements for different dwelling types (Type A houses, Type B houses, village shops, mahjong halls, and processing factories), drawing on both qualitative and quantitative findings. Two visual frameworks were developed: Figure 8.1 shows the design factors for furniture in daily lifestyles, and Figure 8.2 displays the design factors for furniture in special lifestyles. Both figures show the source of the data, the furniture in question, the furniture needs and the design factors pointed to. From these two figures, it can be seen that whether in daily or special lifestyles, the furniture needs point to the following nine design factors: **functionality, ergonomics, safety, materials, space optimization, aesthetic appeal, cultural and lifestyle considerations, sustainability and cost-effectiveness, and ease of maintenance**. Together, these factors provide the foundation for furniture design in rural Jidong. The following sections examine each in detail.

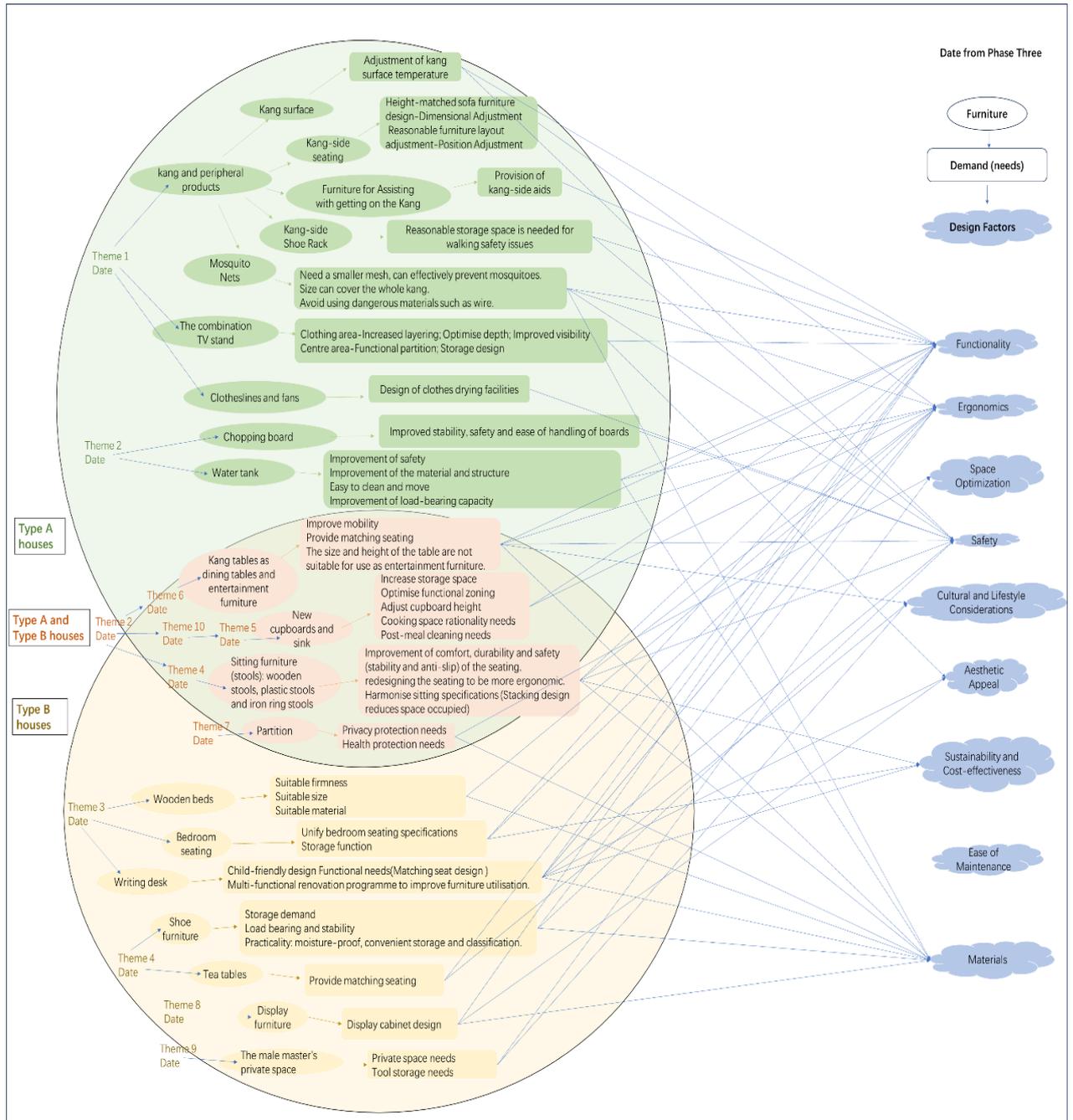


Figure 8.1 Design factors for furniture in daily lifestyles

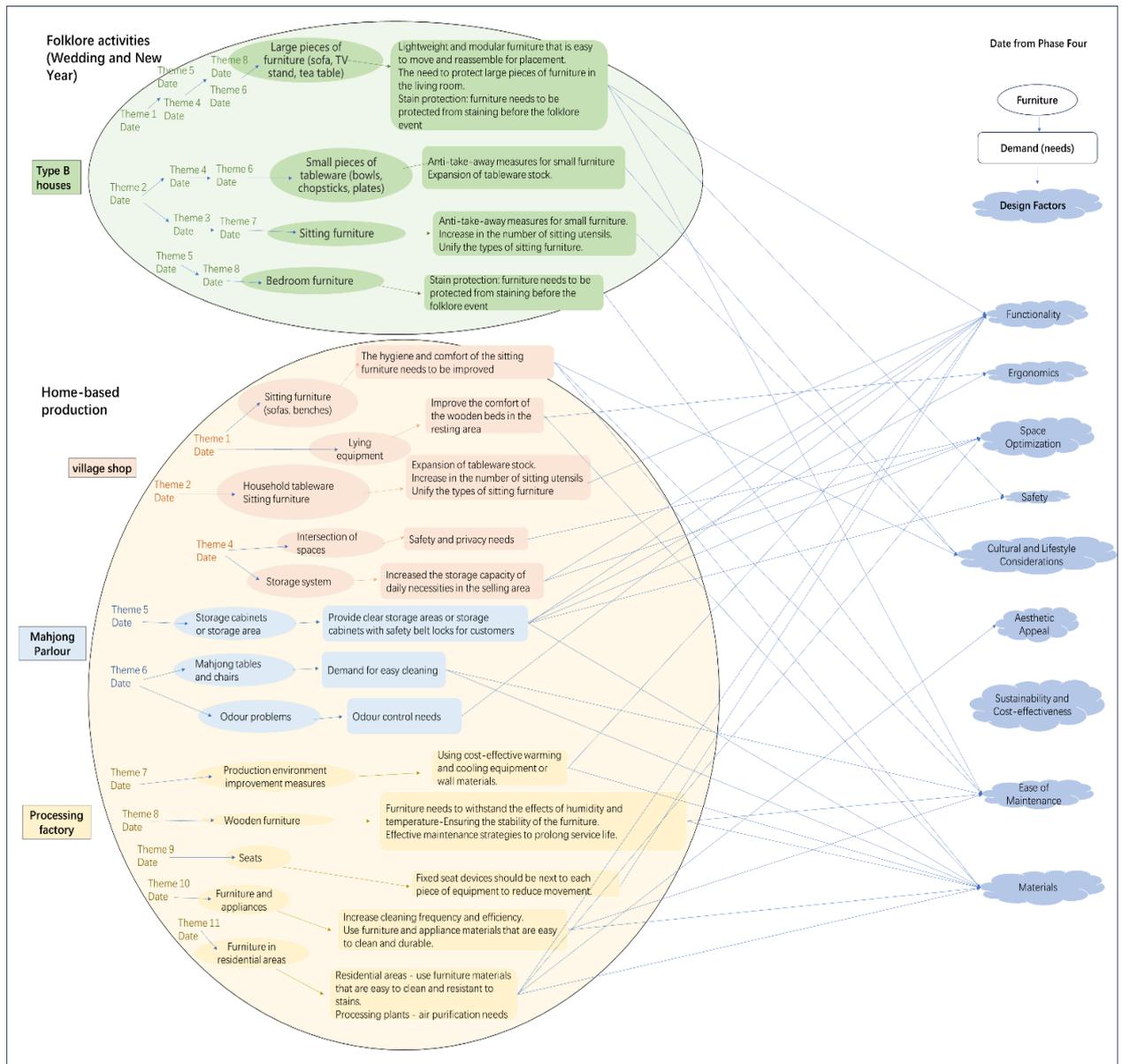


Figure 8.2 Design factors for furniture in special lifestyles

8.2.1 Functionality

Functional design enables rural Jidong furniture to serve multiple roles, enhancing practicality, comfort, usability, durability, and safety. Key aspects include temperature and height adjustment, storage, modularity, structural integrity, mobility, and function-oriented design. Firstly, temperature and height adjustment are central to both domestic and production settings in Jidong. Intelligent temperature control or thermos-regulating materials improve comfort in kang and processing areas. Height-

adjustable furniture, such as TV stands, writing desks, and the popular square wooden stool, which was identified in the questionnaire shows as the villagers' favourite daily sitting furniture, as it can be placed and used in various spaces in the home and accommodate a wide range of users.

Secondly, given the compact nature of many homes in the study, storage functionality is a particular priority in improving space efficiency and reduces clutter. For example, integrated storage along kang edges minimises tripping hazards, while TV stands with adjustable shelving and cupboards with zoning for spices, cookware, and tableware enhance usability. Public spaces such as shops and mahjong halls benefit from mobile storage racks and wheeled cabinets, improving orderliness and adaptability.

Thirdly, modular design allows furniture to be reconfigured to suit diverse needs. In Type B houses, sofas, tea tables, and cabinets could employ detachable modules, facilitating layout adjustments. This not only facilitates adjustments to space layouts but also solves the problem of moving large pieces of furniture.

Fourthly, structural design is an essential requirement for consumers in rural Jidong, furniture structural optimization could not be overlooked. Robust structural design underpins stability and safety. For instance, mosquito nets could be redesigned with aluminium alloy freestanding frames; water tanks as double-walled structures with sealing lids; and kang tables with foldable seating to ensure stability, comfort, and hygiene.

Fifthly, mobility in furniture design is another important functional component in spaces requiring frequent rearrangement. Tables, tanks, sofas, and cabinets could incorporate locking wheels to allow flexible repositioning while maintaining stability.

Sixthly, function-oriented design focuses on solving practical problems through good

design to enhance the usability and convenience of the product. For instance, designs could include footrests or lifting devices for shorter users (such as children or the elderly) to help them easily get onto the kang. Double sink designs could be used for preparing ingredients and dishes separately to improve kitchen efficiency and hygiene.

In conclusion, multi-dimensional functional innovations in design could optimize the user experience and spatial efficiency of furniture in rural Jidong, while better adapting to the unique living environment and habits of the villagers.

8.2.2 Ergonomics

The application of ergonomics in furniture design for rural Jidong is crucial. A well-designed ergonomic approach not only enhances the comfort, efficiency, and safety of furniture but also better accommodates the physiological characteristics, activity needs, and usage habits of residents. The following explores the ergonomic factors in the furniture design of rural Jidong based on the demand analysis for different types of furniture, aiming to optimize the design and improve the comfort and functionality of the living environment.

Furniture should align with the average adult height in rural Jidong (150-175 cm). Seating is particularly critical: chairs for writing desks should offer adjustable heights (40-55 cm) and lumbar support that follows the natural spine curve to prevent discomfort during long periods of use. In everyday seating, mismatched heights between kangs and sofas often create awkward visual differences during conversation. Designing sofas at 40-50 cm in height and maintaining a distance of 2-2.5 m between sofa and kang can keep eye-level differences within 0-5 degrees, thereby improving communication comfort. Similarly, square wooden stools and kang cushions should

be standardised, 35-45 cm seat height and 5-10 cm cushion thickness, to promote stability and comfort.

Beds should also follow ergonomic principles. Common double wooden beds (200 × 200 cm) would benefit from breathable, natural coconut-fibre mattresses 12-15 cm thick, providing adequate support and improving sleep quality. Single beds used in shop cashier areas should similarly comply with ergonomic standards to ensure rest comfort.

In kitchen furniture, ergonomics plays a vital role in reducing fatigue and improving efficiency. Current cupboards, typically about 60 cm high, cause users to bend excessively. Raising surfaces to 75-80 cm better accommodates users' elbow height, making daily operations more comfortable. In Type B houses, where storage is limited, enlarged cupboards (240 × 60 × 75-80 cm) with sectioned countertops for cutting, cooking, and plating can streamline workflow and minimise unnecessary movement. Double sinks (60-80 × 40-50 × 25-30 cm) and traditional cylindrical water tanks (inner diameter 37 cm, outer diameter 42 cm, height 50 cm) should also be retained or refined to meet ergonomic and practical needs.

For special furniture, ergonomic adaptation remains important. Mosquito nets should correspond to kang dimensions (200 × 300 × 180 cm) to ensure full coverage and ease of use. Shoe cabinets (180 cm high) should provide ample storage, and storage cabinets in mahjong parlours (255 × 46 × 180 cm) with 36 compartments (30 × 46 × 27 cm each) can efficiently accommodate users' belongings while optimising spatial use.

By aligning furniture design with ergonomic principles grounded in anthropometric data and local use patterns, the comfort, safety, and functionality of rural Jidong furniture can be significantly improved, supporting both physical well-being and daily social practices.

8.2.3 Safety

Safety in the furniture design of rural Jidong requires a comprehensive and preventative approach that considers daily use, seasonal fire risks, and frequent furniture movement. The aim is to minimise potential hazards while ensuring stability, durability, and user protection.

Anti-slip features are fundamental for preventing falls and instability. Durable rubber pads can be applied to the legs of stools, chairs, and mosquito-net frames, as well as beneath chopping boards, increasing surface friction and reducing slipping risks during use. Rounded corners on furniture edges and connection points (such as those on desks, mosquito-net frames, and adjustable components) help to prevent injuries caused by sharp angles during everyday activities.

As furniture is frequently rearranged in rural homes for folk activities or gatherings, protection during movement is equally vital. Attaching rubber or foam bumpers to the corners of sofas, tea tables, and TV cabinets prevents collision damage, while foldable or stackable stool designs reduce clutter and tripping hazards. Shoe storage integrated along the kang edge can also prevent accidental falls caused by disorganised footwear.

Fire safety is a particular concern during winter, when heating and cooking are spatially integrated. Following the Code for Fire Prevention in Design of Interior

Decoration of Buildings (Ministry of Public Security of the People's Republic of China, 2018), furniture near heat sources should incorporate fire-retardant materials such as flame-resistant fabrics, treated foams, and heat-resistant coatings. Bedding, cushions, and curtains used on kang should all be made from fire-retardant fabrics to prevent ignition.

Other site-specific hazards should also be addressed. Clotheslines located close to electric fans in Type A houses should be relocated to safer drying areas, and tall furniture such as shoe cabinets should be anchored to walls to prevent tipping. In semi-public settings such as mahjong parlours, cabinets can be fitted with digital password locks to enhance user security.

In summary, by integrating anti-slip designs, rounded corners, protective structures, fire-resistant materials, and targeted hazard mitigation, the safety of rural Jidong furniture can be significantly improved, enhancing both user protection and the longevity of furniture use.

8.2.4 Materials

In the furniture design for rural Jidong, material selection is key to ensuring furniture performance, durability, and comfort. Different types of furniture require the use of appropriate materials based on their functionality and environmental characteristics to ensure that the furniture meets usage requirements and has a long service life.

According to the properties and uses of the materials, this thesis classifies the materials that could be used for furniture into four main categories: synthetic and recycled materials, natural and ecological materials, metal and durable materials, and moisture-resistant and protective materials.

Firstly, material selection should prioritise sustainability, recyclability, and local availability. Synthetic or recycled materials, such as recycled polypropylene (rPP) for stool seats or high-density polyethylene (HDPE) for water tanks, offer both cost efficiency and environmental benefits. Designers are encouraged to adopt modular and detachable construction methods, enabling easy repair, replacement, and reuse.

To further promote material sustainability, it is recommended that village committees establish a product buyback mechanism to recycle villagers' old furniture and remanufacture or upgrade it to prolong its life cycle, improve resource utilisation, and reduce wastage. Simultaneously, the modular and detachable design should be promoted to facilitate furniture repair, component replacement, and recycling, thereby advancing the rural furniture industry toward a circular economy model.

Secondly, Natural and breathable materials remain vital for ensuring comfort and cultural resonance. Locally sourced woods such as poplar, combined with natural fibres like coconut coir, cotton, or latex, can improve comfort while maintaining the aesthetic and tactile qualities valued in rural households. Their integration reinforces the connection between material authenticity and traditional craftsmanship.

Thirdly, in spaces such as shops, mahjong parlours, or home-based production areas, materials must endure frequent use and variable conditions. Metals and treated hardwoods can provide the required strength and longevity. Designers should ensure that connections and fittings are replaceable to extend product life and simplify maintenance.

Fourthly, Given the region's humid climate and mixed-use domestic spaces, moisture resistance and surface protection are crucial. Finishes such as low-VOC coatings,

heat- and water-resistant layers, or bamboo-based panels can safeguard furniture against wear while maintaining indoor air quality. Designers should also consider material compatibility with insulation, fire safety, and partitioning systems to improve environmental comfort and safety.

In conclusion, by selecting appropriate materials based on the functional requirements and usage environments of different furniture types, it is possible to not only improve the service life of the furniture but also enhance its comfort and aesthetic appeal.

8.2.5 Space Optimization

In the residential and commercial environments of rural Jidong, space optimization plays a crucial role in enhancing the functionality and comfort of spaces. Spatial optimization of household furniture and environment in rural Jidong can reduce spatial clutter and improve spatial cleanliness.

Firstly, designers should prioritise flexible furniture solutions that accommodate changing spatial needs. Foldable or stackable seating and multi-purpose partitions enable quick transformation between daily living, social, and productive uses. For instance, foldable stools or partition screens in kitchens and living areas allow residents to reconfigure their environment with minimal space occupation. Such flexibility reflects the multifunctional nature of rural domestic life.

Secondly, well-planned storage design is central to maintaining spatial clarity. Built-in or embedded cabinets and mobile storage units can reduce clutter in homes, shops, and communal venues. In smaller residences, wall-integrated storage preserves interior aesthetics while improving practicality. Designers should consider how

storage functions align with residents' daily routines and circulation patterns to ensure both accessibility and tidiness.

Thirdly, appropriate zoning enhances comfort and hygiene in shared domestic and work environments. Transparent or semi-permeable partitions (such as foldable, easy-to-clean screens) can separate cooking and living areas without reducing light or openness. In mixed-use dwellings and village shops, movable partitions help distinguish public and private zones, protecting residents' privacy and security. Transitional areas, such as entrance cleaning zones with shoe racks or mats, can act as buffers that maintain indoor cleanliness and support health-oriented spatial design.

In summary, space optimization in rural Jidong furniture design should address flexibility, storage efficiency, and zoning clarity. By integrating adaptable, multi-functional, and well-organised furniture solutions, designers can improve spatial performance and create living environments that balance practicality with comfort in both domestic and commercial contexts.

8.2.6 Aesthetic Appeal

Aesthetic appeal not only involves the appearance of furniture but is also closely related to the atmosphere of the space, the comfort of living, and emotional connections. Through clever design, it is possible to enhance the visual attractiveness of rural Jidong furniture without compromising its functionality, thereby creating a living space that is both aesthetically pleasing and comfortable.

Firstly, the selection of materials directly influences the aesthetic and practical performance of furniture. Designers should consider how material textures, transparency, and colour influence spatial perception. For example, semi-transparent

cabinet doors in combination TV stand can create a sense of openness and brightness, while darker or textured finishes may better suit rural homes located near processing sites, balancing cleanliness with visual appeal.

Secondly, modern lighting design is also an important means of enhancing aesthetic appeal. In display cabinets and combination TV stands, installing warm LED spotlights or concealed light strips could effectively enhance the visual effect of the displayed items. In situations with insufficient lighting, the supplemental light makes items in different areas more visible while creating a warmer and more modern atmosphere.

Thirdly, the use of colour and pattern should respond to local preferences and functional zoning. Thoughtful colour contrasts can visually organise multifunctional spaces (such as distinguishing between retail and living areas) while also reflecting users' emotional and aesthetic needs. In children's furniture, for instance, playful colour combinations may enhance both usability and visual engagement.

Fourthly, the aesthetics of furniture in rural Jidong should combine local traditional culture with modern aesthetic trends. For example, carvings or patterns with regional characteristics should be appropriately integrated into the furniture decoration, such as the unique 'Hui' character carved on wooden furniture. Moreover, the questionnaire shows that rural residents in Jidong have a high acceptance of New Chinese and Nordic styles of furniture, so the future furniture design can combine the characteristics of these two styles, retain the traditional cultural flavour, but also meeting the needs of modern aesthetic simplicity.

In conclusion, the aesthetic design of rural Jidong household furniture should strike a balance between functionality and visual appeal. By carefully selecting materials, incorporating effective lighting, utilizing colour strategically, and considering regional aesthetic preferences, furniture design can significantly enhance both the beauty and liveability of rural spaces.

8.2.7 Cultural and Lifestyle Considerations

In the design of rural Jidong household furniture, cultural and lifestyle considerations are crucial. The mismatch between the traditional culture, daily habits, and lifestyle of rural Jidong residents and the traditional or current furniture often lies at the heart of furniture-related problems. Therefore, furniture improvement designs should fully respect and integrate the culture and lifestyle of rural Jidong to ensure that the designed furniture not only meets functional needs but also aligns with local traditions and habits.

Firstly, the traditional furniture currently in use in rural Jidong is not only an essential part of daily life but also a cultural symbol. In the design of improvements, it is essential to respect the traditional forms and avoid arbitrary changes to traditional dimensions and heights. For example, the kang, as an important component of traditional rural Jidong furniture, carries profound cultural significance. The design should focus on innovations in additional facilities, such as the kang surface regulation system, mosquito net designs for the kang, and the addition of armrests, footrests, and kang-side shoe cabinets. These improvements could effectively enhance functionality and comfort while preserving the core cultural value of the tradition.

Similarly, the Kang table is a common traditional dining furniture, but it is also often used as entertainment furniture. However, due to the low height of the kang table, it is

not very suitable for use as an entertainment table. In the design, it is not recommended to change its traditional size at will, but it is recommended to choose new furniture specially designed for entertainment use to replace the traditional kang table.

Secondly, in the daily lifestyle of rural Jidong residents, their habits directly influence the use of furniture. When existing furniture does not align with these habits, various problems often arise. For example, rural Jidong residents generally have the habit of squatting, whether for daily conversation or meals. This leads many to use tea tables, which are typically the same height as kang tables, as dining tables. In furniture design, it is necessary to adapt to the usage habits of rural Jidong residents rather than forcing them to change their traditional lifestyle, such as directly taking the tea table as the usual dining table and designing a matching seat.

In addition, this mismatch of usage habits often leads to the idleness of furniture, for example, the wooden table in the living room that was originally used for dining is unused. However, the thriftiness of rural Jidong residents means that unused furniture in homes is often repurposed. So, design should consider transforming furniture such as writing desks and living room tables into other usable forms to maximize the utilization of existing resources.

Thirdly, for the special lifestyle of holding folk activities at home in rural Jidong, furniture needs to be highly adaptable in terms of spatial flexibility, functionality, shareability, and safety to accommodate various usage scenarios. Traditional folk activities in rural Jidong usually require a large number of furniture pieces to host guests. This requires large furniture in the living room (such as sofas, tea tables, TV

cabinets, and refrigerators) to be highly movable and adaptable so that space can be cleared for activities.

Additionally, during festival activities in rural Jidong, the demand for furniture such as square wooden stools, tables, tableware and other furniture will increase significantly, but this furniture is not in large quantities in daily life. Therefore, the design should consider establishing a community-sharing system, allowing villagers to borrow furniture and household items when needed. This sharing system not only addresses short-term furniture needs but also improves resource utilization, reduces furniture idleness, and fosters interaction and cooperation among villagers.

Fourthly, for the special lifestyle in rural Jidong where family space is occupied for selling, entertainment, and commercial farming or animal husbandry, furniture presents unique requirements. For instance, rural Jidong shops are not only places for shopping but also spaces for socializing and resting. The comfort of seating in these shops directly affects customers' stay duration and their willingness to make purchases. Thus, seating design in shops should focus on comfort, potentially updating to more comfortable sofas or chairs to increase the time spent in the shop. Moreover, in commercial production, rural Jidong residents often move discarded furniture into production areas for use, but these discarded pieces pose safety hazards. Therefore, furniture standards for production areas should be unified to ensure both safety and durability.

In conclusion, the design of rural Jidong furniture should take into account cultural significance, lifestyle, and traditional habits. By designing furniture that aligns with the actual needs of the villagers, the quality of life can be enhanced, and the

transmission of rural culture and the continuation of traditional lifestyles can be promoted.

8.2.8 Sustainability and Cost-effectiveness

Sustainability and cost-effectiveness are core design factors in rural Jidong furniture design, aimed at promoting environmentally friendly and economically feasible design solutions to support the economic and ecological sustainability of rural households.

Firstly, to reduce environmental impact, the design should prioritise environmentally friendly materials, including recyclable, biodegradable, or locally sourced materials. For example, the natural and ecological materials (such as poplar wood and coconut fibre) and synthetic recycled materials (such as rPET, rPP, and rPE) proposed in Section 8.2.4 not only meet the functional requirements of furniture but also improve resource utilization, aligning with the principles of sustainable development.

Additionally, it is recommended to establish a furniture buyback and recycling system to encourage villagers to return old furniture for remanufacturing or upgrading, which can extend furniture lifespan, reduce resource waste, and lower the cost of furniture acquisition for households.

Secondly, rural Jidong furniture design should focus on standardization to facilitate mechanized and automated production. Standardized design allows for the mass production of furniture, reducing the manufacturing and selling costs of individual products. The lower furniture sales price is more acceptable for rural families with poorer economic conditions. For example, for common seating in rural Jidong (such as wooden stools, plastic stools, and iron ring stools) and bedroom seating (wooden chairs), it is recommended to unify specifications, carry out large-scale production

and sales, increase the supply of furniture, and solve the situation of insufficient furniture in Jidong villagers. For production seating equipment in processing factories, standardization is also necessary. It could be designed as fixed, shared, and height-adjustable seats to improve work efficiency.

Thirdly, for economically disadvantaged rural Jidong households, the design should prioritise low-cost and effective improvements. For instance, adding thermal insulation kang boards on the kang surface instead of the intelligent temperature control system mentioned earlier. The hollow design of the kang board makes it have a certain distance from the kang, which can also effectively isolate the heat of the kang body from direct contact with the skin while maintaining a comfortable surface temperature for a long time. For families without children, writing desks could be transformed into TV cabinets, dressing tables, or tool storage cabinets to improve the multifunctionality and usability of furniture. For shops that could not design new seating, removable cushion covers could be customized for existing sofas to facilitate regular cleaning and replacement, thereby extending the furniture's lifespan. For processing factories where wooden furniture could not be replaced, systematic maintenance measures could be taken, such as applying wear-resistant and corrosion-resistant coatings to extend its service life and ensure safety in complex work environments.

In conclusion, by choosing environmentally friendly materials, promoting standardized production, and implementing cost-effective improvements, rural Jidong furniture design could balance sustainability and cost-effectiveness, helping to improve household living environments and support the sustainable development of the rural economy and ecology.

8.2.9 Ease of Maintenance

Ease of maintenance is an important consideration in rural Jidong furniture design, aimed at reducing the complexity of daily maintenance for villagers and extending the furniture's lifespan through the design of removable components, surface protection, and environmental adaptability.

Firstly, when designing furniture, considering the convenience of daily cleaning and maintenance, the use of removable components could significantly reduce cleaning difficulty and extend the furniture's service life. For example, the cushion cover of the sofa in the shop, the backrests, armrests, and seat cushions of children's writing desks can be designed as removable, convenient for users to remove and clean regularly, and keep the furniture clean and sanitary.

Secondly, to reduce the accumulation of stains and damage on furniture surfaces, using waterproof, oil-resistant, and stain-resistant surface treatments or designing protective covers is an effective solution. For example, before the folk event, oil-resistant covers could be provided for shop sofas, living room furniture, and bedroom furniture to protect the furniture from food contamination and stains. For high-pollution environments, for furniture and equipment in processing factories, applying waterproof, oil-resistant, and stain-resistant coatings (such as PTFE coatings) or using dust-proof and oil-proof outer shell designs could effectively reduce the accumulation of dust, grease, and other substances. Antifouling material tablecloths can also be designed for mahjong tables in mahjong parlours to reduce cleaning difficulty.

Thirdly, based on the needs of different usage environments, furniture design should be highly adaptable and incorporate regular maintenance measures to ensure the functionality and safety of furniture in various environments. For example, designing

a splash-proof sink for kitchens in rural Jidong type B houses could effectively avoid the secondary pollution of water stains. For high-frequency use areas such as mahjong parlours, ventilation systems and fans could be added to maintain airflow. In residential areas around processing factories, high-efficiency air purifiers could be installed, especially in key areas such as the living room and bedroom, to reduce the impact of external pollution on the indoor environment. Additionally, in the design of wooden furniture for processing factories, regular checks and updates of protective coatings could effectively ensure the long-term use of furniture, while improving the overall safety and comfort of the work environment.

These easy-to-maintain designs, could enhance the long-term efficiency of furniture use and the furniture’s lifespan could be extended.

8.3 Summary of Design Factors Definitions

Table 8.1 Summary of design factors for rural household furniture in Jidong and their contextual interpretations

Design Factor	General Definition	Meaning in Rural Jidong Context	Examples from This Study
Functionality	The capacity of furniture to effectively support anticipated activities and practical functions.	Furniture must support the overlapping occurrence of three activities within the same space: domestic living, folk customs, and household production, whilst accommodating frequent adjustments to spatial arrangements and layouts. Core design requirements include adjustability, integrated storage, modularity, and mobility.	Modular sofas, tea tables, and cabinets in Type B houses, allowing reconfiguration of layouts and easier movement during folk activities or spatial changes.

Ergonomics	Furniture is designed to accommodate human physiology, movement patterns and usage habits, thereby reducing physical fatigue and achieving harmonious interaction between people and objects.	Design must align with local anthropometric ranges and accommodate habitual postures such as squatting, sitting on kangas, and mixed seating positions. Height coordination between beds, sofas, stools, and tables is crucial for comfortable interaction and usage; kitchen and shop furniture must mitigate fatigue from prolonged work and repetitive tasks.	Raised kitchen work surfaces (75–80 cm) and enlarged cupboards in Type B houses to reduce excessive bending and improve workflow efficiency.
Safety	Furniture must possess design attributes ensuring structural stability, freedom from physical harm, and the absence of substances harmful to health.	Safety design must address fire and usage risks arising from winter heating, frequent furniture rearrangement, and mixed-use spaces. Furniture should minimise collision, slip, and overturn hazards, particularly during folk gatherings. In kang-centred living environments, flame-retardant materials and robust structures are paramount.	Application of fire-retardant fabrics and treated foams on kang bedding and cushions to address winter heating and fire risks. Adding rounded edges and anti-slip pads to stools and mosquito-net frame.
Materials	Select primary materials, secondary materials and fittings appropriate to the furniture's function and setting, taking into account design elements that balance material physical properties with process compatibility.	Materials should be locally sourced, economical and durable, and suited to the humid, multi-purpose rural environment of eastern Hebei. (Natural materials emphasise comfort and cultural affinity, while recycled plastics and metals enhance durability; furniture components must be repairable and replaceable, aligning with villagers' long-term usage habits.)	Using locally sourced poplar timber as the primary material for wooden furniture reduces costs and enhances regional cultural identity. Adoption of recycled plastics (rPP, HDPE) for stools and water tanks to improve durability and reduce material costs.
Space Optimization	Through the design of furniture dimensions, form and function,	Furniture design must facilitate swift spatial transitions between living, socialising and	Use of foldable stools and movable partitions to rapidly transform living

	maximise the spatial efficiency of both the home and its furnishings.	commercial functions. Order and hygiene are maintained in shops and living spaces through partitioning furniture; storage systems (particularly in village shops) should employ built-in, wall-integrated or mobile solutions to minimise clutter.	rooms for folk activities and large gatherings.
Aesthetic Appeal	The visual aesthetic expression of furniture in terms of form, colour, texture and detail.	Aesthetic design must strike a balance between traditional cultural identity and residents' growing acceptance of modern styles; by enhancing spatial brightness and sense of order, and integrating regional decorative elements into the design, emotional resonance is strengthened.	Integration of regional decorative elements, such as carved '回' characters. Use of semi-transparent cabinet doors and warm LED lighting in TV stands and display cabinets to improve visual openness and spatial atmosphere.
Cultural and Lifestyle Considerations	Furniture design incorporates regional cultural symbols, aligning with users' lifestyles and behavioural patterns to achieve a harmonious balance between practicality and spiritual needs.	Respect must be shown for the traditional forms of Jidong furniture (such as the heated bed), while adapting to changes in daily and festive lifestyles; folk activities in Jidong demand greater mobility, adaptability and shared use of furniture.	Preservation of traditional kang dimensions while introducing auxiliary designs such as kang-side shoe cabinets, footrests, and mosquito nets. Adaptation of tea tables as dining tables paired with suitable low seating, responding to villagers' squatting and low-seating habits.
Sustainability and Cost-effectiveness	Design elements that balance environmental considerations (renewable materials, green manufacturing processes) with cost control (production, transportation, and usage	Standardised design and mass production reduce furniture costs, making essential pieces more accessible; incremental, low-tech design upgrades provide practical, sustainable solutions	Standardised production of common seating (wooden stools, plastic stools, iron ring stools) to reduce manufacturing costs and improve availability.

	costs), achieving a harmonious blend of sustainability and value for money.	for households with limited financial means.	Low-cost alternatives for poorer households, such as insulated kang boards replacing intelligent temperature control systems.
Ease of Maintenance	Furniture that is easy to clean, simple to maintain and has readily replaceable components can reduce usage and maintenance costs while extending the lifespan of the furniture.	Furniture must withstand contamination, frequent use and limited maintenance resources; design should facilitate cleaning, disassembly and surface protection, extending the lifespan and practicality of furniture through replaceable components and protective coatings.	Removable cushion covers for shop sofas to facilitate regular cleaning and replacement. Application of waterproof, oil-resistant, and antifouling coatings on furniture used in mahjong parlours and processing factories.
<p>Note: The <i>General Definition</i> column is adapted from existing literature (Adapted from Liu, 2022; Nong, 2022; Guo,2023), while the remaining columns summarise findings and discussions presented earlier in this chapter, based on the author’s fieldwork in rural Jidong.</p>			

Through the refinement of the nine design factors identified in Section 8.2, this subsection summarises their specific meanings within the rural Jidong context (Table 8.1). A clear contrast emerges between the general definitions of these design factors and their contextual interpretations in rural Jidong. The general definitions reflect widely recognised, universal standards within the field of furniture design, whereas the Jidong-specific interpretations are shaped by local household lifestyles revealed through ethnographic fieldwork. In rural Jidong, functionality shifts from supporting a single, predefined use towards enabling the coexistence of domestic living, folk customs, and household production within the same space. Ergonomics extends beyond anthropometric fitting to accommodate culturally embedded postures such as squatting and kang-based sitting. Safety becomes closely associated with seasonal heating practices, frequent furniture rearrangement, and densely populated folk activities. Material selection similarly departs from standardised industrial aesthetics,

prioritising local availability, economic affordability, and long-term repairability. Space optimisation focuses on rapid functional transformation, while aesthetic considerations seek a balance between traditional cultural identity and emerging modern preferences. Sustainability and ease of maintenance are redefined through cost control, standardisation, and low-technology durability. Taken together, these contrasts demonstrate that the design factors identified in this study do not constitute universal principles applicable to rural environments in general, but rather represent contextualised interpretations grounded in the lived realities of rural households in Jidong.

Moreover, although each design factor addresses a distinct aspect of furniture design, their meanings in the rural Jidong context are inherently interwoven, reflecting the overall characteristics of rural daily life rather than isolated design categories. Specifically, ergonomics, space optimisation, and cultural lifestyle considerations are closely interconnected in Jidong furniture use. Centred on embodied practices such as squatting, low seating, and kang-based living, furniture must simultaneously support living, dining, social interaction, and folk activities within spatially constrained domestic environments. These observations indicate that bodily comfort is always embedded within specific lifestyle patterns and spatial usage logics. Similarly, functionality and aesthetic appeal are inseparable in rural Jidong. Furniture is repeatedly employed across domestic life, small-scale commercial operations, and folk activities, with its mobility, transformability, and structural adaptability directly affecting usage efficiency. At the same time, villagers' preferences for familiar forms, warm colour palettes, and culturally recognisable decorative elements strongly influence whether furniture is accepted, retained, or continuously used. In this context, aesthetics directly serves practical use and spatial integration by maintaining visual order, spatial familiarity, and cultural identification. Furthermore, material selection, sustainability, and cost-effectiveness form an integrated whole shaped by local resource availability, economic constraints, and villagers' preferences for

durability, repairability, and low-cost solutions. Finally, safety and ease of maintenance are jointly constrained by the realities of mixed-use spaces, fire risks associated with winter heating, and limited maintenance resources.

Based on an understanding of these overlapping factors, Chapter 9 integrates the design factors into four higher-level design principles. This process of integration does not diminish the richness of the research findings; rather, it translates context-specific insights into a structured set of principles that remain firmly rooted in rural Jidong practice. The resulting design principles should therefore be understood as outcomes of empirical research rather than abstract generalisations, forming a coherent framework that bridges field observation and design practice.

8.4 Summary

This chapter, by analysing and summarizing the design factors, facilitates the creation of household furniture with strong functionality, safety, adaptability, and cultural relevance, while also bringing cost-effectiveness and sustainability to the rural environment. It lays the foundation for formulating the design principles for rural Jidong furniture.

9 Discussion and Conclusion

9.1 Introduction

This chapter discusses the primary findings of this research and relates them to the existing literature, establishing the core distinctions and contributions of this research. The unique aspect of this research lies in its adoption of a mixed-method approach in anthropological ethnographic fieldwork to conduct an in-depth exploration of the current state of rural household furniture in Jidong. First, the research documented the existence and usage of certain traditional rural furniture, contributing to the preservation of cultural heritage and providing a foundation for its continued transmission. Second, utilizing lifestyle theory, it identified specific issues associated with currently used furniture and proposed design principles to address these challenges, thereby providing theoretical support for the improvement and design of rural furniture in Jidong.

Sections 9.2, 9.3, and 9.4 examine the relationship between the research findings and the research questions and objectives. This research also compares the research results with the literature on furniture in other rural regional and Jidong rural areas. Section 9.5 discusses the theoretical and practical implications of this research. Finally, Section 9.6 analyses the study's limitations and outlines directions for future research, offering insights and suggestions for subsequent investigations.

9.2 Research Question One

To address research question one (What traditional furniture was discovered in the villages surveyed?), the second phase of fieldwork was conducted in four rural Jidong villages. This phase was specifically designed to systematically document traditional

furniture by employing open-ended interviews as the primary method, complemented by direct observation approaches. Through detailed analysis of traditional furniture in local homes, this study examined multiple dimensions, including size, usage, decorative features, and manufacturing techniques, while also exploring their cultural significance. The findings are summarized in Section 4.6 of the thesis. By organizing and documenting traditional furniture in the study area, this research contributes to filling a part of the gaps in traditional furniture data in rural Jidong, successfully achieving Objective One.

9.3 Research Question Two

To explore the research question two (What problems and needs do rural residents have regarding household furniture in the context of the lifestyle of eastern Hebei rural households?), the first half of the first phase of fieldwork involved an investigation and data collection on the contextual background of Jidong rural lifestyle, which is discussed in detail in Sections 4.2 of the thesis.

Building upon this foundation, the second half of the first phase along with the second phase of fieldwork involved a photographic analysis of yards, houses, and furniture. Chapters 4.3 and 4.5 specifically examine the types and layouts of currently used furniture in different yards and houses. This thesis divides the yards and houses in Jidong into three categories: pre-earthquake yards and houses, residential yards and houses, and production-type yards and houses. Among these, the pre-earthquake yards and residential yards are included in the eleven types of Jidong rural yards proposed by Wang *et al.* (1962). At present, the most prevalent yard layouts in rural Jidong are Type A and Type B yards in residential yards. This research provides a detailed introduction and analysis of the types and layouts of currently used furniture in the Type A houses of Type A yards and Type B houses of Type B yards.

Regarding pre-earthquake yards, although their overall number is minimal, some of the examples of traditional furniture remaining within them holds certain collectable value. This research summarizes this type of furniture to answer research question one. Furthermore, a new category of functional-type yards was introduced in this research. It is a product of the changes in Jidong's rural lifestyle with the development of the times, and a new discovery made by the researcher through fieldwork. This research classifies and arranges the types and layouts of furniture currently used in the production area.

Secondly, integrating the findings from the first two phases, the third phase conducted fieldwork guided by lifestyle theory. Chapters 5, 6, and 7 of thesis employ a mixed-methods approach, incorporating interviews, observations, field diaries, and questionnaires capturing both participants and researcher perspectives. These methods integrate qualitative and quantitative analyses to provide a comprehensive understanding of the study's findings. These chapters delve into the issues, demands, and preferences associated with currently used furniture in daily and special lifestyles. This research addresses the limitations of prior research, such as Shao (2013) and Zheng (2019), which focused only on the modification of individual household furniture and lacked a comprehensive analysis of issues and demands for furniture in various home spaces in rural Jidong. Drawing on the fieldwork methods of scholars such as Wang Tong (2010), Zhang Chong (2005), and Zhang Yachi (2007), who studied rural household furniture in other regions of China, this research, based on their methods, adds the dual perspectives of respondents and observers to collect multiple data of qualitative and quantitative data. Through in-depth analysis, this research successfully establishes a comprehensive archive of the current furniture needs of rural households in Jidong, achieving the second research objective. This outcome provides significant data support and theoretical foundations for future research on furniture design in rural Jidong.

9.4 Research Question Three

In order to answer research question 3 (What improvement principles can be proposed for the design and usage of furniture in rural households of eastern Hebei, considering their current lifestyle?), Chapter 8 of this thesis proposes design factors for existing furniture. Unlike previous studies (Shao, 2013; Zheng, 2019), which focused only on isolated furniture improvements, this research presents a holistic approach by systematically analysing furniture use across different household spaces and lifestyles. In contrast, through fieldwork, this research comprehensively sorted out the problems encountered by rural families in the use of household furniture in different family spaces and lifestyles in the Jidong area. Chapter 8 presents design factors for each piece of furniture, with some furniture even accompanied by detailed design plans, following the writing methods of Engler *et al.* (2009). These design factors are further discussed and analysed in Section 9.6, forming design principles that serve as a bridge between design considerations and future design practice. These outcomes successfully fulfilled the third objective of this research.

9.5 Contribution to Knowledge

The original contribution to knowledge presented in this research is multifaceted, grounded in its unique methodological approach, comprehensive data collection, and the innovative application of lifestyle theory to the study of rural household furniture in Jidong. This approach differs from the traditional mixed research methods of combining quantitative and qualitative data used by scholars such as Sun (2014), Wang Tong (2020), and Li (2015), and also from the purely qualitative ethnographic methods employed by Wang (2017). This research not only fills existing gaps in the documentation and analysis of traditional rural furniture but also proposes practical design principles for improving the functionality and cultural relevance of contemporary furniture in rural eastern Hebei.

A key contribution of this research lies in its adoption of a mixed-methods approach within anthropological ethnographic fieldwork. By integrating qualitative methods such as open-ended interviews, participatory observations, field diaries, and photographic analyses with quantitative data from structured questionnaires, the research achieves a holistic understanding of the subject matter. This methodological framework allowed for an in-depth exploration of both the historical context and the present-day realities of rural household furniture, setting this research apart from previous research that predominantly relied on singular methodological perspectives.

The systematic documentation of traditional rural furniture discovered during fieldwork represents another significant contribution. The identification and analysis of nine distinct types of traditional furniture, categorised by dimensions such as size, usage, decorative features, and manufacturing techniques, address the lack of comprehensive data in this area. This archival effort not only preserves valuable cultural heritage but also provides a foundational database for future comparative studies and design innovations.

In addition, Jin (2010), Li (2015), and Wang *et al.* (2023) have studied rural furniture in other areas of China using lifestyle theory. The application of lifestyle theory to understand the problems and needs of rural residents concerning household furniture introduces a novel analytical lens. By examining how changes in lifestyle influence furniture usage and preferences, the study offers critical insights into the evolving domestic environments of rural Jidong. This approach surpasses the limitations of earlier studies, which often focused narrowly on individual furniture pieces without considering broader socio-cultural dynamics. The study fully demonstrates the applicability of lifestyle theory in analysing the problems and needs of rural furniture

in specific regions of China, providing new empirical support for the broader application of this theory.

Another original contribution is the classification and detailed analysis of furniture layouts in various yard types, including pre-earthquake yards, residential yards, and the newly identified functional-type yards. The introduction of functional-type yards, a concept emerging from fieldwork observations, highlights the adaptive responses of rural architecture and furniture arrangements to socio-economic changes. This new category of yard was identified during the fieldwork and is included in the research as it marks a change to traditional rural life in Jidong.

Moreover, the study's practical contributions are evident in the design principles proposed for improving rural household furniture. Unlike previous research that offered generic recommendations, this research presents specific improvement measures for different furniture types. These principles are informed by empirical data and tailored to the actual needs and preferences of rural residents, ensuring their relevance and applicability.

In summary, this research makes original contributions to knowledge through its methodological innovations, comprehensive documentation of traditional furniture, application of lifestyle theory, introduction of new yard classifications, and the development of targeted furniture design principles. These contributions not only advance academic understanding of rural household furniture in Jidong but also offer practical solutions for enhancing the living conditions of rural communities.

9.6 Conclusion and Reflection

Conclusion:

This research has investigated the household furniture of rural Jidong, integrating both traditional and currently used furniture within the scope of anthropological fieldwork. By situating the study against the backdrop of rapid socio-economic development, the erosion yet persistence of traditional lifestyles, and the particular seismic history of the region, the thesis highlights the mismatch between urban-oriented furniture markets and the distinctive needs of rural households. Through documenting surviving traditional furniture and examining contemporary furniture use in relation to rural daily and special lifestyles, this study not only supplements the fragmented historical record but also addresses practical design problems faced by villagers. The outcomes culminate in the formulation of design factors and design principles that bridge cultural continuity and modern usability, contributing both to the preservation of rural material culture and to the development of design strategies tailored to local contexts. In this study, the design factors identified in Chapter 8 constitute the primary empirical outcomes derived from multi-phase ethnographic fieldwork, while the design principles presented here are not treated as additional findings but as interpretive abstractions developed to translate those factors into practice-oriented guidance. In doing so, the research establishes a foundation for future work on culturally responsive, sustainable, and user-centred rural furniture design in eastern Hebei and beyond.

Reflection:

Implications for practice

As discussed in Section 2.3.4, this study argues that individual design factors alone are insufficient to directly inform practical design interventions. Design factors

primarily function to reveal problems, describe contexts, and synthesise fieldwork findings; their value lies in explaining what is happening and why it happens (Muhammad Suandi *et al.*, 2022). Design practice, by contrast, must address the question of how design should be carried out. Consequently, in order to translate ethnographic findings into actionable design guidance, design factors need to be integrated, abstracted, and reconfigured through design principles, which serve as an intermediary framework capable of informing future design decisions.

Based on this understanding, Table 9.1 synthesises and abstracts related issues across the nine identified design factors, distilling them into four design principles. This table sets out “Key Fieldwork Findings in Rural Jidong,” “Grouped Contextual Logic,” and “Analytical Rationale,” clearly demonstrating how each design principle emerges from the interplay of multiple design factors within specific rural contexts of Jidong. Accordingly, the design principles function as an intermediary analytical framework, bridging detailed ethnographic evidence and future design decision-making, rather than as universal or decontextualised design rules.

Table 9.1 Design Factors to Design Principles

Design Factors	Key Fieldwork Findings in Rural Jidong	Contextual Grouping Logic	Analytical Rationale (Why These Factors Are Interrelated)	Resulting Design Principle (General Definition)	Design Principle Meaning in the Rural Jidong Context
Ergonomics	Long-term squatting and kang-based sitting practices; mismatch between stool height and villagers’ body proportions	Furniture use is deeply shaped by embodied habits and a kang-centred lifestyle	In rural Jidong, ergonomic problems do not simply stem from dimensional mismatch, but are closely associated with long-established squatting practices, kang-based living, and the multiple uses of domestic space. Furniture does not serve a single, stable	Human-Centred Design Principle (A human-centred design approach grounded in	Human-centred design in Jidong extends beyond anthropometric optimisation to encompass embodied practices shaped by local culture,

Cultural and Lifestyle Considerations	Continued use of traditional kang dimensions and inherited furniture; preference for adaptation rather than replacement; furniture as a carrier of family memory	Furniture functions as a material carrier of lifestyle, cultural identity, and everyday order	posture; instead, it supports continual transitions between resting, dining, socialising, and productive activities. Accordingly, furniture scale, height, and spatial arrangement must respond to this dynamic usage logic. Ergonomics, lifestyle, and space optimisation therefore jointly constitute a human-centred design issue rooted in embodied practice.	general anthropometrics, comfort, and usability)	everyday habits, and social interaction norms. Furniture should adapt to villagers' established ways of living rather than requiring behavioural change. Traditional furniture forms should be preserved in their original dimensions, while usability is improved through auxiliary and peripheral design interventions.
Space Optimisation	Single pieces of furniture support resting, dining, and social activities within the same space under different lifestyle scenarios	Spatial organisation follows everyday practices rather than functional zoning principles			

Functionality	Furniture shared across shops, household workshops, weddings, and folk activities; frequent movement and reconfiguration of furniture	Furniture must be adaptable, mobile, and transformable across multiple contexts	In rural Jidong, furniture is repeatedly used across domestic life, commercial activities, and folk events. Its mobility, transformability, and structural adaptability directly affect usage efficiency. At the same time, villagers' preferences for familiar forms, colours, and cultural symbols determine whether furniture is accepted, retained, or modified. Aesthetic qualities are therefore not merely decorative, but integral to whether furniture can be smoothly integrated into spatial order and sustained use. Functionality and aesthetics jointly shape furniture "usability" and	Principle of Balancing Functionality and Aesthetics (A design principle that seeks balance between functional requirements and visual expression)	Aesthetics in Jidong is non-decorative and practical in nature. Visual simplicity, familiar forms, and cultural recognisability help maintain spatial order, enabling furniture to function efficiently within crowded and multifunctional interiors. This principle redefines aesthetics as an integral
Aesthetic Appeal	Preference for familiar forms, warm colour palettes, and culturally recognisable decorative elements	Aesthetic comfort serves everyday usability rather than symbolic display			

			“acceptability” in this context.		component of functional performance rather than an added value.
Materials	Reliance on local timber, recycled plastics, and natural fibres; material choices constrained by cost and availability	Material decisions are shaped by local resource systems and economic constraints	In rural Jidong, the relationship between material choice and sustainability arises from concrete economic realities and resource conditions. Villagers depend primarily on locally available materials and prioritise durability, repairability, and reuse, particularly in economically constrained households. Sustainability is therefore not an abstract environmental goal, but a pragmatic strategy grounded in long-term usage cost, maintenance capacity, and material availability. Materials and cost-effectiveness together form an economic sustainability logic centred on long-term affordability.	Economic Sustainability Principle (A design principle emphasising long-term resource efficiency from environmental or economic perspectives)	Sustainability in Jidong is practice-oriented, prioritising local materials, standardised components, and repairable structures to enable long-term use and incremental adaptation under limited economic conditions.
Sustainability and Cost-effectiveness	Economically disadvantaged households prioritise repair, reuse, and durability over novelty	Long-term affordability takes precedence over short-term performance optimisation			
Safety	Fire risks associated with kang heating; unstable stool structures; workshop furniture often temporarily assembled	Safety hazards arise from improvised adaptation and mixed-use environments	In highly mixed-use rural environments, safety risks and maintenance burdens tend to emerge simultaneously. Kang-based heating, frequent furniture movement, and improvised production furniture make fire hazards and structural instability commonplace. Limited time and maintenance resources further require furniture to be easy to clean, repair, and	Principle of Ease of Maintenance and Safety (A design principle ensuring safety and ease of maintenance through structural	Safety in Jidong is a condition of everyday use rather than a regulatory threshold. Furniture must minimise risks of fire, slipping, and contamination while remaining easy to clean, repair, and
Ease of Maintenance	Limited time and resources for	Furniture must tolerate frequent use			

					<p> durable under </p>
<p> Note: The <i>General Definition</i> column is adapted from existing literature (Yang et al., 2024; Bai et al., 2024; Wang, 2020), </p>					

As shown in the table, each design principle is generated through the combined and interrelated influence of multiple design factors as they operate within the specific socio-spatial context of rural Jidong. For example, the Human-Centred Design Principle is not derived solely from ergonomics, but instead integrates ergonomics with cultural and lifestyle considerations and spatial optimisation. This combination reveals that furniture use in rural Jidong does not follow standardised ergonomic postures or functionally zoned spatial logics. Rather, it is embedded within a kang-centred way of life, long-established practices of squatting and mixed sitting postures, and the dynamic transformation of domestic space between resting, socialising, and productive activities. Accordingly, this principle is redefined in the Jidong context as a response to embodied practices, emphasising that furniture should adapt to existing ways of living rather than compel users to modify established behaviours.

Similarly, the Principle of Balancing Functionality and Aesthetics emerges from the functionality and aesthetic appeal. In rural Jidong interiors, furniture is required to support cross-scenario use, mobility, and functional transformation. At the same time, fieldwork findings indicate that whether furniture is accepted, retained, or continuously used depends largely on its ability to maintain familiar formal languages

and culturally recognisable characteristics. Aesthetics in rural Jidong, therefore, are not an additional symbolic layer, but a practical factor that directly influences spatial order, efficiency of use, and household acceptance. As such, functionality and aesthetics are inseparable in practice.

The Economic Sustainability Principle is jointly constituted by material considerations and sustainability and cost-effectiveness factors. Its underlying logic is not based on abstract environmental ideals, but is rooted in villagers' economic conditions, local resource systems, and preferences for durability and repairability. In rural Jidong, sustainability is understood as a strategy centred on long-term affordability, emphasising the extension of furniture life cycles through locally available materials, standardised components, and gradual refurbishments, rather than through one-off, high-technology, or high-cost solutions aimed at achieving idealised performance.

Finally, the Principle of Ease of Maintenance and Safety integrate the design factors of safety and ease of maintenance. The diversity of use contexts, reliance on kang-based heating, and frequent movement of furniture result in the simultaneous presence of safety risks and maintenance burdens in rural Jidong households. In contrast to safety design approaches that rely on regulations or external supervision, this principle prioritises risk reduction and labour minimisation through structural stability, material selection, and maintenance-friendly design under conditions of limited resources.

Overall, compared to their general definitions, these four design principles undergo a clear shift in emphasis within the rural Jidong context: from abstract, universal design values to practice-oriented principles shaped by specific lifestyles, cultural

conventions, and economic realities. It is in this sense that design principles are positioned in this study as a critical bridge between design factors and future design practice. These four design principles provide a structured pathway for designers, manufacturers, and policymakers working within the Jidong rural context.

It is important to emphasise that the design principles proposed in this study cannot be directly transferred to other rural contexts. Although they may appear similar on the surface to widely recognised principles such as human-centred design, sustainability, or safety, their meanings are shaped by the specific social, cultural, environmental, and economic conditions of rural Jidong. Moreover, in contrast to general rural design frameworks that prioritise standardisation or scalability, the principles proposed herein demonstrate how design principles can be derived from ethnographic evidence and remain closely aligned with local ways of living. In this way, the study contributes to both design practice and research methodology by illustrating how in-depth contextual insights can be systematically translated into practice-oriented guidance while preserving cultural and contextual richness. On this basis, the design principles proposed in this study are positioned not as universal design solutions, but as a contextual bridge between empirically grounded design factors and future design practice, demonstrating how ethnographic research can be systematically translated into actionable yet locally responsive design guidance.

Reflection on the research process

The researcher reflects on the key stages of the research process from a methodological perspective, focusing on how anthropological fieldwork methods influenced the formation of research pathways and conclusions at different stages of data collection, analysis, and presentation.

During the data collection stage, the primary innovation of this study lies in the systematic integration of anthropological fieldwork methods into rural furniture design research. Through a combination of long-term participant observation, interviews, and photographic documentation, the study records the real-life contexts of furniture use in rural households in Jidong. This approach not only attends to the form and function of furniture but also emphasises how furniture is actually used in daily life, traditional festivals, and special events. For example, during weddings, collective entertainment activities, and household production, furniture often assumes multiple and continuously shifting functions. Compared with similar studies (Shao, 2023; Yan, 2022), which primarily focus on functional optimisation or technical improvement, this research places greater emphasis on the cultural dimension, particularly on how furniture is embedded within local lifestyles and how it relates to regional customs, family structures, and patterns of spatial use. This practice-oriented fieldwork approach enables a deeper understanding of furniture as a social and cultural carrier.

In the data analysis stage, this study adopts thematic analysis to systematically organise and synthesise textual, visual, and observational data obtained through fieldwork. Through coding and analysis, the researcher gradually identifies shared issues and contextual characteristics in the use of rural household furniture in Jidong, and on this basis extracts design factors. These procedures provide a structured pathway for subsequently translating ethnographic evidence into design-oriented language.

In the presentation of research findings, this thesis does not simply list fieldwork observations but instead integrates and abstracts the findings through a hierarchical structure of design factors and design principles. In particular, during the construction of design factors and design principles, prior design practice provided important

analytical experience for identifying and interpreting ethnographic data. For example, the study by Wang et al. (2023) on living room furniture design in Yuanling County, which systematically incorporated local traditional cultural factors into furniture design decisions, offered an important reference for this research. Similarly, in analysing furniture-related issues in rural Jidong, this study places local traditional culture, everyday practices, and spatial usage patterns at the core of its design factors and design principles. In addition, the exploration of a “local materials and standardised design” approach in the Anji bamboo rural furniture project in Zhejiang inspired this study’s proposal of a design principle that is grounded in local materials while remaining compatible with reproducible production (Wang Tong, 2020). Furniture design cases following the “3.11” earthquake in Japan, in which lightweight beds and storage units employing snap-fit structures could be assembled without professional tools, also directly influenced this study’s attention to disassembly within the functionality-related design factors for rural furniture in Jidong (Fukushima Reconstruction Information Portal, 2025).

Compared with furniture design research commonly conducted in other rural areas of China or post-disaster contexts, this study demonstrates a degree of contextual specificity in its discussion of safety-related factors. Existing studies tend to emphasise emergency response and low-cost solutions, often addressing only short-term post-disaster needs while paying limited attention to cultural adaptation and sustained use in long-term rural living contexts (Shao, 2023; Wang, 2018; Mao, 2020). Such studies typically advocate universal design principles, for example, by using standardised modular units to reduce costs and improve efficiency, yet often overlook significant regional differences in rural lifestyles. For instance, rural furniture in northern China must accommodate winter heating systems such as heated kang or radiators, whereas southern regions place greater emphasis on moisture resistance and ventilation performance. In contrast, this study is grounded in the specific family structure of rural Jidong (such as multi-generational households), the

high degree of integration between production and daily life, and local traditional furniture forms and associated customs. It therefore proposes design factors that emphasise structural stability, safety details, and emergency adaptability. This approach avoids the simple transplantation of “universal solutions” and instead seeks to respond to the concrete realities of rural households in Jidong through contextualised design.

Overall, this study attempts to establish a systematic pathway from in-depth ethnographic fieldwork to the extraction of design principles. The reflective value of this approach lies not only in methodological integration but also in its response to how design research can engage with cultural difference and contextual complexity.

The influence of the researcher’s design background on the study

The researcher’s professional background in furniture design had a profound influence on the formation and progression of this study, particularly in the processes of identifying, interpreting, and translating ethnographic data. Compared with an anthropological perspective that primarily focuses on socio-cultural phenomena, the researcher tended to understand rural everyday practices through the lens of design practice, viewing them as potential design problems or design opportunities. For example, during fieldwork, the long-standing habits of squatting and sitting on the kang among rural residents in Jidong were not only documented as stable cultural practices, but were also interpreted as manifestations of a mismatch between existing furniture heights and dimensions and local bodily postures. This interpretation directly led to design propositions for auxiliary seating or supportive facilities to accompany low furniture such as tea tables and kang tables. Similarly, the persistent phenomenon of living room dining tables lying idle, being temporarily appropriated, or repurposed for storage was not merely regarded as an occasional spatial usage issue. Rather, it was understood as evidence of a disconnect between furniture

functionality and actual lifestyles, thereby prompting a reconsideration of furniture's multifunctionality and adaptability.

In this process, the researcher's design experience enriched the analytical depth applied to fieldwork materials, allowing ethnographic observations to move beyond descriptive accounts and to serve as a foundation for the formation of design factors and design principles. However, while this professional background facilitated understanding, it also inevitably introduced biases, tensions, and decisions of prioritisation. On the one hand, when translating field data into design directions, the researcher tended to prioritise issues that could be directly addressed or improved through design intervention, while relatively downplaying social or structural factors that were less amenable to design solutions. On the other hand, when confronted with tensions between local traditions and modern design logics, the researcher was required to continuously negotiate between "improvement" and "preservation," a process that was unavoidably influenced by personal design values and prior practical experience. Consequently, in the construction of design elements and principles, this research does not constitute an entirely neutral inductive process, but rather the outcome of continuous negotiation and adjustment between ethnographic evidence and design judgement.

Through the practice of this study, the researcher further recognised the importance of introducing ethnographic methods at an early stage in both design research and practical design intervention. Compared with reliance on design intuition or singular functional logics, understandings developed through long-term field observation enable more accurate identification of real needs and latent issues, and help to avoid the uncritical application of externally derived design paradigms to local contexts. At the same time, the research process prompted reflection on how to seek balance between practical constraints (such as economic conditions, material availability, and

technical capacity) and cultural continuity, rather than pursuing formal innovation or functional optimisation alone. This shift in methodological orientation and way of thinking not only shaped the analytical trajectory of the present study, but will also exert a sustained and profound influence on the researcher's future decision-making in furniture design and cross-cultural design practice.

9.7 Directions for Further Research

The primary objective of this dissertation is to analyse the current household furniture (currently used furniture and traditional furniture) in rural Jidong. However, there remain four aspects that were not fully addressed, offering opportunities for further exploration in future research.

Firstly, while this thesis primarily concentrates on identifying issues associated with currently used furniture and proposing design principles for improvement, the selection of respondents and the observational focus were predominantly centred on the daily lives and furniture usage patterns of female household members. Due to gender-related limitations of the researcher, an in-depth examination of the daily routines and specific furniture-related needs of male household members (particularly concerning rest) was not feasible. Nevertheless, the roles of men within the household and their associated furniture requirements are equally significant. Therefore, future research should expand the scope of investigation to include a more comprehensive analysis of male household members' living environments and furniture needs, thereby strengthening the theoretical foundation for the design of rural Jidong household furniture.

Secondly, regarding the study of traditional furniture, this thesis organises the types of traditional furniture found in four fieldwork villages. However, the Jidong region is vast, and different villages may exhibit varying cultural, economic, and lifestyle characteristics, which could result in differences in the types and uses of traditional furniture. The study based on just four villages is evidently insufficient to comprehensively reflect the state of traditional furniture across the entire Jidong. Thus, future research should expand to include more Jidong villages, conducting in-depth investigations into the regional characteristics of traditional furniture.

Thirdly, although participant observation was a primary methodological approach in this study, necessary adjustments were made to shorten observation periods to respect cultural norms within the study population. This limited the depth of the collected data, and these limitations are acknowledged as potential gaps. Therefore, future research could enhance data richness by extending or repeating field visits, ensuring a more comprehensive understanding of household furniture usage in rural Jidong.

Finally, validation and evaluation of the design principles form part of future research and have not been conducted within this study. Future work could involve co-design or participatory workshops, bringing together villagers, designers, and local artisans to prototype and test key concepts, thereby assessing their cultural relevance, functionality, and sustainability. Furthermore, as a designer-researcher, the outputs of this study will guide subsequent work, including ongoing collaborations with rural communities, the development of design guidelines or toolkits for rural furniture, and archiving and documentation strategies for furniture culture and usage, with the aim of translating empirical findings into sustainable design practice and providing long-term reference for future rural furniture design.

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Appendices

Appendix 1: Differences: Tangshan & Qinhuangdao area

Table: Differences between the Tangshan area and the Qinhuangdao area, Adapted from Ren *et al.*, 2017; Wang, 2018; Zhang, 2020)

Dimension	Specific Category	Tangshan Region	Qinhuangdao Region
Geographical Characteristics	Topographic Distribution	Predominantly central plains (e.g., Fengrun, Yutian), with coastal zones in the south (Caofeidian, Laoting)	Predominantly Yanshan hilly areas (Qinglong County) and coastal fishing villages (e.g., Dapuhé Town in Changli), showing a clear “mountain–sea differentiation.”
	Distinctive Landforms	Most of the villages are located in the plains.	Over 70% of villages are located within 5 km of the coastline, with nearshore waters serving as primary fishing grounds.
Rural Population	Total Rural Population	Approximately 2.754 million (33.1% of total municipal population)	Approximately 1.043 million (33.6% of total municipal population)
	Population Distribution	Concentrated in plain farming areas and coastal rice–fish zones	Concentrated in coastal fishing villages; sparsely populated in hilly areas.
Economic Structure	Dominant Industries	Integration of agriculture and industry, with equal emphasis on agricultural modernization and rural industry	Marine economy–oriented, with fisheries integrated with cultural and tourism sectors.
	Agricultural Features	“Northern fruit trees, central vegetables, southern rice–fish” pattern; in 2023, the total agricultural, forestry, animal husbandry, and fishery output value reached CNY 102.77 billion, with fisheries accounting for 21.3% (350,000 mu of aquaculture in Caofeidian).	Fisheries account for 65% of total agricultural output; scallop farming in Changli covers 150,000 mu (annual output value over CNY 2 billion); recreational fisheries saw annual revenue growth of 18%.
	Non-agricultural Industries	Rural industries focus on building materials and equipment manufacturing; in areas such as Qian’an and Zunhua, rural industrial output exceeds 50% of the total.	Coastal tourism dominates (including homestays and recreational fishing); the “Great Wall Homestay” cluster drives rural tourism to account for 28% of total income.
	Consumption and	Engel coefficient of 32%; per 100 households: 62.3 cars, 93.5 air conditioners; 18,000 km of	Engel coefficient of 32%; refrigerator penetration rate of 98%; “hardened road

	Infrastructure	rural roads, with 100% of townships connected to Grade-3 roads.	access to every village” achieved, with coastal tourist roads linking 26 fishing villages.
Cultural Characteristics	Cultural Foundations	A blend of agrarian and industrial culture, heavily influenced by steel, chemical, and related industries.	Dominated by marine culture, integrating fishing village traditions (e.g., “Opening of the Sea” festival) with Great Wall heritage, creating a strong cultural–tourism atmosphere.

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
		Date			
2	If Yes, please indicate source of approval (and date where known): <i>Approval in principle must be obtained from the relevant source prior to seeking ethical approval</i>	Research Degrees Committee	<input checked="" type="checkbox"/>	2023.04.13	
		Institute Research Committee	<input type="checkbox"/>		
			<input type="checkbox"/>		

SECTION C: Internal and External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	UWTSD Research Ethics & Integrity Code of Practice <input checked="" type="checkbox"/>
2	UWTSD Research Data Management Policy <input checked="" type="checkbox"/>
3	<input type="checkbox"/>

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution	
2	Contact person name	
3	Contact person e-mail address	
4	Is your research externally funded?	YES <input type="checkbox"/> NO <input type="checkbox"/>
5	Are you in receipt of a KESS scholarship?	YES <input type="checkbox"/> NO <input type="checkbox"/>
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary YES <input type="checkbox"/> NO <input type="checkbox"/>
7		Employed YES <input type="checkbox"/> NO <input type="checkbox"/>
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered. YES <input type="checkbox"/> NO <input type="checkbox"/>
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue. YES <input type="checkbox"/> NO <input type="checkbox"/>

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
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	If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).
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SECTION E: Details of Research Activity

1	Indicative title:	Investigation of the current situation of rural household furniture in East Hebei Province, China		
2	Proposed start date:	2023.04	Proposed end date:	2024.09
<p>Introduction to the Research (maximum 300 words per section) Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below:</p> <p><i>Purpose of Research Activity</i> <i>Proposed Research Question</i> <i>Aims of Research Activity</i> <i>Objectives of Research Activity</i></p> <p>Demonstrate, briefly, how Existing Research has informed the proposed activity and explain <i>What the research activity will add to the body of knowledge</i> <i>How it addresses an area of importance.</i></p>				
3	<p>Purpose of Research Activity</p> <p>With the trend of new rural construction, the living standards of Chinese rural areas continue to improve, and the demand for furniture from Chinese rural residents increases at a rate of 30% per year (Cui et al., 2008). However, for a long time, the Chinese furniture market has attached importance to cities and despised the countryside (Yu, 2014).</p> <p>Therefore, in this project, I will use the method of anthropological field investigation to study the current situation of rural household furniture in East Hebei Province (as known as 'Jidong'). The focus is on solving the problem of mismatch between rural household furniture and usage needs. This project will compile information on the current status of rural household furniture in Jidong, which has reference value for furniture designers to understand the needs of rural villagers. Secondly, the Jidong region has experienced severe earthquakes, and many paper materials have been destroyed. Therefore, this research aims to fill in some of the data gaps on rural furniture in Jidong. Finally, according to the literature, scholars who study regional rural furniture in China have not yet mastered a systematic theoretical research framework (Peng, 2020). Therefore, based on the field investigation method, I hope to construct a research framework for Chinese rural household furniture, which can be used as a reference for other scholars.</p> <p>Reference list:</p> <p>Cui, X. H. et al. (2008) 'The Development Status and Prospects of my country's Rural Furniture', <i>Forest products industry</i>, (01), pp. 16-19. DOI:10.19531/j.issn1001-5299.2008.01.004.</p> <p>Peng, A. M. (2020). Study on the architectural characteristics of traditional dwellings in the Jidong region, <i>Beijing University of Architecture</i>, Available at: https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202002&filename=1020633279.nh</p> <p>Yu, X. (2014) 'Is environment "a city thing" in China? Rural-urban differences in environmental attitudes', <i>Journal of environmental psychology</i>, 38, pp. 39-48. doi:10.1016/j.jenvp.2013.12.009.</p> <p><small>(this box should expand as you type)</small></p>			
4	Research Question			

	<p>At present, what is the demand for furniture of rural households in Jidong?</p> <p>Are there any solutions to the problems of rural furniture in Jidong? Does the furniture have any special usage?</p> <p>Is the traditional furniture in the villages of Jidong still preserved? How was that traditional furniture used? Is there any special way of using it?</p> <p>How to build a systematic theoretical research framework for the study of rural household furniture?</p> <p>(this box should expand as you type)</p>
5	<p>Aims of Research Activity</p> <p>This project aims to investigate Jidong area, conduct the on-the-spot investigation and data analysis, use the method of anthropological ethnographic field investigation to study the current situation of rural household furniture in Jidong, analyse and sort out the data to solve furniture problems and evaluate project outcomes.</p> <ol style="list-style-type: none"> 1. Establishing a document on the current situation of rural household furniture in Jidong. 2. Providing solution ideas to the rural household furniture problems. 3. Supplementing the literature on Jidong rural furniture. 4. Building a framework that can be used to mainly focus on rural household furniture with regional characteristics. <p>(this box should expand as you type)</p>
6	<p>Objectives of Research Activity</p> <p>Establishing a current status archive of rural household furniture in Jidong. This includes identifying the condition and issues of the furniture, analysing the behaviours and postures of villagers using furniture from an ergonomic perspective, and summarizing the current status and issues of rural household furniture in eastern Hebei province in this archive.</p> <p>Providing solution ideas for identified issues, considering factors such as price, form, functionality, materials, and sustainability, as well as evaluate and validate these solutions through consumer feedback.</p> <p>Collecting existing data on traditional furniture to supplement any rural furniture data that may have been lost due to natural disasters.</p> <p>Constructing a framework for studying rural household products with regional characteristics, providing reference for other rural researchers to adjust their research processes and methods based on local living habits and geographic conditions.</p> <p>(this box should expand as you type)</p>
	<p>Proposed methods (maximum 600 words)</p> <p>Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.</p>
7	<p>This project will adopt multiple research methods and tools, including literature review, taxonomy method, field research methods, interviews, questionnaires, and quantitative data analysis. Among them, literature review and field research are the main methods for data collection in this project, and quantitative and qualitative research methods and tools will be used in the practice of field investigation.</p>

Literature review

I will collect natural and cultural environment data in the Jidong area through various resources, such as books, internet searches, and visits to local libraries. In addition, I also need to summarize relevant papers on household furniture in the Jidong area.

Field research

First, I will describe two methods and tools used to collect data in fieldwork. The first is a qualitative approach. I will collect interview data on furniture issues using semi-structured interviews with participants by telephone, or face-to-face at home. The second is the quantitative method. I will collect furniture data (furniture size, space size, etc.) by taking photos, so as to obtain more traditional furniture information and improve the archives of Jidong rural family furniture.

Second, the project requires five field investigations for data collection. The data collection time will be from October 2023 to March 2024.

Before conducting data collection, participants will be recruited and their signed consent forms will be obtained prior to their participation. All participants in this project only include adults, excluding any vulnerable groups and children.

a. Round 1:

With the help of a local guide who knows the village well enough about the target village's ethnography, geography, cultural characteristics, etc. I will have a basic understanding of the population composition, natural geographical environment, and lifestyle of the research village through observation.

b. Round 2:

I will collect photos of 60 households' furniture in the village using my phone and record them (data protection see SECTION J). I will categorize the household furniture photos using taxonomy methods of furniture (taxonomy methods of furniture: material, function, style, space, price, manufacturing process, applicable objects, etc.).

c. Round 3:

I will randomly interview 10 families from Round 2, record the problems they have when using family furniture in their daily life, and analyse and sort out the superficial problems existing in the current furniture.

d. Round 4:

Using the methods of in-depth interviews and participatory observation, I will choose another 10 households in the research villages. I will live in the home of village guide, record the ways these 10 families use furniture in folklore activities, daily interactions, and family production, and summarize the deep-seated problems existing in current home furniture.

e. Round 5:

200 responses to the questionnaire of furniture preference to summarize villagers' preference standards for furniture.

Example questions for interviews

	<p>1. What problems have you encountered when using home furniture? The most prominent problem? In what aspects?</p> <p>2. What do you do during the Chinese New Year when you are at home?</p> <p>3. How you use the living room?</p> <p>4. What do you do when you are not busy?</p> <p>(this box should expand as you type)</p>
	<p>Location of research activity Identify all locations where research activity will take place.</p>
8	<p>The study will be conducted in Luannan County, Tangshan City, Hebei Province, China. The villages will be studied in the field are Fangpao Village, Qianmadi Village, Shangcaoying Village, and Dongbahu Village.</p> <p>(this box should expand as you type)</p>
	<p>Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.</p>
9	<p>The relevant legal and ethical codes in the areas I research do not go beyond any code of ethics normally prescribed in the UK. There are no specific ethical concerns in the local environment in which the research activities take place.</p> <p>(this box should expand as you type)</p>

10	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	<input checked="" type="checkbox"/>
		YES	<input type="checkbox"/>
11	<p>If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales.</p> <p>(this box should expand as you type)</p>		

Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?		YES	NO
12	A prosperous Wales	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	A resilient Wales	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14	A healthier Wales	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15	A more equal Wales	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	A Wales of cohesive communities	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17	A Wales of vibrant culture and thriving Welsh language	<input type="checkbox"/>	<input checked="" type="checkbox"/>

18	A globally responsible Wales	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19	If YES to any of the above, please give details:		
	(this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Use of interviews?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Use of focus groups?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Use of participant diaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Use of video or audio recording?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Use of computer-generated log files?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Participant observation with their knowledge?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	Participant observation without their knowledge?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Access to personal or confidential information without the participants' specific consent?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Performance of any acts which may cause embarrassment or affect self-esteem?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	Investigation of participants involved in illegal activities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Use of procedures that involve deception?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14	Administration of any substance, agent or placebo?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15	Working with live vertebrate animals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Procedures that may have a negative impact on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Details of any other primary data collection method: (this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:	YES	NO
1	Students or staff at the University?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Adults (over the age of 18 and competent to give consent)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3	Vulnerable adults?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Prisoners?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Young offenders?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	People engaged in illegal activities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Details of any other participant groups: (this box should expand as you type)		

Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	<p>How many participants are expected?</p> <p>Round 1: I will mainly understand the general environment of the village. Round 2: 60 families are to be visited. (Only photos of home furniture will be collected, no participant interviews) Round 3: 10 family masters will be interviewed. Round 4: In-depth interviews with 10 family masters. Round 5: 200 villagers to fill in the questionnaires.</p> <p><i>(this box should expand as you type)</i></p>
11	<p>Who will the participants be?</p> <p>a. Key criteria for participants: (must be met)</p> <p>This study will select residents whose household registration is in rural areas and who have lived in local rural areas for a long time. Residents who have rural ID cards but have lived in cities for a long time have been integrated into urban life and maybe the control group, but will not be the focus of this study.</p> <p>All participants in this project will only include adults, excluding any vulnerable groups and children. Participants will primarily be the male and/or female adult householders of the family.</p> <p>b. Special family standards:</p> <p>Families holding folk activities (folk activities include weddings, funerals, birthdays, New Years, etc.) Households engaged in home production (home production is the main source of income, home shops, home restaurants, etc.)</p> <p><i>(this box should expand as you type)</i></p>
12	<p>How will you identify the participants?</p> <p>Eligible participants will be identified using a purposeful selection method. Recruitment will be evenly distributed from the study area.</p> <p>a. Participants for Round 2</p>

		<p>Purposeful selection method: I will approach the family who are willing to participate through the advice of local guide, and use selective sampling to vary the family features (such as number of people, number of bedrooms, location, etc.).</p> <p>60 households meeting the participation criteria will be selected from the target research villages to collect rural household furniture data.</p> <p>b. Participants for Round 3</p> <p>In-depth interviews will be conducted with 10 families (the male and/or female adult) selected from among 60 families from Round 2.</p> <p>Indicate by filling out a short form whether they would like the researcher to take an in-depth look at their home life, which includes accepting the researcher into the home, recording videos, taking photos, etc.</p> <p>c. Participants for Round 4</p> <p>This recruitment will be selected based on particular family criteria (Special family standards). In the four research villages, as long as there are families who hold folk activities at home and farmers who produce at home, they can participate. Choose 5 families for each situation.</p> <p>d. Participants for Round 5</p> <p>Participants with 200 responses of furniture preference questionnaire need to meet the requirements of a. Key criteria for participants in item 11 of SECTION G.</p> <p>No other family member information will be collected without the consent of the participant. No information will be retained about families that refuse to participate.</p> <p><i>(this box should expand as you type)</i></p>
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Information for participants:		YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Will you tell participants that their participation is voluntary?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Will you obtain written consent for participation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	If the research is observational, will you ask participants for their consent to being observed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	If NO to any of above questions, please give an explanation			
<i>(this box should expand as you type)</i>				

Information for participants:		YES	NO	N/A
24	Will participants be paid?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
25	Is specialist electrical or other equipment to be used with participants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26	Are there any financial or other interests to the investigator or University arising from this study?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
28	If YES to any question, please provide full details			
<i>(this box should expand as you type)</i>				

SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them.							
If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.							
1	<table border="1"> <tr> <td>Full risk assessment completed and appended?</td> <td>Yes</td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>No</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Full risk assessment completed and appended?	Yes	<input type="checkbox"/>		No	<input checked="" type="checkbox"/>
Full risk assessment completed and appended?	Yes	<input type="checkbox"/>					
	No	<input checked="" type="checkbox"/>					
2	<p>Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information</p> <table border="1"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Risk to participants:</p> <p>Risk of privacy breach</p> </td> <td style="width: 50%; vertical-align: top;"> <p><i>How you will mitigate the risk to participants:</i></p> <p>Participants may be concerned that the personal information they disclose during the interview will be disclosed or misused. Solutions include:</p> <ol style="list-style-type: none"> a. Explain the confidentiality of the interview to participants in advance and make sure they understand the confidentiality measures in place. b. Respect the privacy of participants and do not disclose personal information that they do not wish to share. c. Take appropriate security measures such as anonymization and encryption when recording and storing interview data. </td> </tr> </table>	<p>Risk to participants:</p> <p>Risk of privacy breach</p>	<p><i>How you will mitigate the risk to participants:</i></p> <p>Participants may be concerned that the personal information they disclose during the interview will be disclosed or misused. Solutions include:</p> <ol style="list-style-type: none"> a. Explain the confidentiality of the interview to participants in advance and make sure they understand the confidentiality measures in place. b. Respect the privacy of participants and do not disclose personal information that they do not wish to share. c. Take appropriate security measures such as anonymization and encryption when recording and storing interview data. 				
<p>Risk to participants:</p> <p>Risk of privacy breach</p>	<p><i>How you will mitigate the risk to participants:</i></p> <p>Participants may be concerned that the personal information they disclose during the interview will be disclosed or misused. Solutions include:</p> <ol style="list-style-type: none"> a. Explain the confidentiality of the interview to participants in advance and make sure they understand the confidentiality measures in place. b. Respect the privacy of participants and do not disclose personal information that they do not wish to share. c. Take appropriate security measures such as anonymization and encryption when recording and storing interview data. 						

	<p>Risk of misleading</p> <p><i>(this box should expand as you type)</i></p>	<p>The interviewer may inadvertently or intentionally mislead participants, resulting in biased or distorted information. Solutions include:</p> <ol style="list-style-type: none"> The interviewer should remain neutral and objective and avoid implying specific answers in questions or responses. Provide clear instructions and explanations to ensure that participants fully understand the intent of the question and are able to express their views freely. Try to use open and neutral questions to promote independent thinking and free expression of participants. <p><i>(this box should expand as you type)</i></p>
3	<p>If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities</p>	
	<p>In my research, the above mentioned situations carry a very low risk of psychological harm.</p> <p><i>(this box should expand as you type)</i></p>	
4	<p>Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest</p>	
	<p>Risk to the investigator:</p> <p>Personal safety risks</p> <p>Mental health risks</p>	<p><i>How you will mitigate the risk to the investigator:</i></p> <p>When conducting fieldwork alone, investigator may face personal safety risks such as theft, assault or accidents. Solutions include:</p> <ol style="list-style-type: none"> Accompanied by trusted person or stay in touch with my families and regularly report my location and movements. Conduct a full safety assessment before the inspection, understand the safety situation of the destination, and take corresponding preventive measures, such as understanding the local safety situation and finding safe accommodation. Find a suitable travel companion or local guide for added personal safety. <p>Working alone for long periods of time can be stressful and burdensome to the investigator's mental health. Solutions include:</p> <ol style="list-style-type: none"> Set reasonable working hours and rest periods for myself to avoid overwork. Before conducting research, be prepared with strategies for coping with loneliness and stress, such as staying in touch with family

	(this box should expand as you type)	and friends, attending local social events, or seeking psychological support. (this box should expand as you type)
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	Risk to the University: (this box should expand as you type)	How you will mitigate the risk to the University: The University or Institutional risks are considered minimal. Data protection risks(Section J) are addressed in adherence with the University's Research Data Policy and UWTSD Group Data Protection Policy. This research will be conducted with the highest ethical standards of the University's Research Data Policy and UWTSD Group Data Protection Policy. (this box should expand as you type)
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: Traffic and noise (this box should expand as you type)	How you will mitigate the risk to environment: Fieldworkers entering villages, driving car and conducting observations and data collection at different locations may increase local noise levels. This may cause a certain degree of disturbance to the life of the residents. Solutions include: a. Minimize the impact of traffic and noise on the village. b. Take reasonable transportation arrangements and choose less crowded time slots for work. (this box should expand as you type)

Disclosure and Barring Service				
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	The participants' privacy, right to know, and right to participate should be guaranteed when taking pictures and data presentation, and the consent form will be provided to them before the study,

	<p>along with the information sheet. At the end of the program, participants will be invited to a presentation.</p> <p><i>(this box should expand as you type)</i></p>
2	<p>Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.</p>
	<p>This research will be personal, confidential, and sensitive personal data as defined under the Data Protection Act 2018 (DPA). Informed consent will be required for this study to ensure that participants understand that data for the study will be obtained from interviews, questionnaires, and recordings, and then consent will be obtained for data storage and anonymized data sharing after the completion of this project.</p> <p>Information sheet will be provided to the potential participants to understand the research activities and their rights. The information sheet includes a detailed explanation of the purpose of the research, the procedures involved, the potential risks and benefits, confidentiality measures, voluntary participation, and the right to withdraw at any time without penalty. In addition, informed consent will be obtained from each participant before conducting any research procedures. If questionnaires are taken online, participants will be required to read the information sheet and provide their electronic consent by clicking on an "I agree" button before proceeding with the questionnaire.</p> <p>During the project research process, if there are any adjustments to the project plan, research content, research location, research cycle, etc., the researcher will promptly notify the participants and make corresponding adjustments. Second, during the course of the project, researchers share information with participants, analyse results, and ensure the rights of participants.</p> <p><i>(this box should expand as you type)</i></p>
3	<p>Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.</p>
	<p>All data collection and handling will comply with the standards set by UWTSU's Research Data Management Policy and the UK 2018 Data Protection Act and any information which leaves the university will have the name and associated information removed to ensure the confidentiality is maintained at all times.</p> <p>a. Data collection phase:</p> <p>Take an anonymous survey method: Use anonymous questionnaires to collect data, ensuring that participants' personally identifiable information is not compromised.</p> <p>Ensure data security: Take necessary security measures, such as encrypting data transmission, using secure storage devices with password, etc., to prevent unauthorized access and disclosure.</p> <p>b. Data processing and analysis phase:</p> <p>De-personal identifiable information: During data processing and analysis, ensure that any directly identifiable information such as name, address, etc. that can identify an individual is removed. Use an anonymous number or pseudonym in lieu of personally identifiable information.</p> <p>Data aggregation: Data is aggregated to avoid revealing specific information about individual participants. Ensure that analysis results cannot restore the identity of individual participants.</p> <p>c. Data presentation and reporting phase:</p>

Any personal information provided will be used for research purposes only. In research reports and presentations, avoid disclosing any information that can be traced back to individual participants. If it is intended to be published, for example in an academic presentation or paper, the faces and any personal identifiers in any video footage / images will be obscured so any participants cannot be recognised. Present research findings using overall statistics or summarized results.

(this box should expand as you type)

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	<p>"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If YES, provide a description of the data and explain why this data needs to be collected:			
2	<p>In order to better solve the current problem of using rural furniture, I need to collect statistics on the personal information of the participants during the data collection stage, such as age, gender, education background, work background, salary level, daily activities, and interests. Collecting and analysing this information important for understanding the participants' potential demand for furniture, ability to purchase furniture, etc.</p> <p>a. Age and gender Knowing the basic information of the interviewee can help me build better interaction and communication. In this way, more information can be learned about the use of household furniture from their perspective and context.</p> <p>b. Education background Understanding the educational background of the participants can provide their life and personal experiences, which may better help me understand the stories behind the furniture.</p> <p>c. Work background and salary level Understanding the homeowner's work background and salary level helps me more accurately assess their ability to purchase furniture. This understanding can fully consider the cost of furniture when designing country home furniture.</p> <p>d. Daily activities and interests Understanding the participants' daily activities, hobbies and social activities helps me understand their lifestyle and social relationships. Collecting this information helps me analyse their furniture preferences in my projects.</p> <p>Measures to protect participants:</p> <p>Any personal information provided by participants will be used for evaluation purposes only. I will obscure participants' faces and any personal identifiers in any video footage/images if it is intended to be published, for example in an academic presentation or paper, so that participants cannot be recognised. All data collection and handling will comply with the standards set by UWTS'D's Research Data Management Policy and the UK 2018 Data Protection Act and General Data Protection Regulation 2016, and any information which leaves the university will have the</p>		

<p>participants' name and associated information removed to ensure participants confidentiality is maintained at all times.</p> <p>Individual participant research data will be anonymous and given a research code, known only to me, and will be stored in a locked cabinet, within locked my room, accessed only by me.</p> <p>Electronic data e.g. video/audio files, will be stored on a password-protected computer, known only by me, within a locked cabinet.</p> <p>Manual files will be stored in a locked cabinet, within locked my room, accessed only by me.</p> <p><i>(this box should expand as you type)</i></p>			
Does it involve special category data (as defined by the GDPR)?		YES	NO
3	<p>"Special category data" means sensitive personal data consisting of information as to the data subjects' –</p> <p>(a) racial or ethnic origin,</p> <p>(b) political opinions,</p> <p>(c) religious beliefs or other beliefs of a similar nature,</p> <p>(d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992),</p> <p>(e) physical or mental health or condition,</p> <p>(f) sexual life,</p> <p>(g) genetics,</p> <p>(h) biometric data (as used for ID purposes).</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If YES, provide a description of the special category data and explain why this data needs to be collected:			
4	<i>(this box should expand as you type)</i>		

Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?		YES	NO
5	Manual files (i.e. in paper form)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	University computers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Private company computers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Home or other personal computers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	"Cloud" storage or websites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Other – specify:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	<p>For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:</p> <p>a. All information collected will be kept confidential and anonymous, per DPA 2018 and GDPR 2016.</p> <p>b. All collected data will be backed up to hard drives and encrypted USB storage devices. During data collection, transcription, and analysis, backups will be made to the USB storage device monthly. All digital resources will be encrypted and password protected and data will be pseudo-anonymized/ anonymized as early as possible.</p> <p>c. The data temporarily saved in the laptop will be transferred to hard drives on time every month, and any data transferred will always be completely anonymous to ensure that no data will be lost and leaked.</p>		

	d. Manual files will be stored in a locked cabinet, within locked my room, accessed only by me. <i>(this box should expand as you type)</i>
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Data Protection			
Will the research activity involve any of the following activities:		YES	NO
13	Electronic transfer of data in any form?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14	Sharing of data with others at the University outside of the immediate research team?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15	Sharing of data with other organisations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Export of data outside the UK or importing of data from outside the UK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18	Publication of data that might allow identification of individuals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19	Use of data management system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20	Data archiving?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	<p>13. I will use a mobile phone or a camera to collect data, and then back up the data collected every day to my personal computer, USB disk and hard disk. All the devices are secured with password. The online survey will be on trustworthy platform (like Qualtrics) that protects data and privacy.</p> <p>16. My research location is in China.</p> <p>17. When conducting interviews, I need to make an appointment to contact participants with a Chinese mobile number.</p> <p><i>(this box should expand as you type)</i></p>		
22	List all who will have access to the data generated by the research activity:		
	<p>Researcher--PhD supervisory team (anonymised data only)</p> <p><i>(this box should expand as you type)</i></p>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	<p>Researcher—CHEN BINGLU</p> <p><i>(this box should expand as you type)</i></p>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	<p>Security measures for data storage include:</p> <p>a. Electronic data e.g. video/audio files, will be stored on a password-protected computer, known only by me, within a locked cabinet (Adopt home firewall and network security measures to protect storage system from network attack and malicious intrusion.)</p>		

	<p>b. Manual files will be stored in a locked cabinet in my room, within locked my room, accessed only by me.</p> <p>c. Regularly backup data. Backup data should be stored in different locations, such as my hard disk, my USB, and my laptop.</p> <p>d. All the data of the participants will be encoded and stored in a computer with a password, and only I can access it.</p> <p>Data will be stored by me for a possible 3-year retention period, in the form of photographs, documents, as required for research purposes.</p> <p><i>(this box should expand as you type)</i></p>		
25	<p>Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i></p> <p>All data held through the UWTSD Research data repository will be stored and maintained indefinitely. Under the UWTSD Research Data Policy (2016), the UWTSD Research Data Repository will be responsible for long-term governance. This responsibility is reserved by the UWTSD Research Data Repository Director.</p> <p><i>(this box should expand as you type)</i></p>		
26	<p>Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)</p>	YES	<input checked="" type="checkbox"/>
27	<p>Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding</p>	YES	<input checked="" type="checkbox"/>

Appendix 3: Questionnaire

Questionnaire on Household Furniture Preferences in the Jidong Rural Area

I am currently a current PhD student at Trinity Saint David University in Wales. I am researching the preferences of Jidong villagers for household furniture. Please tick the appropriate options according to your thoughts and reality, this questionnaire will take about 3-5 minutes, is completely anonymous, does not disclose personal information, and is for academic research purposes only. Your help would be greatly appreciated!

Time: _____

Date: _____

—

1. Your gender:

Male Female

2. Your age:

Under 20 years old 20-40 years old 40-60 years old Over 60 years old

3. Your height:

Below 150cm 150-175cm 175cm or above

4. Your family members:

1 person 2-3 persons 3-5 persons More than 5 persons Other

5. What is your family's main source of income? (multiple choices)

Farming Work near home Home-based production Other

6. Your family's total monthly income:

Less than 5000 5000—10000 10000—15000 15000—22000 Not convenient to discuss

7. Where do you spend the most time in a day?

Bedroom Living room (hall) Kitchen Bathroom Side room

8. Is your items of furniture easy to use at present?

	Very inconvenient	Somewhat inconvenient	Neutral	Somewhat convenient	Very convenient
Bedroom (Inner room)	<input type="radio"/>				
Living room (Hall)	<input type="radio"/>				
Kitchen	<input type="radio"/>				

9. Do you agree with the following views ?

	Strongly disagree	Disagree	General	Agree	Strongly agree
The furniture itself is of poor quality	<input type="radio"/>				
Don't know how to use furniture	<input type="radio"/>				
Furniture design is not reasonable, it is difficult to use	<input type="radio"/>				
Furniture can be insufficient during festivals	<input type="radio"/>				
Normally, there are unused furniture in the house	<input type="radio"/>				

10. Under what circumstances would you buy furniture? (multiple choices)

- When building a new house or renovating a house
- When the existing furniture is outdated
- When the existing furniture is damaged
- When furniture is on sale
- When you have a child or get married

O Other _____

11 Which of the following intrinsic factors do you consider most important when purchasing furniture? [Ranking question, please fill in the numbers in the middle bracket in order]

- Material: Durability and workmanship of the materials used in the furniture
- Functionality: Whether the function of the furniture meets your actual needs.
- Comfort
- Design and style: the appearance and overall style of the furniture
- Size: Whether the size of the furniture is suitable for your space or not.
- Environmental friendliness

12. Which of the following external factors do you think is the most important when buying furniture? [Ranking question, please fill in the numbers in the middle bracket in order]

- Price
- Brand
- After-sales service
- Purchase channel (e.g. physical shop or online platform)

13. Which of the following styles of furniture do you prefer?



O Nordic style



O American style



- New Chinese style
- No special preference
- other _____

14. Which type of bed do you prefer?

- Traditional bed-“Kang”
- modern wood bed
- metal bed
- other _____

15. What type of bedroom seating furniture do you prefer?

- Sofa
- Wooden seat
- Square wooden stool
- Iron ring stool
- Plastic stool
- Other _____

16. What type of wardrobe do you prefer?



- Traditional wardrobe



- Modern sliding door wardrobe



Open wardrobe (without door, with hanging rod)



The combination of TV cupboards and wardrobes

Other _____

17. What type of sofa do you prefer?

Fabric sofa leather sofa wooden sofa other _____

18. What type of dining table do you prefer?

Wooden dining table Foldable table Kang table Tea table Other _____

19. What kind of sitting furniture do you prefer?

Plastic stool Iron ring stool Wooden benches (Square wooden stool) Other

20. What type of shoe cupboard do you prefer?

Closed shoe cupboard Open plastic shoe rack Shoe box other _____

21. What type of cupboard do you prefer?



Old cupboard



New cupboard



One-piece multi-function cupboard

Other _____

Thank you very much for taking your valuable time to participate in this questionnaire.

Appendix 4: Participant Information Sheet

Participant Information Sheet

You are invited to participate in a research study on the current state of rural household furniture in the Jidong region. Before you decide, it is important to understand the purpose of this study and what benefits it may offer you. Participation is entirely voluntary, and you may choose not to take part. Please read the following information carefully to help you make an informed decision. If you have any questions or require further clarification, feel free to ask.

Title of the Study:

An Investigation of Current Rural Household Furniture in East Hebei (Jidong) Province, China

1. What is the purpose of this study?

This study aims to examine the current state of rural household furniture in Jidong, focusing on the mismatch between furniture and user needs. Additionally, it seeks to document certain types of traditional furniture, filling gaps in existing data on rural furniture in this region.

2. Why have I been invited?

As a permanent resident of the village under study, your participation would be invaluable to this research.

3. Do I have to take part?

Participation is entirely voluntary. You are provided with this information sheet for reference. If you agree to participate, you will be given a consent form to sign. You may withdraw from the study at any time without providing a reason.

4. What will happen if I take part?

I will visit and photograph your home and ask you some questions about your furniture. (You may stop the visit at any time.)

I will conduct a face-to-face interview with you, recording the conversation via audio or video. You may choose which questions to answer, and you may stop the interview or the recording at any time.

You will be asked to complete a questionnaire about furniture, with my assistance if needed. (You may also choose not to complete the questionnaire.)

5. Will there be any costs or payments?

There are no costs associated with participation in this study.

6. Are there any disadvantages or risks in taking part?

This study poses minimal risk. If at any point the study inconveniences you or your family, I will immediately halt the research.

7. What are the potential benefits of taking part?

While there may be no direct benefits to you, the information obtained from this study will contribute to a better academic understanding of furniture use in Jidong and may inform solutions to existing furniture-

Updated version

Date: 03,07,2024. ----Kitchen cooking problems Site/location: Qianmadi Village

Length of Observation: 2 hours Participants (list names): Q92717

Activity (explain in detail):	Reflection:
<p>Female Master's Action Track:</p> <p>Preparing to cook: 10:50-11:00 Arrived home, went into living room (didn't change shoes) to place ingredients, washed hands in kitchen, got mushrooms from living room, washed mushrooms on kitchen cupboard, got shallots from living room, sowed shallots in kitchen to wash and cut shallots, bent down to open cabinet to get chopsticks, went to living room to get side dishes, went back to kitchen to wash side dishes, rice in pot, went out.</p>	<p>Pre-Cooking Preparation</p> <p>During the ingredient preparation process, the female host frequently moved between the living room and the kitchen to retrieve various ingredients and utensils, indicating an inefficient kitchen storage layout. Some ingredients (e.g., mushrooms, shallots) were stored in the living room; while washing and preparation took place in the kitchen. This not only increased unnecessary walking distance but also posed potential hygiene concerns. Additionally, she had to bend down to retrieve chopsticks from a low cupboard, highlighting that the storage design did not adequately consider ergonomic factors, as frequently used items were stored in inconvenient locations.</p>
<p>Cooking: 11:24-11:36 arrived home, went into the living room (didn't change shoes), washed hands and drank water in the kitchen (stooped twice), steamed rice in the living room (stooped three times), stooped in the kitchen to get stir-frying utensils, half of the spices were on the cupboards, half were in the cupboards, stooped four times to look for the spices, the cupboards were very messy, the bedroom set up the cutlery.(11:33 Male host comes home, washes hands in kitchen, eats in bedroom.)</p>	<p>Cooking Process</p> <p>During cooking, the female host repeatedly bent down to search for spices and cooking utensils, indicating poor organization of storage spaces. The spices were stored in a disorderly manner, making them difficult to locate, which negatively affected cooking efficiency. Additionally, certain cooking tasks, such as steaming rice in the living room and setting the dining table in the bedroom, suggest that the kitchen space was inadequate to fully accommodate essential cooking and dining activities. This phenomenon of kitchen function overflow not only increased labor intensity but also reduced spatial efficiency.</p>
<p>Cleaning up after dinner: 12:21 Brushing dishes, sink too small to place, half of the cutlery put on the floor, water splashes from the sink, floor is dirty, cleaned cutlery is re-contaminated, frying pans are too big to be put in the sink, sink catches the water, bending down, put on the floor to clean the pans, straighten up, put in the sink to pour the water, repeat three times.</p>	<p>Post-Meal Cleaning</p> <p>During post-meal cleaning, the sink was too small to accommodate all the dishes, forcing the female host to place some items on the floor, which not only compromised hygiene but also risked cross-contamination of cleaned dishes. Furthermore, large frying pans could not fit entirely in the sink, requiring her to bend down multiple times to place them on the floor for cleaning, lift them back up, and drain water repeatedly. This process increased physical strain and caused water to accumulate on the floor, making the kitchen environment slippery and posing safety hazards.</p>
<p>Design Recommendations</p> <ol style="list-style-type: none"> Optimizing Storage Layout: Establish a systematic storage arrangement for ingredients and utensils to minimize unnecessary movement. Introduce drawers or overhead cabinets to reduce the need for frequent bending. Enhancing Kitchen Workflow: Integrate cooking functions within a well-organized workspace to reduce movement between the kitchen and living areas. Consider a multifunctional preparation counter. Improving Washing Facilities: Enlarge the sink to accommodate larger cookware, prevent dishware from being placed on the floor, and adjust the height to reduce strain from bending. Enhancing Safety: Implement non-slip flooring materials and improve drainage systems to reduce the risk of kitchen slips and water accumulation. 	
<p>Key Focus Areas for the Next Household Observation (Next Household)</p> <ol style="list-style-type: none"> Usage Patterns: Examine the division of household tasks and observe the engagement of elderly and children in kitchen activities. Furniture Ergonomics: Assess whether cabinets and seating arrangements align with ergonomic principles and explore potential adjustments. Ventilation and Lighting: Evaluate the adequacy of natural lighting, ventilation, and the efficiency of smoke extraction. User-Led Modifications: Observe any self-initiated adaptations to kitchen facilities and assess their effectiveness in improving convenience. 	

Appendix 7: An example: Generation of Theme 1



Themes	Categories	Codes	Descriptions	Statements/ Quotations
Theme 1: Problems of living furniture in the inner room of Type A houses	a) Problems with the kang and peripheral products	Problems with overheating of the kang that may burn the skin	Excessively high temperatures in kangs pose safety hazards, especially for children and the elderly, so families have to take protective measures or switch to other heating methods. However, none of the current alternatives are satisfactory.	Interview: 'We adults are fine, but it's mainly the children, who have delicate skin, so I put a thicker blanket on the kang to prevent the children from getting burned.' (Q92710) 'Now that we have installed air conditioners and electric heaters in our house, the number of times we burn the kang has decreased significantly, but the electricity bill is very expensive, so I still burn the kang a bit more often.' (Q92715) 'My daughter-in-law bought me water-heated blankets, which are fine, but I still get cold when I don't burn the kang.' (D93011)
		Problem of mismatch between kang and sofa	The height difference between the kang and the sofa causes physical discomfort and communication difficulties when family members and guests sit together.	Interview: "Our sofa is lower than the kang, every time I sit on the kang and my husband sits on the sofa to talk, he always has to look up at me, and I look down at him, which is really hard on my neck after a long time, and sometimes my back and waist hurt." (S92915) "Young people like to sit on sofas, but we prefer sitting on kang. When a room full of people are talking, some have to look up and others have to bend down. Last time my niece came to visit, she said sitting on a sofa was like 'squatting on the floor,' and that it was more comfortable to move a stool over to the side of the kang." (F92606) "When we talk, he tilts his neck back and I lower my head, like 'bunk beds.'" (Q92715)
				Field notes: "Uncle sat down on the edge of the kang, and Aunt naturally sat down on the sofa. The two of them chatted about the autumn harvest under the light. I noticed that Aunt kept leaning forward unconsciously while talking, almost sitting on the edge of the sofa, while Uncle habitually leaned forward with his upper body bent. 'Are you two trying to get closer?' I joked. Aunt patted the sofa and said, 'Of course! He's tall and I'm short, so I have to lean forward to

			hear him.' Uncle replied, 'Last time my daughter came, she sat on the sofa and I sat on the kang. We chatted for an hour, and when she went home, she said her neck was sore.'" (D93004)
	Problems with getting on the kang	The height and accessibility of the kang create difficulties and safety risks for elderly or physically limited individuals when getting on or off.	<p>Interview:</p> <p>"It's super hard for me to carry my child to the kang sometimes. I have bad knees and rheumatism, so I need to be very careful every time I get on the kang, and sometimes I really wish the kang could be a little bit lower." (F92606)</p> <p>"When I was young, the bed was just as high, but back then I had the strength to climb down. Now I can't do it anymore. Getting up in the middle of the night to go to the bathroom is even scarier: it's pitch black, and I'm always worried about missing the step. If only there were a small handrail or a step to help me." (D93004)</p> <p>"I have osteophytes in my knees, so I can't move on the kang by myself. Every morning, I have to wait for my neighbour's daughter to come and help me. She holds me up so I can slowly climb onto the kang." (S92903)</p> <p>Field notes:</p> <p>"First he put his hands on the edge of the kang, then he took off his shoes, jumped six times, and finally hit his foot on the edge of the kang." (D93001)</p>
	Problems of shoe placement on the kang side	The clutter of shoes around the kang creates frequent tripping hazards, leading to accidents and safety concerns for both children and adults.	<p>Interview:</p> <p>"My kid's tripped over shoes twice already, and the scar on his forehead is from hitting the edge of the kang after tripping." (F92603)</p> <p>"My father fell once because of the messy shoes when he got up at night. Later, I bought a night light." (Q92708)</p> <p>"Every day it's like stepping on landmines when getting out of kang." (S92903)</p> <p>Field notes:</p> <p>"Shoes of all sizes were scattered on the floor in front of the kang, including Aunt's cloth shoes, Uncle's leather shoes, and three pairs of children's sneakers and sandals. A total of eight pairs of shoes were piled up less than half a metre away from the edge of the kang. Aunt was getting off the kang, carefully moving her feet among the pile of shoes, muttering, 'Slowly, slowly, don't step on the shoes and fall!' No sooner had she said this than her youngest son jumped down from the kang, not paying attention to his feet, and slipped on a slipper. Fortunately, he held onto the edge of the kang and did not fall. Aunt quickly bent down to push the shoes aside, but just as she created a little space, her eldest daughter, who had just returned from school, took off her shoes and tossed them carelessly, restoring the floor to its chaotic state." (S92905)</p>
	Problems with mosquito nets on the kang	Mosquito nets for the kang are often ill-fitting, ineffective, or expensive, forcing	<p>Interview:</p> <p>"The most traditional mosquito net that I use at home, which is actually a window screen, I don't think it works well, its mesh is too big to keep mosquitoes out. I want to change it, but the mosquito nets on the market are</p>

		families to rely on improvised solutions that still leave comfort and safety problems unresolved.	<p>not the right size and they are especially expensive.” (S92903)</p> <p>“I bought a mosquito net from the Internet before, only enough to sleep three people, my family of six people, it is not sleeping, and then idle, now I use this is, I bought gauze from the Internet, the bracket is my own welding. I think it works pretty well.” (D93001)</p> <p>'We can't buy a mosquito net of the right size, so we have to make do with this old one. Mosquitoes can still get in and it is particularly inconvenient to get up at night.'(F92603)</p> <p>Field notes: ‘This was welded by the child's father using steel bars. It can cover the entire kang, but the iron wire is too sharp.’ ‘The mosquito nets sold in the village are all this size, and they can't completely cover our large earthen kang. When it gets hot, the mosquitoes can carry people away.’ ‘This mosquito net can't keep the mosquitoes out at all. It's much too small and doesn't cover the head and foot of the kang properly.’(D93007)</p>
b) Problems with the combination TV stand	Poor access to clothes	Poor cupboard and drawer design (such as lack of compartments, awkward heights, and difficult access) causes inconvenience and safety risks in daily use.	<p>Interview:</p> <p>“There are no compartments in this cupboard and all the clothes are piled up together, so when you take out the clothes at the bottom you always have to take out the ones on top, which is very troublesome.”</p> <p>“This drawer is too low, and I have to crouch down every time I take something out.” (S92915)</p> <p>“Every time I take out seasonal clothes, I have to move a small stool to stand on tiptoe and lean over the cabinet door to reach inside. Last time, I didn't hold on tight enough and fell forward, but luckily, I managed to hold onto the cabinet and didn't fall down.” (D93011)</p> <p>Field notes: “Auntie's first took out all the clothes on top, then found the white sweater she was looking for, and finally put the clothes back.” (S92905)</p>
	Lack of clear functional division in the middle area	The lack of organized storage and compartmentalization in large cabinets leads to clutter, lost items, and daily inconvenience.	<p>Interview:</p> <p>“My home is just this one big piece of furniture, everything is put here, I not only want to place the TV, charging cable, these scattered small objects, I also need to put some decorations.” (F92603)</p> <p>“There should also be dividers in the middle, with several small compartments for remote controls and sewing kits, so you don't have to rummage around every day.” (F92606)</p> <p>“Small items keep falling out. Last time, my grandson's homework book slipped through the crack and fell behind the cabinet. It took me half an hour to find it.” (Q92708)</p> <p>Field notes: “The first impression was one of visual overload: the surface was covered with various items, leaving almost no space. Cable wires were tangled like snakes. The centre section housed the television, with a drawer underneath containing keys, nail clippers, medication, small metal boxes, and other</p>

				miscellaneous items. The right display stand was used for storing books, and children's toys, while the left display stand held washing products such as mirrors, combs, tissues, toothbrushes, and toothpaste. The upper drawers were reserved for fragile and valuable items like tea sets, gourds, and inkstones. As Ms Liu complained to the researcher, 'I always forget where I put the remote; it's been days, and I still can't find it.'" (S92908)
c) Clotheslines and fans	Safety problems caused by the proximity of the two elements	Indoor clotheslines placed too close to ceiling fans create constant safety hazards, forcing families to compromise between drying clothes and using ventilation.	Interview: "When the fan is on in my house, the clothes are always blown around, and once they were even rolled into the fan, which is particularly dangerous." (F92606) "Either move the clothesline to a different location, away from the fan, or get a special clothes rack that can be folded away when not in use, so it doesn't keep getting in the way of the fan. The current situation is too dangerous." (Q92710) "Now we don't dare to turn on the fan when drying clothes. Even when it's hot, we just have to endure it, otherwise we feel uneasy." (D93011)	Field notes: "In the inner room of Auntie's house, two thick hemp ropes were strung across the ceiling as clotheslines, hung with freshly washed shirts and the children's school uniforms, less than half a metre away from the ceiling fan above. Just then, Uncle walked in and turned on the fan. As soon as he flipped the switch, the airflow from the spinning fan caused the shirts on the clothesline to sway back and forth. The corner of a long-sleeved shirt directly brushed against the fan blade, making a 'Clatter! Clatter!' sound, startling Auntie into shouting, 'Turn it off! Turn it off! The clothes are going to get sucked in!' The uncle hurriedly turned off the fan, but the corner of the shirt had already been created by the fan blades. The aunt moved the clothes to both sides of the line while muttering, 'I've told you so many times to take the clothes down when you turn on the fan, but you still don't listen.' The light in the inner room wasn't very bright, and the uncle replied, 'I didn't notice.'" (D93012)

Appendix 8: Participants Tables in phase one

Participants in the first phase were included in the second phase (Table 3.10). Directly annotating them in Table 3.10 would be too confusing, so these two tables have been reorganised in Appendix 8.

Table 1 Participants in the first phase (field notes)

Participants
F92610, F92601, F92605, F92607, F92608, F92609, Q92710, Q92708, Q92703, Q92711, Q92713, Q92709, Q92712, Q92714, S92913, S92907, S92908, S92901, S92918, S92910, S92919, S92915, S92905, S92903, S92909, D93016, D93012, Chief of four Villages; Senior people playing cards in front of a shop in the village; The people chatting at the village entrance.

Table 2 Participants in the first phase (photographs)

Type of yard		Cases -- yards visited
Pre-earthquake Yard		Q92716, Q92717, Q92718
Residential Yard	Type A yards	F92607, Q92710, Q92712, D93011, S92907, S92908, S92915
	Type B yards	Q92711, Q92715, F92610, S92903, D93006, S92903, S92912
Production-type Yard		F92605, Q92704, Q92713, Q92714, F92601, S92909, S92916, S92917, S92919, D93005, D93015, D93016, D93008

Appendix 9: Quotes-Five Situations to Purchase

Furniture

Five situations in which villagers would choose to purchase furniture

Situation	Representative Quotes from field notes
When building or renovating a house	<p>"Our family is building a new house, inside and outside have to pick up! Old furniture and new walls and new floors do not go together, buy a new set of ornaments to be like, live also comfortably. I haven't bought a bed yet, so let's do it together." (S92913)</p> <p>"No problem, I have to wait until next month, the house is not yet finished!" (S92908)</p> <p>"Our family was last year to renovate the old house, the original broken cabinet, the old table looks awkward, do not buy new furniture are sorry for the house." (F92608)</p>
When existing furniture styles are outdated	<p>'Last year, the neighbours got a new wardrobe with drawers, which is bright and can be installed, but my old wooden cupboard is clumsy and old, and my children always say, "Mom, let's get a new one".' (S92918)</p> <p>"Now there are many styles of furniture shops in town, my sofa is still ten years old, the armrests are worn out, compared with the new houses in the village, it looks too backward, it's time to change." (Village Chief of Fangpao)</p>
When existing furniture is damaged	<p>"The legs of the wooden table broke last month, with nails nailed twice or shaking, always worried about collapsing when eating, no way, can only go to buy a new one, or a family dinner have no place to put the bowl." (Q92708)</p> <p>"Wardrobe door hinges are broken for half a year, not tightly closed, the clothes are always dusty, repair several times is useless, so buy a new one to save your mind, so that you don't have to tinker with it every day." (Village Chief of Dongbahu)</p>
During sales or promotional periods at furniture stores	<p>"Furniture shops in town to carry out anniversary celebrations, said all furniture 20% off, I've been staring at that solid wood bed for a long time, usually too expensive to buy, take advantage of the promotional rush to get down, can save a few hundred it!"</p> <p>"I also intend to buy a new cabinet" (Q92703, Q92713)</p> <p>"I also ran into a while ago, Changning Town, the furniture electric flyer people said "clearance sale", the next day I went to take a look at the sofa is cheaper than the usual small one thousand, thinking about the sofa should be replaced, so I took the opportunity to buy changed, took the opportunity to buy... Really, I'll go and have a look tomorrow." (S92910, S92915)</p>
When children or the household itself is getting married.	<p>"My son is getting married next month, so we can't put old furniture in the new house, right? When a girl marries, she has to have a new sofa and wardrobe to make her look important and decent." (Village Chief of Dongbahu)</p>

	<p>“My niece is getting married, her parents said they want to give her a set of furniture to accompany her, saying that nowadays young people are getting married with new furniture, and the old ones are too old to be taken care of, so they specially waited for an event in town to pick out a set of good ones.” (S92905)</p> <p>"I heard that the daughter of the Li family in your village even had her kang rebuilt for her wedding. Yes, not only was the kang rebuilt, but the stove was also tiled." (S92903)</p>
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Appendix 10: Quotes-Factors influencing furniture purchases

Factors influencing furniture purchases

Factors	Representative Quotes from Field Notes
Internal factors: material and environmental friendliness	<p>‘buy furniture can have to put a good material off, my home two years ago to buy pine chairs, not so much use on the swaying, this time to change the furniture I specialise in picking hardwood, expensive but sturdy.’ (Village Chief of Dongbahu)</p> <p>‘Not only no strong, and also have to smell! Last time I went to the furniture shop, some cabinets open a choking headache, the boss said that the paint is not environmentally friendly, the family has grandchildren cannot dare to buy.’(F92607)</p> <p>‘Yes, now pay attention to environmental protection, I'd rather spend more money to buy solid wood, those sticker panels heard that there is formaldehyde, the family has an elderly child dare not use.’ (F92608)</p> <p>‘Yes, I chose the wardrobe deliberately asked, have to be solid wood brush environmentally friendly paint, open no odour before I dare to buy, the child's body is important, cannot figure cheap harm baby.’ (S92903)</p> <p>‘Choose a sofa to touch the fabric, the kind of coarse linen wear-resistant, home with children is not afraid of scratching, if you use flannel, stained with grey difficult to take care of.’ (Q92711)</p>
Internal factors: functionality and size	<p>‘Buy wardrobe should be with partition and hanging rod, can be divided into open clothes trousers, or pile up a pile of trouble to find, my new wardrobe with a small drawer, socks and underwear is just right. Wardrobe cannot be too wide, or the aisle is too narrow to turn around, I ordered according to the size of the wall, not more or less just right, save space and enough.’ (S92913)</p> <p>‘The size must also be calculated! My living room is small, the sofa bought a large walk are in the way, and then chose a three-person seat, just enough to sit also does not take up space.’ (F92607)</p> <p>‘Folding dining table is the most practical, usually a family of four enough to eat, New Year's relatives come to pull open can sit, do not have to move a small table to make up the number...I have a small room, the desk deliberately selected a narrower, put against the wall does not take up space, but also with a small bookshelf, put the book just right.’ (S92905, S92909)</p>
Internal factors:	<p>‘Sofa to sit on the soft and cannot collapse, I tried a number of homes, some sit for half an hour on the back pain, and finally chose a sponge cushion, watching TV all</p>

<p>comfort and design style</p>	<p>afternoon are not tired. . . Style also have to match the home decoration, my home wall is light-coloured, selected light wood cabinets, looking bright, if you choose dark, the house will seem boring.’(Village Chief of Fangpao,)</p> <p>‘Now young people do not like fancy, I bought my son's desk without pattern, wipe up convenient, look also fresh, he said than the old table is much more smooth. . . Mattresses can choose comfortable, hard and hard to pinch, too soft the next day to get up sore back, the kind of not soft and not hard to fall asleep only strong.’(Senior people playing cards in front of a shop in the village of Firecracker)</p>
<p>External factors: price and brand</p>	<p>‘buy furniture first look at the price, too expensive we cannot afford the crops, the town activities to buy the most cost-effective, the same type of sofa can save hundreds of dollars, the quality is still almost the same. . . The same wardrobe a sell three thousand, another two thousand eight, I compared the quality of the same, sure to choose the cheap, living life has to be carefully calculated. . . I would rather spend more to buy the old brand, the town shop opened more than ten years, the neighbours bought his wardrobe used for five years without bad, unlike the new shop, problems cannot find people.’ (S92907, S92901, S92919)</p> <p>‘Although the big brand furniture is expensive, but rest assured that the last time I bought a small brand chair, half a year on the bad, looking for the shop is not recognised, the next time what to say also buy acquaintances recommended brand.’ (Village Chief of Fangpao)</p>
<p>External factors: after-sales service</p>	<p>‘Buy furniture have to ask clearly warranty, my sofa warranty three years, the last armrests loose, the shop to repair free of charge, do not have to find their own craftsmen to spend money to repair.’(F92609)</p> <p>‘We must choose the package delivery and installation, so heavy cabinets we cannot move, the shop door to door good debugging, there are problems on the spot to say, worry.’(Q92709)</p> <p>‘I bought a bed deliberately asked, if the mattress sleep deformation can be replaced, the boss said that within three years there is a problem at any time to find him, so buy a solid, not afraid to use the bad no one care.’(F92610)</p>