

**Building a Generic Value Creation Model  
For the  
Sri Lankan National Education System**

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This research was undertaken under the auspices of the  
London School of Commerce

Submitted in partial fulfilment for the award of the degree of  
Doctor of Business Administration

**University of Wales Trinity Saint David**

2021

# **Declaration**

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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## **Abstract**

This research was an attempt to build a generic value creation model architecture which can be used by any organisation without business v. public or profit v non-profit differences, by way of: a synthesis of literature in 6 streams of management related to value creation; operationalise it using data collected through an exploratory study in the System of General School Education in Sri Lanka; and, test the operationalised model in the same context through a confirmatory study.

The study was a mixed-method one, using in its exploratory phase interviews as its data collection instrument, and in its subsequent confirmatory phase, questionnaires as its data collection instruments. Data analysis methodologies used to test hypotheses were structured equation modelling and multiple regression analysis.

The operationalisation validated the model building assumptions, and the final research results showed that the proposed model can be used in a national-scale public education context to measure value creation.



The problem of value must always hold the pivotal position, as the chief tool of analysis in any pure theory that works with a rational schema.

--*Joseph A. Schumpeter*

*History*



## **Acknowledgements**

Firstly, I wish to express my gratitude to Dr. Renuka Herath, my Lead Supervisor, for her continuous support, guidance, motivation and encouragement throughout the course of this research. I would also like to express my gratitude to the other members of the Supervisory team, Dr. Ravindra Dissanayake and Dr. Lester Massingham for their support.

Secondly, a special word of appreciation is due to Dr. Lester Massingham who, in addition to being Director of Studies in the supervisory team, was also the Director of Studies in Sri Lanka, for being so inspirational while conducting the coursework stage of the programme, and for guiding and directing all of us to complete this research journey with spirit.

Thirdly, I wish to express my special thanks to the BSC and the LSC for organising this wonderful programme providing us an opportunity to do research.

Fourthly, I wish to express my gratitude to Prof. Jill Venus, for her understanding, support and guidance throughout the course of the programme from start to end. I would also like to thank the members of the Business School and the University for reaching out to countries like Sri Lanka and playing an enabler role.

Finally, I wish to express my gratitude to all the participants who took part in this research, and my colleagues: Mayura Senanayaka, Kapila Ranasinghe, Anura Kudagamage and Lakshi Herath, in particular, for helping me in various ways during the process of data collection.







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# 1. Introduction

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## 1.1. Chapter Overview

This research about developing a generic value creation model architecture to suit any type of organisation was necessitated primarily by a need of finding an answer to a problem of measuring value creation in the system of General School Education of Sri Lanka (hereinafter referred to as SGSESL or the System), a subject officially belongs to Educational Administration (EA), a field which is averse to business management theories. Setting out the research, this chapter, in its first 3 subsections, gives a general background to the research problem, a definition, and specification of research objectives. The justification, significance and the limitations of the research come in the next 3 subsections. The chapter ends with an outline of the general structure of the report.

## 1.2. Background

The SGSESL is the Government owned system of public-school education in Sri Lanka catering to the general school education needs of the country by educating children from 5-18 years, for 13 consecutive years, till university entrance. The System conducts 3 national level examinations: Scholarship, GCE O/L, and GCE A/L at standards 5, 11 and 13 respectively (National Education Commission, 2016), the first for the selection of students to popular schools, the second to select for A/L vocational streams, and the third to the university. These examinations, especially the first and the third, are extremely competitive, and children enter the education race by starting to take private tuition at an early age as 8 years, and stay in it till they quit school (Liyanage, 2013). In short, Competition is the modus operandi in current Sri Lankan school education.

## 1.2.1 Defeated Purpose

Job prospects pinned on exam success and parents being hell bent on their children's exam success, virtually every family is on an exam footing, where private tuition is seen as the saviour not the school (Sedere, 2016). Parents' sole criterion in selecting a school for a child is its reputation for producing exam results, not its ability to impart skills or competencies (Perera & Hettiarachchi, 2016). Teachers expect their students to take private tuition, and a sizeable proportion of teachers themselves have taken to private tuition, neglecting their work at school (NEC, 2003). Prestigious schools allow students to attend private tuition during school hours, seeking a boost in the school image through exam results. This trend has now 'spread into all levels of the education system like a deadly cancer' (Sedere, et al., 2016). Educationists and intellectuals criticize the System for its lack of purpose (Lekamge, et al., 2008; McCaul, 2007; Perera, 2008; Jayaweera, 2010). The competition and tuition culture are seen as by-products of the education policies, particularly evaluation policies followed over a long period of time, which now operate to defeat the very purpose of education. The current school system is 'adversely affecting the overall development of the child' and 'has failed to ensure the total development of the child envisaged by its broad goals and objectives' (Sedere, et al., 2016).

## 1.2.2 Promotion of Private Tuition

Private tuition has grown steadily as the demand for it has increased over the years (Pallegedara, 2011; Suraweera, 2011). Within the 10 years from 1996 to 2006, the percentage of households using private tuition has increased from an average of 23.26% to 64.01% (Pallegedara, 2011). The respective percentages of users in the lowest to highest income groups are shown in the table below:

**Table 1: Growth in the number of households using private tuition, 1996-2006**

Income Group	Percentage of households using private tuition (%)	
	1996	2006
First quartile	6.38	59.74
Second quartile	13.99	63.81
Third quartile	24.55	64.03
Fourth quartile	48.11	68.45
Average	23.26	64.01

In 1996, private tuition had been for high income groups (3<sup>rd</sup> and 4<sup>th</sup> quartiles) and, in 10 years, there is not much of a difference between income groups in terms of usage, confirming that it has become an essential household commodity.

### **1.2.3 Scarcity of Resources**

Parallel to the proliferation of private tuition, the government spending on education has fallen steadily, and it is only a 1.86% of the GDP now (Ranasinghe, et al., 2016), lower than the world average spending on education (4.8%) and even the average spending by the lowest income country group (4.16%) (World Bank, 2017). Although Sri Lanka is an upper middle-income country with an average GNI per capita of 3955 \$, her educational spending is lower than even those of the poorest countries of the world (Ranasinghe, et al., 2016). It is said that at least a 5% of the GDP is needed to solve the financial crisis prevailing in the System (Medagama, et al., 2016). Surprisingly, this lower spending too is despite the additional costs of basic resource provisioning such as providing free text books and school uniforms to children (Kulasekara, et al., 2016), indicating how too little is spent on the real process of education. The kindergarten education being run wholly by private enterprise (Sarma, et al., 2018) is not a burden on the government financially. Clearly, a part of this financial deficit is borne by the parents through their children's private tuition. And with this passing of the responsibility of educating children onto the hands of parents through private tuition, the government's claim of 'free education for all from kindergarten to university' has become a 'misnomer'. Managing free education with a meagre budget signifies nothing but an acute scarcity of resources.

### **1.2.4 Inequitable Delivery**

And even that small spending is not being distributed equitably. A vast disparity both in terms of quantity and quality of resources exists between the privileged 353 'National Schools' and the 9841 'Provincial Schools'. The geographical distribution of national schools is skewed: 30% of the students in urban districts are in national schools and this percentage in rural districts is only 5% (Ministry of Education, 2018). A '54% of the National Schools are located in 3 provinces', whereas the other 6 provinces have 'less than 50% of the National Schools'. A 77.7% of the student population coming from the rural sector, a large majority of children do not have access to quality education near their place of residence' (Department of Census and

Statistics & Ministry of National Policies and Economic Affairs, 2017). Rural schools do not even have the basic facilities as in the figure below (Ranasinghe, et al., 2016):

<b>Electricity</b>	<b>Telephone</b>	<b>Teacher rest rooms</b>	<b>Water</b>	<b>Sanitary facilities</b>	<b>Playground</b>
15%	69%	92%	16%	1%	36%

**Figure 1: Percentage of schools without basic facilities**

Grade 1 entry criteria into national schools favour the privileged (Ministry of Education, 2018). Entry into Grade 6 is through the scholarship examination which only a 14.35% of students pass (Department of Examinations, 2019) and the preparation for examination for years cause mental stress and other far reaching negative mental health problems in small children (Sarma, et al., 2018). A 40% of children, mostly rural, do not have access to any kindergarten education at all, and ‘marked irregularities’ exist in their quality, as they are run for profit by private entrepreneurs (Sarma, et al., 2018). A student population of 19.7% in urban national schools have about 56% of the A/L Science teachers in the country (Ranasinghe, et al., 2016). Rural poor children are deprived of science and commerce education (Jayawardena & Madurawala, 2011) and they select their vocations based on their parents’ financial capacity and not on their ability (Samarakoon, et al., 2016). This inequitable distribution of resources in education has been responsible for two revolts against the government by the rural youth, in 1971 and 1989.

### **1.2.5 Failing the Economy**

Even the System’s main preoccupation, serving the economy, has failed to deliver results. Employers express serious concerns on the students’ lack of competencies for employment (Dundar, et al., 2017; Abeysekara, 2017; Grero, 2018). The cultivation of soft skills ignored by the exam-oriented education has created a mismatch between the education system and the job market (Grero, 2018). The schools have not been able to match their study streams to the job market specialisations (Little & Hettige, 2013), and there is a mismatch in the demand and supply in the job market (Weerakoon & Arunatilake, 2011; Arunatilake & Jayawardena, 2010; Institute of Policy Studies, 2010; Lanka, 2016; Gunawardena, 1991), and the labour shortage continues to be detrimental to the overall productivity of the economy and ‘a large gap has been created between the requirements of job creators and the expectations of job seekers’ (Central Bank of Sri Lanka, 2017).



### **1.2.6 Lack of Capacity Building**

The teacher training programmes, both pre-service and in-service, are plagued by numerous issues. Teachers have not yet understood the concept of competency, though the education reforms aim competencies (World Bank, 2011). A shortage of trained teachers exists in certain subjects. Degree level courses in universities are limited and the ones available offer little or no classroom experience. Bachelor of Education programmes are limited to content in arts, because only the arts faculties in universities conduct these programmes now (Sethunga, et al., 2014). The colleges of education which train pre-service teachers and the teacher training centres which train in-service teachers lack 'basic facilities and have problems in their recruitment processes' and are ineffective due to the 'lack of coordination with other educational institutions'. The number of programmes available 'for providing pre-service teacher education and the annual output of qualified teachers are insufficient to meet the demand' (Sethunga, et al., 2014). The colleges of education and teacher training schools are vastly distanced from the rest of the System in management.

### **1.2.7 Imported Teaching Practices**

The stereotypical class room based auditory method of teaching favours female students who are predominantly auditory learners, and alienates male students who generally are kinesthetic learners and the results show up in all institutions. Females dominate males in universities in a 62% to 38% (Ginige, 2018). 5E, the imported teaching model, 'seems to be less accepted' (National Education Commission, 2008/2009; Sri Lanka Institute for the Advancement of Education, 2010). Despite its student-centricity and activity-based nature, its rigidity 'defeats its purpose and limits the creativity of teachers and students' (Widanapathirana, et al., 2016), and its teaching methodology is very difficult to be practiced (World Bank, 2011). 'The soft skills essential for success in the complex modern society can be inculcated through proper methodology of teaching. This has not received enough priority' (NEC, 2016).

### **1.2.8 Obsolete Management Practices**

Breeding issues and allowing them multiply are the management structure and practices used in the SGSESL. It has created a complicated geographical plan of 312 divisions and 98 zones for a small country (Ministry of Education Sri Lanka, 2017), without going by the simple geographical divisions in general administration. Dual-

line administration of central and provincial governments has made matters worse and the provincial structure has several tiers of management which are redundant. (Medagama, et al., 2016). The ministry seems to have a tall and complex functional structure with serious overlaps, where managing in silos is the order (Ministry of Education, 2020). High-level performance review or a coordination committee 'to address issues of communication and coordination' is missing (National Education Commission, 2016). The System lacks 'competent professionals to carry-out the functions, and form active inter organisational links, and information needed for planning (NEC, 2016) and decision making. Information scarcity is a serious issue and there is no way to find information concerning the different parts and aspects of the System which are essential for management (Medagama, et al., 2016).

Resource utilization is inefficient, and vacancies are 'not filled on a need basis, as there is no clear process to identify the human or other resource requirements' (Medagama, et al., 2016). The school system is organised on ethnic-religious lines, while paradoxically expecting national cohesion to occur (Medagama, et al., 2016). Numerous types of schools exist making management complex (National Education Commission, 2016). Teachers are unevenly distributed across schools (Kulasekara, et al., 2016). School Based Management procedures overburden the teaching staff at all levels (Perera & Hettiarachchi, 2016). Without proper performance management, performance evaluation is subjective and 'much of the work done in the system is to prove not to improve' (Perera & Hettiarachchi, 2016). Seeking better compensation, teachers and principals have resorted to trade union action (Daily Mirror, 2019).

### **1.2.9 Valueless Curriculum**

The current school curriculum 'does not reflect the National Goals adequately. And the curriculum developers are more concerned with imparting of knowledge rather than inculcating desirable competencies among students' and there 'has been a wide variation in the level of incorporation of National Goals in the subject curricula of all grades' (National Education Commission, 2016). And, 'there is considerable potential for the competency-based curriculum to contribute to the achievement of basic competencies such as those pertaining to personality development, communication, environment and learning to learn' and, 'the curriculum developers are urged to have content and process outcomes rather than the competencies' (Widanapathirana, et al., 2016). Though values are 'an important objective of education' and 'there is

evidence of rapid deterioration of human values in contemporary Sri Lankan society', the 'current curriculum hardly contributes to the holistic development of the citizen' (National Education Commission, 2016). Even after 70 years of reforms, the school curriculum is still overloaded, unbalanced (SLAAED, 2010; NEC, 2008/2009) and the contents are disproportionate grade wise, and lacks in flexibility, as it operates as a uniform model for all subjects in all age groups (Widanapathirana, et al., 2016). Issues related to age and grade appropriateness of content in many subjects exist, and in some cases the Teacher Instruction Manuals and text books contradict (Widanapathirana, et al., 2016; National Education Commission, 2016). The curriculum development and implementation process does not have a feedback mechanism for effective implementation (National Education Commission, 2016).

### **1.2.10 Political Interference**

Politics has been a feature in the 'modern education' in Sri Lanka founded by the Portuguese under the Catholic Church (Don Peter, 1978), institutionalised by the Dutch under the Protestant Church (Ruberu, 1962; Mottau, 1969), and modernized by the British under the Anglican Church (Ruberu, 1969), as rivalries existed between foreign missions and the local interests, right from the beginning, for a wider representation in education governance (De Silva, 1969), for which more secularisation of education was the answer (Godage, 1969), which was realised only in the latter half of the British period (Rajaindran, 1969). Yet, even after secularisation, the delivery of education was still classist, and advanced schools were not accessible to the lower classes (De Silva, 1969), understandably for the need of cutting costs, as 'no colonial master through the ages ever ruled its colonies for the unadulterated benefit of the ruled' (Jayasuriya, 2018). Though the colonial government controlled the resources in education, through a grant-in-aid system (Sirisena, 1969), with utilitarian policies (Perera, 1969), they were able to elevate the economy of the country to a high level in Asia (Little, 2014; De Silva, 1981), a feat which successive independent indigenous governments are yet to accomplish, except tinkering on education on their political agendas (Lewin & Little, 1982).

The political rivalry between the two main camps in local ideology politics -liberals and nationalists, for ease of reference, who respectively represented quality improvement and democratisation-began with the passing of the free education bill in parliament in 1939 before independence, with much opposition from the pro-

missionary liberals (Jayasuriya, 1979) leading to the non-election of the minister responsible for the bill in parliament, in the next election in 1952, allegedly orchestrated by his own camp, and the appointment of a member opposing its implementation as the new minister, who used delay tactics to prevent its implementation (Ratnayaka, 1969). Nationalists clamoured for a full takeover of the denominational schools, won the election in 1956, and changed the language of instruction in schools into Vernacular (Sumathipala, 1968) and completed their mission by taking over all denominational schools in 1961 (Karunaratne, 1969). The rivalry was far from over, and the liberals coming into power in 1965 retaliated by scrapping on-going programmes of the former government (Hewage, 2018) only to witness unemployment among youth between 15-24 to rise to 80% by the time of election in 1970 (Jayaweera, 1986). The proposal for job orientation in education, brought by the Education review Committee appointed by the nationalist government elected in 1970 (Little, 2010), was not implemented till a youth revolt by the disgruntled youth broke out in 1971 (Lewin & Little, 1982). The revolt prompted the nationalist government to implement the proposals (Wijemanne, 1978), but were scrapped by the liberal government came into power in 1977 (Lewin & Little, 1982; Little, 2010), only to pave the way for another youth revolt in 1989 which was crushed brutally as was in the first instance in 1971 (De Silva, 2004).

The most recent hopes of education being free from politics, kindled by the establishment of the National Education Commission (NEC), through a unanimous bill in parliament in 1991 (Gunawardena, 2010), on the recommendations of a commission, investigating into the causes of youth unrest (Little, 2010), for the purpose of ending politics and reaching at a national consensus on education policy, have been short lived. Appointed by the political leadership with no enforcement powers, NEC policy initiatives have been ineffective, 'elitist and top down' (Wikramanayake, 2009) and subservient to the very politics which its coming into being meant to eliminate.

### **1.2.11 Lack of Direction and Leadership**

The first policy intervention by the NEC was a set of 9 'national goals' (Appendix AA), to be achieved through 60 'educational values' (Appendix AB) and 5 competencies (Appendix AC) (National Education Commission, 1992). These 'national goals' appear to have been 'invented' hastily by the NEC to please the political leadership, as the whole programme even with public hearings had lasted only 9 months (NEC, 1992). No

other government institution has ever used these national goals to this day. The 'educational goals', which provided cover for the politically mediated 'national goals', were a set of loose, overlapping, verbose, unmanageable statements, and been dropped by the subsequent committees of the same NEC. The general practice in educational policy making is to set manageable educational goals, to make the derivation of competencies and curriculum from them feasible, as is verifiable in the simple educational goals of Finland (Halinen, 2018) and Singapore (Appendix AD and AE respectively) (Ministry of Education-Singapore, 2018). The irrelevance of NEC national goals became obvious when the NEC had to add two additional competencies (Appendix AF, additions and changes are marked) of basic nature related to 'personal development' and 'preparation for the world of work' to the list in 2001, only after 4 years of its implementation (Gunawardena, 2010).

The subsequent reform proposals showed how lightly educational policy making is treated in Sri Lanka and its lack of leadership. The next reform in 2003, dropped the 60 educational goals altogether, and reduced the national goals to 8 (Appendix AG), ironically lamenting lack of continuity in education policy, and stressing the need of 'strengthening the implementation of the previous reforms and to identify policies to remedy shortcomings or to meet emerging needs' (National Education Commission, 2003). In 2009, the Minister of Education initiated a process for formulating a policy framework for education with a set of national goals consisting of 10 items (Appendix AH)(National Committee for Formulating a New Education Act for General Education, 2009). The Special Parliamentary Advisory Committee pursued the matter and prepared a draft for a new Act with totally different 6 National Goals (Appendix AI) (Special Parliament Advisory Committee of Education, 2010). The NEC, having gone for years on a course of change backtracked to its 9 original goals in 2016 (National Education Commission, 2016).

### **1.3. Complex Nature of the Problem**

Since the individual SGSESL issues described above are at interplay with one another within and outside the system, they present a rather complicated management problem demanding a multifarious solution with multiple capabilities as can be summarised below:

**Table 2: Multiple Capabilities required in the Solution**

No.	Capability required
1	Stress the importance of educational values to guide the work of the whole System.
2	Link the educational values related to economic progress with the educational process.
3	Supply performance metrics for the whole system aligning performance evaluation with educational values.
4	Supply a basis for developing a fitting educational programme (curriculum) from within to achieve educational values.
5	Provide a process foundation that leads to create educational values and prevent counterproductive outcomes such as private tuition.
6	Facilitate generating teaching practices needed to achieve educational values from within.
7	Stress the importance of capacity building to achieve educational values.
8	Supply a basis for management practices needed to achieve educational values.
9	Highlight the importance of resource requirements to achieve educational values.
10	Highlight the importance of solving resource inequalities blocking the achievement of educational values.
11	Supply self-regulatory powers to block external political interferences.
12	Foster the development of leadership capacities within the system.

The above issues indicate that what SGSESL needs is an integrated solution which could facilitate the identification of its basic value expectations and the alignment of value creation at all layers and functions of the system towards accomplishing those final values. The basic problem in the system is one of value creation.

## **1.4. Justification of the Research**

The proposed research is justified on the basis of the theoretical, research and practice gaps in the related management disciplines that have prevented finding a solution to this and similar problems.

### **1.4.1 Theoretical Gaps**

The two theoretical disciplines directly apply to the current problem are Educational Administration (EA), and Educational Management, Administration and Leadership (EMAL) are not broad and powerful enough to address the complexity of the current problem as there are clear limitations in the two disciplines in terms of theory, research or practice. Also, the scholarship in Business Management (BM) has not looked at the possibility of having a theory of value applicable across disciplines.

### **1.4.1.1 Theoretical Gap in EA**

Modern EA was born in the attempts to set up EA departments in the US universities to train educators and administrators in the early 1900s (Tyack & Hansot, 1982). The subject matter at the time was a mixture of fragments borrowed from various other disciplines such as: social psychology, sociology, business, education, statistics, law, political science, architecture and engineering (Walton, 1955), and most notably, from scientific management or 'Taylorism', which was popular in the US industry at that time (Callahan, 1962). Taylorism maximised efficiency in the work place through standardisation of labour by dividing all work into discrete, quantifiable tasks; measuring observable outputs; exercising heavy managerial control over workers; and minimising costs appealing to workers' economic self-interests (Callahan, 1962). The same principles were imported into education, aiming at eliminating waste in education and bringing about a factory-like efficiency by providing an itemised curriculum with methods and facilities to achieve specific objectives provided by the supervisors (Bobbitt, 1912). To measure observable outputs in order to exercise control over everything as in a factory, standardised tests became the measure of performance of both teachers and students (Au, 2011) and this having been the situation it is clear that how much ever powerful the other borrowed elements may have been, Taylorism was the real driver of education. However, on the theoretical side of things, since the goal was an administrative science independent of other disciplines, EA scholars adopted a new seclusionist policy to put a full stop to all borrowings, and embark on a theory movement in search of a theory to unify the discipline to make distinct from others (Walton, 1955). The formation of the National Conference of Professors of EA (NCPEA) in 1947, and the University Council for EA (UCEA) in 1955 were some of the initial landmarks of the movement (Griffiths, 1978), where the intentions were (Halpin, 1970):

1. To adopt hypothetico-deductive research rooted in theory.
2. To adopt a stance of EA that is not distinct from general administration.
3. To draw insights from behavioural sciences.

Using the scientific management principles already, the automatic choice of this movement as its theory was 'logical positivism' developed by the 'Vienna Circle' during the 1920s, of which the core tenet was the verifiability of meaning, or the idea that unverifiable things were beyond scientific investigation (Park, 2001). And, EA

'officially' became a value-neutral 'science of administration' (Culbertson, 1981), continuing the use of 'value-neutral', 'scientific method' of 'standardised tests' as its sole measure of educational performance (Park, 2001), which continues to this day.

Later, as scholars started to refute logical positivism (Kuhn, 1962; Feyerabend, 1975), positivism in EA was challenged by the ideas of 'subjectivism' and 'critical theory' (Park, 2001). Greenfield, in a subjectivist view point, argued that there were multiple realities for different observers (Greenfield & Ribbins, 1993). By the 1980s, Bates, inspired by 'critical theorists' like Habermas, and Michael Young's ideas on the relationship between societal power structures and school curricula, criticised subjectivism and argued that it failed to see the existence of a societal structure over human value systems, and individual value is only attainable under 'collective social value' (Park, 1999). The next phase of the theory movement came in the 1990s as 'natural coherentism', advanced by Evers and Lakomski, two scientific-realists, who criticized both subjectivism and critical theory and argued that science played a helping role in overcoming myths and social ignorance, and therefore, super-empirical virtues like 'consistency, simplicity, comprehensiveness, conservativeness and explanatory unity' are needed to justify a theory identifying the presence of those virtues as 'natural coherentism' (Evers & Lakomski, 1991). In essence, theirs was a post-positivist theory of science that was 'broad enough to incorporate considerations of ethics and human subjectivity' (Evers & Lakomski, 1993), and they paid attention to cognitive science and neuro-science with the belief that it would produce 'a unified account of theory and practice' (Evers & Lakomski, 1996). With criticism mounting on different grounds, for its over-ambitious nature (Hodgkinson, 1993); misrepresenting Greenfield (Gronn & Ribbins, 1993); insufficient attention to the role of the society (Bates, 1993), its influence waned by the 2000s (Oplatka, 2009).

Oplatka (2009) analysed, research papers in the 3 oldest and most dominant refereed journals in EA (*Journal of Educational Administration*, *Education Administration Quarterly*, *Education Management Administration and Leadership*) during the period from their first volume (all in 1960s) to late 2007 in all scholarly, historical and empirical categories. He analysed and coded the reported research by their purposes, arguments, epistemological questions, criticism, findings and insights and using the analysis, delineates the evolution of the discipline from 1960s into several periods as: period of institutionalisation (1960-70); epistemological concerns about



purposes and boundaries (1980s); public pressures towards quality and practice (1990s); a time of critical reflections on the past (2000s). The critical voices in the recent period exemplify the lack of stable theory to guide the discipline even after 100 years of existence. The disappointment in scholars is clear in their voices wanting: a coherent and in-depth body of knowledge which lead to a practical orientation (Heck and Hallinger, 2005; Ogawa, et al., 2000; Pounder, 2000); a limitation to the research concepts to the most important ones, in order to be productive (Tshannen-Morran, et al., 2000); a linkage between management functions and school activities (Honig & Seashore, 2007; Gunter, 2002); a controlling of the dominance of educational leadership as it is thwarting the progress of the whole field (Allix & Gronn, 2005) with its obsession on leadership than leading or leaders (Gunter & Ribbins, 2002); not to be overtly inward-looking (Gorard, 2005) not to be dominated by the US and UK literature (Mulford, 2005). These scholars question every macro aspect of the discipline, including theory building, future direction, progress, research agenda, theory-practice alignment, methodologies, scope and so on (Heck & Hallinger, 2005; Foskett, et al., 2005; Pounder & Johnson, 2007; Greenfield, 2005; Gorard, 2005; Ogawa, et al., 2000; Pounder, 2000; Reihl, et al., 2000; Gunter & Ribbins, 2003), along with other research on micro problems in the field, which are given in summary form in the table below (Oplatka, 2009):

**Table 3: Current issues faced by EA as regards its own body of theory**

<b>View</b>	<b>Scholars</b>
A disagreement over the field's direction exists	(Heck & Hallinger, 2005)
Current patterns of thinking need reflection	(Pounder & Johnson, 2007)
Need reflection to find gaps in knowledge base	(Greenfield, 2005)
Knowledge production and scholar preparations problematic	(Pounder, 2000)
Lack of research synthesis	(Foskett, et al., 2005)
Lack of connection between policy, practice, and research	(Pounder & Johnson, 2007)
Knowledge base irrelevant to practitioner's needs or problems	(Reihl, et al., 2000)
Theories do not inform practice	(Greenfield, 2005)
Research do not impact substantive practical problems	(Ogawa, et al., 2000)
No communication with policy makers and administrators	(Gorard, 2005)
Fragmented, disintegrative, and inchoate scholarship	(Heck & Hallinger, 2005)
Over diversification and lack of unification	(Heck & Hallinger, 2005)
Different methodological and conceptual approaches	(Heck & Hallinger, 2005)
Knowledge production is in small detached units	(Gunter and Ribbins, 2003)

These are all problems of the most fundamental nature as were summarised by Oplatka (2009) in the words: the field has not yet been able to find answers to the most fundamental questions such as, 'what is EA? and what is its knowledge base? Who are those legitimated to access its professoriate? What are the core topics in the field?' etc. It is adequately clear from this current state of affairs, that even after a more than 100 year-long search for a theory, EA is still where it was in its infancy, using Taylorism as its sole driver of performance (Stoller, 2015). All theoretical interventions in the form of subjectivism, critical theory and natural coherentism have been academically debatable subjects with little impact for a little time, where the practice is carried on based on Taylorism. It is this lack of theory that the proposed research will try to address by advancing a generic theory of value from general management which is acceptable to all disciplines, as it seems unlikely that EA with its historical seclusionist mindset will ever be able to fill this theoretical gap from within.

#### **1.4.1.2 Theoretical Gap in EMAL**

Education Management was the initial British version of EA imported from the USA in the 1960s (Bush, 1999). The criticism in the UK on the American version from the very beginning over its reliance on industrial management theories and American models, has led to a UK dispensation of the discipline having a rather different agenda. A perceived incoherence between business relationships and educational values has resulted in an 'indigenising' of the discipline, and from the start with a focus on schools, the first Open University course, 'Managing Schools' exemplifies this (Bush, 1999). In spite of some scholars' opinion that general principles of management are applicable across organisational settings (Handy, 1984), the adopted view has been to pick and choose to assimilate only the common functions in business management applicable to all organisations such as: strategic planning, human resource management, financial management and relationships with the outside etc. (Bush, 1999), although the debate is still on.

The Education Reform Act (ERA) in 1988 has resulted in putting in some controls over the administration of education by the government through a national curriculum and examinations, though the Act also gives schools to enjoy certain amount of freedom 'to compete for clients within educational market place (Bush, 1999). The response from the schools and scholars to this central control, however, was a

demand for more autonomy and self-management on the belief that decisions on individual units are best made by the leaders of those units themselves rather than by people who are away from the scene (Caldwell & Spinks, 1992). Although this argument has merits in it given the fact that the real issues are best understood by the people who are close to them, this demand for autonomy and self-management has made Education Management in the UK to drift towards leadership theory and acquire a new nomenclature, Educational Management, Administration, and Leadership (EMAL), as its focus now is on training leaders to lead education institutes (Thomas & Martin, 1996; Bush, et al., 1993). While leadership theory may be essential to manage education for good, it would be rather simplistic to think that the leadership theory would fill the gap of lack of a theory binding all management elements in education together. Thus, despite being circumspect in receiving EA, EMAL, even after half a century of practice, has not been able find a solution to the theory gap that exists in the discipline.

### **1.4.1.3 Theoretical Gap in BM**

The theory of value in BM has its roots in Economics (Lusch & Vargo, 2006; Popesku, 2015) and it has evolved through different periods of western civilization (Screpanti & Samagni, 2005; Rima, 2001; Sewall, 1901). During the Greek Period, the value of a good was considered intrinsic or residing inside it and its value was the price given to it at the time of exchange and it was the sum of the individual costs and the profit margin (Screpanti & Samagni, 2005). During the period of Mercantile Capitalism, since the profits of goods came to be determined by the buying and selling prices in the market, the value transferred from the cost of goods to the subjective concept of utility. Bernardo Davanzati, a mercantile theorist, attempted to develop a 'theory of value' on utility and scarcity of goods. During the classical period that followed came the 'labour theory of value' which meant the value of a good should be derived objectively from the amount of labour required to produce it. During the neo-classical period in which the economic theory was developed by William Stanley Jevon, Carl Menger, Leon Walras and Alfred Marshall and others, the objectivist interpretation of value again reverted to a subjectivist interpretation-The theory of marginal utility which interpreted that the demand of a good diminishes with continuous usage and the value is subject to individual assessment (Screpanti & Samagni, 2005).

This subjective interpretation of the theory of value was further developed in Marketing Management (MM) starting from its initial years. In 1912, Shaw (1912) defined the role of a businessman as searching and gratifying the wants of customer, bringing the customer into the equation of value. The emergence of service marketing, a new branch of MM arose in the early 1980s, resulted in further refinement of the theory of value. Later in this period the concepts of value-in-use and value-in-exchange, which meant the value derived by the customer while using a good and the value transferred from the customer to the supplier at the time of exchange respectively, which were so far studied in isolation, came to be studied together. This was an inclusion of the customer value experience in the marketing agenda giving rise to the concept of value co-creation (Gummesson, 1993; Prahalad & Ramaswamy, 2000). But still the concept of value revolved around goods, the Goods Dominant Logic (GDL), the legacy of the pre-service era. But with the invention of the principle of Service Dominant Logic (SDL) by Vargo and Lusch (2004), all business offerings came to be interpreted as service offerings, thereby establishing the concept of 'value co-creation' by the supplier and the customer together. The dichotomy between goods and services was superseded, and goods came to be included in the larger term of 'service'. Since the concept of 'service' is common across the divide between 'business management' and 'public management', this could essentially be considered as a step towards seeing management as one discipline without differences. The concept of value being so generic in all acts of management, irrespective of business and public differences, a generic theory of value may not only be desirable but also be tenable in the light of SDL. But, despite this MM intervention, no conscious attempt has been made to look at the theory of value as a generic or inclusive one, and formulate foundational principles of value co-creation which in the long term can help build a generic theory of value. The current research attempts to fill this theoretical gap by building basic principles of a generic theory of value as a starting point with the hope that future experience will help establish such theory firmly.

#### **1.4.2 Research Gaps**

Though there are slight differences in the way the discipline of Education Management is looked at in the USA and the UK, the research in EA and EMAL are considered as belonging to one body of literature by many international researchers,

though the name is EA is often preferred to name the unified body, probably due to its antiquity. But, for the purpose of differentiating it from the business management literature in this report the whole body of literature related to managing education (both EA and EMAL) is termed as Education Management (EM) literature, in the belief that it is more apt to refer to the discipline globally.

#### **1.4.2.1 Research Gap in EA and EMAL**

According to Oplatka's (2009) literature analysis, the period between 1960-70 was the period of institutionalisation in EM, and the survey of literature from 1965 to 1978 conducted by Campbell (1979) and published in the leading journal *Education Administration Quarterly* confirms that. According to Campbell (1979), the topics researched with their percentages were: policy making (23.1%), school finance (18.8%), decision making (14.6%), motivation-satisfaction (14.6%), preparation programmes (14.6%), leadership (12.5%), administrative behaviour (10.4%), authority-bureaucracy (10.4%), collective bargaining (10.4%), and organisational structure (10.4%). The other areas that attracted the attention of researchers were: issues of school effects on student achievements (Erickson, 1979); politics of education and superintendency (Campbell, 1976). And there is hardly any research on the subject of value creation during this period, not to mention the value creation of a national system of education.

The next period (1980s) was the period in which the research focus was on the epistemological concerns about purposes and boundaries of the field (Oplatka, 2009) and therefore much of the research in this period were normative in essence or accounts of the past. Though there is a couple of research in this period which touches upon the subject of value, they do so only partially among many other things, and they are not really studies on value or value creation but rather regarding values administrators should possess. And some of the mentions are: the field has focus on administrator's beliefs, values and attitudes (Haller & Knapp, 1985); values and equity (Willower, 1987); motivation (Hoy, 1982); management policy (Glatter, 1987); Organisational culture and climate (Willower, 1987); School improvement and effectiveness (Hoy, 1982; Willower, 1987); values and ethics (Glatter, 1987; Willower, 1987); Hodgkinson (1983) developed a hierarchy of values for administration; and, Tyak & Hanshot (1982) called school administrators the managers of virtue. But these references to value were related to the ethics, values and virtues education

administrators and practitioners should possess, and not about value that should be created through managing education as envisaged in this research. And, this period too does not provide any research example that would have obviated the occurrence of the current research gap.

The next period in the EM history (1990s) was where there were public pressures towards quality and practice subsequent to the policy changes brought about by the rise of neo-liberal governments in many western countries in the late 1980s (Oplatka, 2009). The scholars' response to this was to look farther and drift away from the central administration and focus more on leadership and aspects of institutional management. Murphy, et al. (2007) conducted an analysis of literature during 1989-1998 published in *Education Administration Quarterly* and the topics of those studies with their frequencies and percentages are: organisational aspects (26.1%), school administration (18.5%), politics in education (13.9%), core technology (10.1%), school reform (9.6%), philosophy and ethics (4.2%), gender and race (4.2%), personnel management (2.9%), psychology (2.1%), work of school leaders (1.7%), law (1.7%), economics and finance (1.2%), and other (3.8%). This analysis shows that the organisational focus in research is still intact as the organisational aspects have been researched more (26.1%). But the research focus has shifted to the areas of specific institutional aspects and leadership in response to the policy changes introduced by the centre. But, despite considerable volume in the research on administrative aspects, there is hardly any research on value or value creation in education in the whole period and that is indicative of the selective use of management principles in education discussed above.

The current period (2000s) is a time of critical reflections on the past (Oplatka, 2009) Aypay, et al. (2010) conducted a literature analysis of 449 studies published across 13 EA journals and report the themes studied in those studies and they are given along with their percentages were: leadership (15.6%); Teaching; learning and testing (12.3%); Principalship (12.1%); Community, society and school (7.6%); Administrative organisation, structure and processes (6.7%); professional and staff development (5.4%); policies and programmes (4.2%); school effectiveness (3.8%); organisational climate (3.6%); theory, research and practice (3.3%); field of study of EA (3.1%); change and innovation (3.1%); school business and finance (2.5%); curriculum (2.5%); politics of education (2.0%); decision making (1.6%); supervision and inspection

(1.6%); comparative analysis of countries and systems (1.3%); attitude formation and change (0.9%); student assessment and evaluation (0.9%); professional preparation and certification (0.7%); facilities, equipment and materials (0.7%); counselling and guidance (0.4%); special needs programmes (0.4%); reform (0.2%); and other (3.1%). The topic that features most (15.6%) in the list is leadership and this is indicative of the inclination in the field to move from central administration towards managing educational institutions through able leadership. The research interest clearly has been on one or two specific areas of educational administration and not on an education system as a whole. These findings are consistent with the analysis of the 610 research studies in 5 leading EM journals during 2004-2009 conducted by Aydin, et al. (2010). The themes of those studies along with their percentages were: leadership (22.5%); school effectiveness (7.9%); principalship (7.7%); organisational structure and processes (7.7%); politics of education (7.0%); professional preparation and certification (6.9%); theory, research and practice (5.9%); society, community and school (5.2%); professional development (4.3%); teaching, learning and measurement (3.8%); reform (3.0%); change and innovation (2.8%); school business and finance (2.6%); supervision and inspection (2.5%); decision making (2.3%); educational politics (2.1%); organisational climate (1.6%); study of EA (1.6%); and, other (2.6%). The same trend towards institutional management through leadership is visible in the topics of this analysis as well. The specific areas of concern such as leadership, school effectiveness and principalship etc. confirm that. The upshot here is that, the style of management in EM as captured in research is part by part, not holistic. As if to prove it, there is no mention in any of these studies of value or value creation in an entire system of education, justifying the current claim of a research gap. This apparently in large part is due to the lack of a powerful theory to unite the various elements in education management systems. In this sense, the theoretical gap and the research gap here seems to be related.

#### **1.4.2.2 Research Gap in Management Literature**

The sub-sections on theoretical gaps in EA and EMAL clarified the point that the application of BM principles in the two disciplines is restrictive, and on principle they are averse to applying BM principles on a large scale. And as such, research interventions into public education on the part of BM is very limited. The first BM body of literature relevant to value creation is service marketing and SDL.

As explained under the sub-section on theoretical gap in BM, SDL promises to integrate multiple disciplines of management and it has been evolving as a theoretical body of literature with research contributions from a large number of scholars (Vargo & Lusch, 2014). According to Lusch, et al., (2016), extensive research on the subject enables SDL to integrate fields such as management, marketing, operations, information systems, supply chain management, computer science and service science. He also sees the possibility of integrating specialised applications in arts, design, health, education and sports tourism etc., as there have been SDL research in the areas of information technology (Yan, et al., 2010), logistics (Randall, et al., 2010), hospitality management (Shaw, et al., 2011), branding (Payne, et al., 2009), service science (Spohrer & Maglio, 2008) and in more general topics such as value in social context (Edvardsson, et al., 2011), value in context (Chandler & Vargo, 2011) and value propositions (Chandler & Lusch, 2015). And, SDL is being used today as a theoretical foundation to integrate disciplines of BM and associated fields such as IT and computer science. However, it is yet to widen its scope into the public domain, and there is hardly any MM research into VC in the public domain.

Another body of BM literature with value relevance is Value Management (VM), also known as 'Value Analysis' or 'Value Engineering' invented by Lawrence Miles in the early 1980s for the purpose of reducing cost by way of finding alternate ways to select the best way of delivering customer value in manufacturing settings (Shillito & De Marle, 1992; Thiry, 1997; Park, 1999; Younker, 2003; Miles, 1989; Dell 'Isola, 1982) But, there is no way that VM has produced research on value creation in a public setting as its scope and applicability is limited to commercial manufacturing.

An important body of BM literature regarding Value Creation (VC) is Value Based Management (VBM) (Gupta & Garg, 2012; Munteanu, et al., 2012; Daraban, 2016) and this body of literature mostly is consisted with research into practical value creation models. For roots in accounting, its birth and evolution as management models are understandable. Having become popular in mid 1980s, it is associated with creating 'shareholder value' (Bausch, et al., 2009). Since the shareholder value has only a financial dimension, these models have hardly any application in the public sphere. Although the theory of 'stakeholder value', popularised by Freeman (Laplume, et al., 2008) prescribed a balance between competing interests of all stakeholders (Sternberg, 1996) including shareholders, customers, employers and the general



public (Fontaine, et al., 2006), and is holistic in approach (Donaldson & Preston, 1995), despite having some literature on VC in higher education looking into various aspects of VC, such as: student value perspectives (Dziewanowska, 2017); VC in international higher education (Vauterin, et al., 2012); value co-creation and university teaching quality (Diaz-Mendez & Gummesson, 2012); co-creation in higher education (Dollinger, et al., 2018); Business innovation through customer value creation in a virtual education business (Kodama, 2000); co-creation of value in higher education through social network marketing (Fagerstrom & Ghinea, 2013); and factors that enable knowledge creation in higher education (Thani, 2018), have only been used to create financial value creation in a business setting and has hardly been able to produce any research on value creation in a public context.

Performance Measurement & Management (PMM) is another body of management literature having direct value relevance. For the direct connections to the stakeholder theory in value creation, it has the ability to bridge the gap between for-profit and not-for-profit applications. But, despite one very limited application in a public education setting in the form of using selected scorecard measures to measure school district performance, under the 6-prong Baldrige Quality Criteria for education (Karathanos & Karathanos, 2005) there is hardly any PMM research in the public domain. And the same is true regarding the other popular PMM models such as the Service-Profit Chain, the Skandia Intellectual Capital Model (Ashton, 2007) and Business Models (Nenonen & Storbacka, 2010) has been used in public school education. This is true even in the case of the public sector BSC, the adaptation of the BSC to suit the public domain (Williams & Shearer, 2011). Despite BSC being used widely in the public sector (Hoque, 2014) across many organisations, such as: local government organisations and municipalities (Umashev & Willett, 2008; Askim, 2004; Chan, 2004; Farneti & Guthrie, 2008; Lang, 2004; Kloot & martin, 2000), hospitals (Gumbus, et al., 2003), not for profit SMEs (Manville, 2007), public sector sport service agencies (Bolivar, et al., 2010) and customer services (Nieplowicz, 2013), it has not reportedly been used as a generic model of VC in a form directly applicable in public school education.

Strategic Management (SM) which was known as financial planning before 1950s and long-range planning before 1960s (Gluck, et al., 1980) is another area of management concerned with ways and means of VC (Guerras-Martin, et al., 2014)

both external and internal to organisations, and this focus has shifted from internal to external and from micro to macro from time to time in its evolution in response to the compulsions of time (Bowman, et al., 2002). Guerras-Martin, et al. (2014) explain this changing focus in 4 dimensions as: internal-macro, internal-micro, external-macro and external-micro. The current literature search being for a micro and macro model that covers both internal and external organisation at the same time, aside individual theoretical principles regarding certain important aspects in SM which may be useful, it was unlikely to find research examples that fits the current requirement and fulfils the research gap. There are also certain differences between the business and public organisations restricting the application of SM in the public domain and they are: complex and ambiguous goals, open and political decision making and the presence of multiple stakeholders in the public sector (Bozeman, 1987; Allison, 2004; Rainey, 2009). For this reason, SM received attention in the Public Management (PM) only recently (Ferlie, 2003; Johanson, 2009). SM has been applied in PM where there is a high degree of: administrative autonomy; performance-based budgets; and, market-like conditions (Hansen & Ferlie, 2016). As such, despite very limited examples of SM research into specific areas of PM, there is hardly any previous SM research that fits into the requirements of this research.

Public Value Management (PVM) is the body of management literature that is directly relevant in VC in the public sphere (O'Flynn, 2007; Alford & Hughes, 2008). Though the current application may be argued to be belonging in PVM due to its public character, there is little PVM offers in the current research as adaptable literature, as its knowledge base is still not settled due to an ongoing debate around the point whether it is an empirical theory or a normative prescription (Alford & O'Flynn, 2009). Though, some view it as a mixture of the two as a 'normative theory' (Barzelay, 2007), it is still limited as an integrative theory, and there is limited research even to substantiate that claim, and the reason for this is seen 'as the inherent complexity and ambiguity of public value as a theory and a framework (Hartley, et al., 2017). Despite its popularity in recent years (Rhodes & Wanna, 2007), there were only 3 research on PV framework (and others have been very limited applications) in a total of 78 studies as found in a survey of past research on PV in 2011 (Williams & Shearer, 2011). One in the broad category was related to school education, but it has been a very limited application of PV to measure the impact of the style of school management by the principals in achieving certain objectives (O'Toole, et al., 2005).

### **1.4.3 Practice Gaps**

#### **1.4.3.1 Practice Gap in EM**

The earliest form of performance measurement in education had been 'input-based' i.e. in terms of spending as a percentage of GDP (Wobmann, et al., 2007), and it has now changed to 'output-based' measurement, 'particularly those related to student achievement' (Dowling, 2008) for, governments could not justify education (Dowling, 2008) and harness public support (Odden & Picus, 2008) for lack of improvement (Mackinsey & Company, 2007) in student achievement (Hanushek, 2002), and today student achievement is 'the new bottom line in education' (Dowling, 2008). But, student achievement is measured through standardised tests introduced to education in the 'Taylor days' of management a 100 years ago (Callahan, 1962).

Taylor's scientific management was a method to improve factory performance through standardisation of labour. Each one activity in the production process was done in one and the same way over time by eliminating personal factors along with chance and accident. The aim was to transfer all thinking and supervision to the supervisors while the workers were acting like robots (Ireh, 2016). What has been happening in education since is not very different from this because, the teachers are teaching to a prescribed method. It is common knowledge that the skills expected, the curriculum items to achieve them, and instructions on how to perform the act are given to the teachers and are being asked to perform in the standard way. And, 'students are the raw materials to be produced like commodities according to specified standards and objectives and teachers are the workers who employ the most efficient methods to get students to meet the pre-determined standards and objectives. Administrators are the managers who determine and dictate to teachers the most efficient methods in the production process. The school is the assembly line where this production process takes place' (Au, 2011). Like in a factory, teacher intuition and creativity are eliminated through standardisation. Bobbitt (1912), the pioneer in US curriculum development, states that the task of 'finding the best methods is too large and too complicated to be laid down on the shoulders of the teachers' and, 'they must be specialists in the performance of labour that will produce the product'. And in this standardised production process, the students' inborn differences and talents, the most fundamental endowments education is designated to preserve and foster, are ignored.

One foundational logic in scientific management is that the standardised objectives drive the process. i.e., the ends determine the means and therefore, all aspects of education must serve pre-determined ends (Kliebard, 1975; Kliebard, 1995) and this in curriculum studies is known as 'means-ends rationality' and it is a technical matter to decide what content and method would yield the pre-determined objectives (Posner, 1988). The application of scientific precision into curriculum planning: 1. enabled standard procedures to arrive at objectives; 2. Relegated the importance of subjects and their contents to the method used to achieve the objectives (Kliebard, 1979). In other words, there is a standardised way to formulate objectives and the method used to arrive at those objectives dominates everything else in education. The field has practically been run by the method (the scientific method) and the method alone, despite all debates happening within the theory movement. The scientific method when applied to education has been to measure objectives through standardised tests and prepare students to be successful in tests in the prescribed way. Whatever else was happening elsewhere in the education system, this has generally been the driver of education everywhere in the world. The school structures and curricular reforms in the Taylor model were common not only in the school reform movements in the early 1900s (Au, 2009) but also in the present day, and that has even become 'hegemonic' in the USA (Apple, 2004). The use of standardised testing has risen to dominance today and is now the central tool for educational reform (Kornhaber & Orfield, 2001). The No Child Left Behind (NCLB) Act Of 2001 using the threat of slashing federal funding for schools and districts for lack of performance in tests of mathematics, language and arts (U.S. Department of Education , 2002) was a case in point. Through that NCLB established high-stakes testing as a nationally mandated practice (Au, 2009), despite the lack of national curriculum (Porter, et al., 2009) and States having their own standards and tests (Eisner, 2001). High-stakes testing is affecting class room practices; promoting standardisation of teaching; disempowers and deskills teachers; make teachers to teach to the tests with increasing regularity, consistency, and intensity (Au, 2009). There is ample empirical evidence that teachers shape the curricular content in the process of teaching to suit testing (Taylor, et al., 2003; Pedulla, et al., 2003; Abrams, et al., 2003; von Zastrow, 2004; Jones & Egley, 2004; Rosenbusch, 2005; Crocco & Costigan, 2006). A 71% of the US school districts cut at least one subject to perform better in subjects mandated by the NCLB Act (Renter, et al., 2006) and a 62% of the districts increase

instructional time on the tested subjects by the NCLB Act (CEP, 2007). High-stakes tests transform learning in the USA into a memorisation of a collection of disconnected facts, operations, procedures or data to be reproduced at the tests (Clarke, et al., 2003; Vogler, 2005; Toch, 2006; Corocco & Costigan, 2007; McGuire, 2007; McCarthey, 2008) and teaching results in teacher centred pedagogies to meet the content and form demanded by tests (Taylor, et al., 2003; Vogler, 2005; Corocco & Costigan, 2007), reducing pedagogies to 'packaged fragments of information sent from an upper level of the bureaucracy' (McNeil, 2000) and teaching into a 'multiple choice teaching' (Smith, 1991) as teachers use increased time to doing test drills and practicing questions to train students for tests (Luna & Turner, 2001; Hillocks, 2002).

The Sri Lankan context could be said worse than that of the USA as teaching and learning are done in Sri Lanka for the singular purpose of passing standardised tests, and private tuition is preferred to the school to achieve it (Sedere, 2016). Parents select schools for children on past exam success (Perera & Hettiarachchi, 2016) and schools allow students in examination classes to attend private tuition during school hours (Sedere, et al., 2016). A sizeable proportion of school teachers have taken to private tuition, neglecting their work at school (NEC, 2003). The current school system has failed to deliver the broad goals and objectives of education (Sedere, et al., 2016). And these broad goals and objectives are what are identified as values in this research. The practice gap here is that anything that has at least a mere semblance of value is stripped in its entirety by the use of the scientific method of standardised tests. So, it is no surprise then that the human resources produced by this education lack value. The term 'value' here conveys the meaning 'everything desirable' as used in management. When applied to EM, values mean everything that is desirable students completing education to possess: skills, proficiencies, competencies, capabilities and capacities etc. And it is this practice gap that this research would fill by introducing the capacity of managing value into education systems in place of the current value free scientific method of measuring value.

#### **1.4.3.2 Practice Gap in BM**

From a limited understanding of the concept of value as a purely economic one, it has developed in the evolution of the discipline to be a multi-faceted concept today. As this happened, value creation has also been seen through different lenses in different sub-fields of management under different circumstances over the course

of the history and as a result there are different frameworks available for VC today. The tendency has been to stick to specialised forms of value creation models in different sub-fields of management. Where a given sub-field does not have an own VC model, then the practice has been to adapt one from an adjacent sub-field with modifications. While this has been useful and has served individual purposes, value being so organic in management and the underlying intention of almost every activity done in an organisation is value creation, the lack of concern on developing a generic theory of value and the potential generic models or frameworks of VC has been a notable void. And that not only has adversely affected the development of the theory of value, but also has created a long-term practice gap. The lack of generic VC models has prevented the penetration of the discipline to small business organisations which are not well aware of the sophisticated field-specific VC models. At the same time, it has delayed the spread of VC models to the areas such as the public sector and the not-for-profit agencies. The current research is a case in point. EM being such an important area of management for the future of the world, the difficulty of learning from the experience of the mother discipline of management due its extreme compartmentalisation of knowledge has been a problem. Whenever these organisations use models of VC, they now have to stretch models that are very distant to their requirements. A generic model would have made the adaptations much easier and the outcomes more meaningful. The current research attempts to fill this practice gap of the lack of a generic VC model.

## **1.5. Problem Statement**

As was found in the discussion regarding the many requirements of the solution needed for the context, and the dictates of the management discipline in which the solution is applicable, the current problem can be identified as a lack of generic principles of value creation in management literature, and the lack of a resultant generic model of value creation, which would integrate value creation in the different parts of an organisation, and align all value creation activities at the different layers of the organisation towards accomplishing the creation of values expected by the external and internal stakeholders of the organisation, while preserving the neutrality of character of the principles of value as well as the model, in order to ensure the acceptability of the solution; and measure the amount of current value creation, to ensure the applicability of the solution and subsequent policy revision.

## **1.6. Research Objectives**

The primary aim of this research was to find the generic principles of value creation which can be used for value creation by all types of organisations-both business and public-and, build an integrated model of value creation using those principles, and put that into use to measure value creation in the SGSESL and show that the model is practical and implementable to create and measure value. The breakdown of the objectives which would serve to achieve that aim were:

1. To do a literary synthesis of the bodies of value related management literature to extract the generic principles of value creation.
2. To build an integrated model architecture or a conceptual model for value creation using the generic principles of value creation.
3. To explore the System to find out the value expectations of different stakeholder groups in the System, in order to ascertain the value measures under each value variable, for completing the value creation model.
4. To investigate the impact of stakeholder value expectations on value creation.
5. To investigate the nature of relationships between the internal value variables in order to ascertain their relative significance on final value creation.
6. To measure the current level of value creation in the System in order to ensure the acceptability and applicability of the value creation model.
7. To make recommendations for the educational policy makers on value creation for change, and for researchers, for future research on the subject.

## **1.7. Significance of the Research**

### **1.7.1 Contribution to the Theory of Value**

This research is unique and significant as it primarily is an attempt to start a scholarly dialogue on the usefulness and possibility of having a generic theory of value with theoretical principles of value elicited from different value related sub-streams of management, which could be refined over time with the accumulation of knowledge and experience through research, while being in a disadvantaged context in which there is hardly any concrete evidence in literature of any such notion or belief of a generic theory. The discipline of management has long been segregated into various sub-streams, and each of the sub-streams having a body of knowledge, scholarship and scholarly journals of its own, the general tendency has been to look

at management problems in a narrowed down analytical lens confined to the perceived boundaries of the sub-stream. The recent developments in service marketing which resulted in the invention of the very futuristic concept of 'value co-creation' (Vargo & Lusch, 2014), for example, have only been attempts to look at the organisation-customer interface alone and without much concern on the employee-organisation interface. The new discovery being one in marketing, the value it might have had in other areas of organisational life is totally ignored, apparently due to the divided interest in a segregated field. This is the general practice in other areas of management as well. If the focus had been holistic in developing the theory, rather than purely on the customer, it would have been resulted in an additional perspective regarding our understanding of value co-creation. Even though the concept of value is so organic in management that the underlying intention of almost every act done in the name of management is value, there is still little concern on having a generic theory of value. Except the recent service marketing interventions of creating Service Dominant Logic (Vargo & Lusch, 2014) and Service Logic (Gronroos & Gummerus, 2014), the discipline of management at large has paid little attention to add anything new to the economics legacy of the theory of value. Even in the theoretical fields which designatedly look at management problems holistically like SM or PMM, all scholarly attempts have been without concern on accumulating knowledge and experience for building a generic theory of value. These two areas dealing with organisational activities and boundaries largely overlapping, that attitude has prevented each from learning from the knowledge and experience of the other, and chances are that this might have been a waste of intellectual energies. While the attitude of dividing scholarship in the larger discipline of management into sub-fields for the propose of looking at micro problems closely and accumulate knowledge and experience for the benefit of all sub-fields, it might as well be useful to study problems holistically and build theories generic across sub-fields to be able to share them across the board. This research is an attempt in this line to help initiate building such a generic theory in the most all important area of value.

### **1.7.2 Contribution to Practice**

In multiple sub-fields in the discipline, the isolated nature of managing affairs in each is the case in practice as well as it is in theory. In cases related to value creation, the practice has been to adapt or modify a model being used in another field with less



attention and care to the dissimilarities of context, rather than building the solution on fundamental principles of value which are common across fields. The building of the public sector scorecard based on the original BSC for business (Kaplan, 1999) and the building of the strategy triangle for public organisations based on the business BSC (Moore, 2003) are stand out examples. The public sector BSC has not been able to gain the kind of popularity its business version has had, and the strategy triangle has been criticised by many scholars for its inherent complexity and ambiguity (Hartley, et al., 2017). What different individual streams of management in building their value creation frameworks have attempted over the years has been to look at organisations in its specific point of view and align the whole organisation in its value creation efforts in the direction of that point of view. While the frameworks created in this style are powerful in those individual fields and similar contexts, they tend to lose power and usefulness when applied with modification in a different context. This is understandable because the focus in building these frameworks is not generally to base them on the generic underlying principles of value, but on the principles specific to the field for which it is build to make it powerful in it. While this type of practical VC frameworks has been very useful in those fields, that practice has made value creation frameworks to be domain specific. This research tries to break away from this trend by trying to introduce a VC framework that is not field or domain or industry specific and can be used by any organisation, irrespective of its type or scale for VC. Since there can be no doubts about the fact that VC could only be maximised by the complete coordination and alignment of the VC efforts at the full breadth and depth of an organisation, the proposed model is an integrated one which can coordinate value creation at different layers of an organisation and align those efforts in the direction of final organisational value. The new model is simple and easy to use as it provides an architecture that can be used by any organisation by populating the context specific value measures. Most importantly, this architecture would reduce the complexity that surrounds present VC frameworks and due its generic nature would not require the expertise that is associated with the current VC framework implementations thereby increase the reachability of the discipline to areas that are currently distant. In the long run, it would facilitate the accumulation of knowledge and experience in VC in different types of organisations so that the model could be further improved and refined. And as such, the proposed framework may provide an open framework to integrate VC knowledge across sub-disciplines.

### **1.7.3 Contribution to EM Theory**

The contemporary EA, has virtually been blind to the wealth of knowledge the other disciplines have been able to acquire over time, especially management. It is unimaginable how an intrinsically multifarious field like EM can be managed without the most basic theories and principles of management. After the Taylor era of management, all borrowings from management have been for specific limited purposes. The theory movement in search of a theory has not been successful (Oplatka, 2009). Yet, the discipline is still not ready to accept a theory which has a business character for the fear of losing its purpose. The need for preserving the sanctity seems to be pronounced by EA and EMAL slightly differently: For EA it's more a want of a distinct discipline, and for EMAL, blocking business logic. The consequences, however, have been contrary to expectations: EA bears the burden of redefining the discipline after 100 years of existence and EMAL the risk of excessive commercialisation of education due to uncontrolled competition among schools. But whatever the rationale, the lack of objectives, more than anything else, seems to be the primary reason for the issues in the field and for its lack of unity. The biggest contribution of the current research to EM theory is that it gives a theoretical objective and a framework that can assuage the fear of business logic entering into EM by using it, as it brings in to the picture the all-important values, the premise on which the whole idea of education is principally built on, and what EM as a management discipline is yet to find a way to manage. The educational values espoused by the great educational thinkers expecting to be final goals and objectives of education have been kept in EM as elusive concepts which are not managed. The general belief in EM is that educational values are to be managed through the curriculum and not by putting them as the bedrock of EM theory or final objectives of education management systems. This research contributes to the EM theory by proposing values to be made the foundation of EM theory and make the discipline an eclectic one enabling it to profit from the richness of the knowledge and experience in other disciplines in order to accomplish those educational goals.

### **1.7.4 Contribution to EM Practice.**

The current state of the developing countries in terms of the performance of their EM systems is an indication of the results of the historical practice of EM in those countries. Sri Lanka is an example. The positive correlation between education and

economic development (Barro, 1991; Mankiw, et al., 1992; Temple, 2001; Hanushek, 1995; Gemmel, 1996; Krueger & Lindahl, 2001; Hanushek & Wobmann, 2008), has not worked for Sri Lanka in the economic sphere. A foreign expert summed up the state of the economy using a country comparison recently: during 2000 to 2015, China has added 76 products worth \$245 per capita to its export basket; Thailand 70 products for a gain of \$326; and, Vietnam 48 products for a gain of \$545. By comparison, Sri Lanka had only been able to add a measly 5 products worth \$7 (Hausmann, 2017). According to him, the problem is the lack of economic know how of Sri Lankans in product development. The situation is similar in the social and cultural environment too. The competition in education has increased individualism to undesirable limits, pushing character building and values to the background (NEC, 1992). The onus of inculcating values under the current SGSESL agenda is on religious education (Ministry of Education, 2020), and the result has been the rising of Islamic extremism and Buddhist fundamentalism. The country has paid a huge price in 2 youth revolts and a separatist ethnic war for having failed to address issues which were finally attributed to equity issues in education. The scenario in other developing countries is more or less the same. If the lack of resources is the only cause of these problems, then the developing countries will never be able to come out of the current problems on their own without outside help. The truth is that the EM practice is also largely responsible for their current predicament, primarily the principles borrowed from management: the isolated planning systems, quality principles and Taylorist model standardised test-based performance measurement. With the current uncertainty in EM theory, the situation in EM practice in developed countries like the USA too have fundamental problems (Clarke, et al., 2003; Vogler, 2005; Toch, 2006; Corocco & Costigan, 2007; McGuire, 2007; McCarthey, 2008). And in this respect, education practice world over is not very dissimilar. Strikingly, there are no examples of countries managing their education systems end to end in a single holistic management system built on EA theory to be found. Given the fact that certain business conglomerates spread across continents have been integrated into single management systems today, this practice appears to be rather perplexing. The contribution of the current research to the EM practice is its VC model architecture which could integrate VC into a single holistic management system of which the educational values are the final objectives and which would have the capacity to do away with the current Taylorist performance measurement altogether.

## **1.8. Limitations of the Research**

### **1.8.1 Geographical Limitations**

Though SL has 24 districts altogether, the current study was situated in only 3 districts in studying the educator value expectations. Though the 3 districts were selected to maximise representation in terms of resource equity, the results may not draw a 100% accurate picture of the whole country due to the limited geography selected for the study.

### **1.8.2 Sampling Limitations**

One notable limitation of this study was its relative lack of rigour in selecting its educationist-intellectual sample, with respect to the other sample used in it, for the difficulty of defining the population of educationists and intellectuals, as there was no population as such agreeable to all, nor an official record of such people nor accepted criteria to demarcate such population. Complicating the issue further was the research requirement that they should also represent the country interests in its entirety including those of posterity, by being overtly impartial in the country's ideology politics as their value responses should be free of political bias. The best approach available was to select a purposeful sample from people without bias and allocate small quotas for different specialisations to increase representation in a stratified purposeful-quota sampling arrangement.

### **1.8.3 Methodological Limitations**

One methodical complexity faced by the current research was the difficulty of connecting the external and internal value expectations, as the two sets of values were to be elicited from two different groups of stakeholders. Not all external stakeholders were knowledgeable about the internal workings of the System as to provide internal value expectations, and on the other hand, the internal stakeholders were not entitled to judge their own value performance. As such the final values had to be studied and reported in 2 sets as external and internal and this made the use of two methodologies, namely factor analysis and multiple regression analysis. However, this issue did not devalue the methodology of the research, as the identification of values in two sets as internal and external was a practical requirement of the research as those were to inform the level of performance of the two groups of stakeholders.

## 1.9. Structure of the Report

The structure of the report in a chapter breakdown is given in the table below:

**Table 4: Chapter breakdown**

No.	Topic	Content Description
1	Introduction	A general introduction to the study with a background to it, setting out the research problem, aims and objectives, justification, significance, and the limitations of the research.
2	Literature Review	A synthesis of the 6 streams of value related management literature, extracting generic principles of value creation, and finally using them to build a value creation model architecture or the conceptual model with the value variables.
3	Methodology	An account of the process of applying the conceptual model in the research context to validate it, and identifying the research purpose and the specific research questions and hypotheses to be addressed by conducting the research, with accounts on the research design, and the sampling design.
4	Exploratory Research	A report on how the qualitative data collection was done, and how the qualitative data was analysed in order to ascertain the value measures under value variables in the conceptual model and on the preparation of the data collection instruments for the descriptive research.
5	Descriptive Research	A report on how quantitative data was evaluated and analysed to build a structured equation model and a multiple regression model to test the research hypotheses and answer the research questions regarding the internal and external value creation respectively.
6	Conclusions & Recommendations	A discussion on how the answers to the research questions strengthened the arguments related to the value creation model architecture with suggestions for future research along with recommendations for EA, EMAL and SGSESL.



## 2. Literature Review

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### 2.1. Introduction

As shown in the introductory chapter, this research is not one which uses an already available conceptual model in full or in part with modification to solve the current research problem, as such a model which could solve the current problem is simply not available in management literature. Even if one such were available, the requirement of neutrality to pass the acceptability test in the problem domain owing to its strict policy of not using business models would have made the selection meaningless. The only option available therefore, was develop a model from the first principles of VC from scratch. The way to do that was to elicit most generic principles of VC from the bodies of management literature that deals with the theory of value, expressively or impliedly, through a literary synthesis and develop a set of most generic foundational principles of VC acceptable to all fields and build a conceptual framework based on those principles by arranging them logically to build the basic structure of a conceptual model (initial conceptual model with high level variables) and then identify the value creation measures (under each variable) of the model through an exploratory pilot study of the problem domain to develop the final conceptual model. This chapter is on the literature synthesis to develop the initial conceptual model and fulfils the first objective of the research.

### 2.2. Methodology of Literature Review

A conceptual model for the current research could not be completed through a literature review in one management stream but several, and, literary synthesis was the best methodology available for the purpose. Cooper's (1988) taxonomy of classifying literary synthesis is used to describe the current review (Appendix AJ):

## 2.2.1 Focus of Attention

This explains where the synthesis interest lies in: research outcomes, theories or practices or combinations of those. Since the current review intends to build a practical model based on theory its interest is in theories and practices.

## 2.2.2 Goals of Synthesis

Goals are what a review does to the literature under review-integration, criticism, or the identification of central issues. The current review needed all these. Integration in turn is manifold including: 'generalisation', 'conflict resolution' and 'linguistic bridge building' (Cooper, 1988). The current review had all these goals too. The goals can also be defined as: review, update and critique; conduct a meta-analysis; review critique and synthesize; reconceptualize the topic; and answer specific research questions (Torraco, 2016). Under this definition, the current goal is to review, critique and synthesize literature to bring out theoretical principles of VC in order to build a conceptual framework for VC. The goal of identifying theoretical principles is building the skeleton of a theory with the hope that it would become acceptable in the long run with more similar research. There is no agreement on what constitutes a theory and it is a highly debatable topic (Smith & Hitt, 2005; Kilduff, 2006; Bartunek, et al., 2006), apparently for the difficulty of the task itself (Sutton & Staw, 1995) and the presence of diverse theories and stakeholders in management (Corley & Gioia, 2011). Theory has been defined as: 'a statement of concepts and interrelationships that shows how and/or why a phenomenon occurs' (Gioia & Pitre, 1990); 'a coherent description of, explanation and representation of observed or experienced phenomena' (Lynham, 2002); and, 'a framework consisting of 4 essential building blocks informing each other' (Dubin, 1978). The current review followed the Dubin's 4 pillars as the table below, in trying to build a theory for its practical guidance.

**Table 5: Building Blocks of Theory**

<b>Block</b>	<b>Description</b>
What?	Describe constituent elements: variables, constructs and concepts. Comprehensive and parsimony are important
How?	Describe the relationships between the constituent elements
Why?	Explain the underlying psychological, economic, social, process and other dynamics that govern the relationships including assumptions
Who, Where, When?	Contextual factors/boundaries limiting the generalisability of the theory



Another important goal of the current review was to integrate theory and practice, as theory needs to be of practical value in an applied discipline (Kaplan, 1964; Mott, 1996; Swanson, 1997; Lynham, 2000), and 'nothing is quite so practical as a good theory' (1951), and 'good theory is practical precisely because it advances knowledge in a scientific discipline, guides research toward crucial questions, and enlightens the profession of management' (Van de Ven, 1989).

### **2.2.3 Perspective on Literature**

This explains the review stand point with respect to the data and findings coming out (Cooper, 1988), whether its neutral or non-neutral. The goal of the current review determined its perspective. The goal being the most generic VC principles to come out and field specific ones to filter out, the perspective needed to be not completely non-neutral. Since non-neutrality rides the risk of bias, the reviewer needs to be 'reflexive' and make his/her influence explicit (El Hussein, et al., 2017) and acknowledge the preconceptions readily 'without donning a cloak of objectivity' (Charmaz, 2014) to Lynch (2000) it was 'methodological self-consciousness'. Torraco's (2005) recommendation to avoid bias was a 'broad conception of what is known about the topic and potential areas where new knowledge may be needed'. The current end goal being to build the 4 pillars of theory (Dubin, 1978), the main strategy to avoid bias was to have them as a constant reference during the review. The minor strategy was to focus on theories and principles in each literature stream by situating them in an 'evolutionary axis' and capture the essence of the concepts that are coming out into theoretical principles, while filtering out the non-essential ones with reference to the 4 pillars and that was made easy by the chart of management evolution (Appendix AK) presented by Bodrozic & Adler (2017).

### **2.2.4 Coverage of the Literature**

This is the expanse of the literature selected for the review, and is determined by the strategy used to select the literature. At a high level, the strategy can be: exhaustive; exhaustive with selective criterion; representation of the core material; central to the reviewer's goal (Cooper, 1988). The current review was 'exhaustive with selective criterion', as its goal was to review literature which has in some way contribute to the development of the theory of value in the current context and the 6 streams selected are given in the table below:

**Table 6: Coverage of the Literature**

<b>Number</b>	<b>Literature Stream</b>	<b>Acronym</b>
1	Marketing Management	MM
2	Value Based Management	VBM
3	Value Management	VM
4	Performance Measurement and Management	PMM
5	Public Value Management	PVM
6	Strategic Management	SM

### **2.2.5 Organisation of the Presentation**

Organisation concerns the way in which the findings and conclusions of the review are arranged. The identified ways are: historically; conceptually or methodologically. Though history was used to understand the essence of value principles in each field, the core attention in this review was to arrange the findings conceptually as the final goal was to identify theoretical principles of value and practical insights of VC.

### **2.2.6 Intended Audience**

Intended audience can include: specialised scholars; general scholars; practitioners and policy makers; and general public (Cooper, 1988). Since this research was to fulfil an academic requirement primarily and a policy requirement secondarily, the scholars and policy makers become its direct and indirect audiences respectively.

## **2.3. Literature Analysis**

The goal of this review being the extraction of generic theoretical principles of value from literature, in order to build an initial conceptual model of VC, it was logical to start the process with a short history to the theory of value, to set a foundation for the review, and then to move from one body of selected literature to another, sequentially, capturing value insights from each until all 6 corpuses are completed.

### **2.3.1 History of the Theory of Value**

The beginning on the theory of value is in Economics (Lusch & Vargo, 2006; Popescu, 2015) and it has evolved through different periods of western civilization, starting from the Greek and Roman periods and passing through the period of mercantile capitalism, classical period and new-classical period to what it is today.

### **2.3.1.1.1 Value in the Greek and Roman Periods**

The theory of value in Economics dates back to the Greek period of western civilisation (Screpanti & Samagni, 2005; Rima, 2001; Sewall, 1901). Aristotle, thought that the ways of becoming rich was: either to produce goods or engage in trade/usury. The value attached to a good was its price at the time of exchange. The decline of the Greek and Roman periods was the next phase of economic thought, the 'scholastic period' or 'dark age' in which the ideas of catholic scholars like Thomas Aquinas dominated. Religion pervaded every sphere of life, and in Economics, it was an attempt to assimilate Aristotelian philosophy into Christianity, but there was no change in the idea of value, as it was still around the intrinsic value of the good, and the price in exchange was the measure. As the renaissance dawned towards the end of the 12<sup>th</sup> century the social organisation in European countries, especially in Italy, started to organise around cities, and in Florence, which arguably was the cradle of renaissance, there was a requirement in wholesale trade to attach a parchment with a description of the individual costs of producing a good including the profit margin, signifying that value was still residing in 'intrinsic value' of the good (Screpanti & Samagni, 2005).

### **2.3.1.1.2 Mercantile Capitalism and Value**

Renaissance paved the way for the next developmental stage in economic thought by the 16<sup>th</sup>-18<sup>th</sup> centuries, and mercantile capitalism, the idea of building nation states by encouraging production inside countries with monopolistic privileges and trade concessions arose. This period was significant because, the value, for the first time, came to be determined by the utility, since the profits of the merchants were determined by the buying and selling prices in the market, not by the costs of production. In 1588, Bernardo Davanzati, a mercantile theorist, attempted unsuccessfully to develop a 'theory of value' on utility and scarcity of goods. In spite of the domination of the mercantile enterprise, precursors for change were developing on two fronts: On the one, scholars in the Continental Europe were criticising mercantilism for its preoccupation with money and gold as the sole source of wealth, suggesting land as the real source of wealth, thereby highlighting the importance of agriculture to a national economy. Boisguillebert, Cantillon, Turgot, Condillac and Quesnay were some of the key figures in this 'physiocratic movement'. On the other, England, influenced by the ideas of Bacon, Locke, Newton and others in

the period of enlightenment just preceded, and propelled by some unprecedented scientific discoveries, was approaching the industrial revolution. Stiff competition had forced the mercantilists to look for ways of reducing production costs in the face of declining profits, and the chief craftsmen in the professional guilds had now become industrialists whose interests were in conflict with mercantilists making the mercantile theoretical position untenable.

### **2.3.1.1.3 Classical Period and Value**

The speculative reasoning of the production costs in the Mercantile period ended bringing an objective and empiricist basis for calculating value of goods with William Petty's publication of 'Political Arithmetik' and Cantillon's 'Essai' and a 93% labour theory of value was adopted. Influenced by Cartesian philosophy and deductive reasoning, Petty rejected subjectivism in the calculation of value and adopted a quantitative mechanism. Following Locke's natural law philosophy, Petty argued that price should be determined by the theories of natural law. The right of controlling labour for the rising capitalist industry, according to Locke, contained in the principle of individual liberty that gave the freedom for one to decide to work or not work. These ideas of industrialist capitalism united different forces and brought an end to the orthodoxy of mercantilism which culminated in what is known as the laissez faire revolution during 1751-1776 that marked the beginning of the classical period of economic thinking (Screpanti & Samagni, 2005). The classical period, whose leading scholars were Adam Smith, David Ricardo, Karl Marx and Piero Sraffa, was responsible for building the economic theory on an objective scientific basis. Despite many differences in the scholarly ideas in this period, they all centred around the 'labour theory of value', which was objective in essence.

### **2.3.1.1.4 Neo-Classical Period and Value**

But, by the late 1800s, the concept of 'marginal utility' built on the premise that the value of a good is subjective to the assessment of an individual, had become a central topic in economic theory. William Stanley Jevon, Carl Menger, Leon Walras and Alfred Marshall were some of the key scholars in this period and their views gave rise to the neo-classical period of economic thinking in which the subjective theory of value came to the fore once again. According to the new theory of marginal utility, the individual demand for a good diminishes with continuous usage, explaining the

age-old problem in economics why a demand for water is less than for diamonds, even though their respective utilities are in the reverse order. Walras developed an equilibrium theory for price of a particular good using the demand and supply curves. And this equilibrium extended beyond the product in exchange into production and capital formation. Alfred Marshall developed an alternative approach to show marginality by looking at a given product, assuming other variables were stable, ended up in developing a theory of relationship between price v. demand and price v. supply (Screpanti & Samagni, 2005).

#### **2.3.1.1.5 A Summary of the Historical Evolution of the Theory of Value**

The history shows that the theory of value has swung back and forth between subsequent periods of economic development: from an intrinsic objective position in the renaissance period to a subjective interpretation in the mercantile period; and again, to a scientific objective definition in the classical period and back again to a subjective stand point in the neo-classical period, not as it is, but in a more developed form. Each swing with valid reasons behind it. When the process of production/service generation was critical for business success, the theory of value has favoured an objective interpretation, and when the market was critical, a subjective position. But the lesson of this history is that, no matter what is more important in a given period, the other cannot be ignored altogether. This is surely why there was so much of interest in the post neo-classical era, on production and capital formation as well, though it had to be geared in the way the market wanted it.

### **2.3.2 Marketing Management and Value**

The concept of value in marketing management is an inheritance from Economics (Lusch & Vargo, 2006; Popesku, 2015).

#### **2.3.2.1 Evolution of the Concept of Value in Marketing Management**

The concept of 'value' has developed to its present state through evolution in different periods of history and this evolution is summarily discussed below.

##### **2.3.2.1.1 Pre-Academic Era of Marketing**

Though some ideas related to macromarketing can be seen in the teachings of Aristotle and Plato in the Greek period (Shaw, 1995) and, Hippo and Aquinas in the

Scholastic period (Jones & Shaw, 2002), the period before 1900s in the USA is considered the era of the modern pre-academic marketing thought (Wilkie & Moore, 2003). This was the dawn of the neo-classical period in economics in which the theory of marginality on production and capital was the main focus. Troubled by the issues of distribution without solutions then, scholars started to discuss distribution. *The Distribution of Wealth* by J.B. Clarke in 1889 and an essay on the co-ordination of the laws of distribution by Phillip Wicksteed in 1894 were some of the scholarly contributions appeared (King & McLure, 2014).

### **2.3.2.1.2 Traditional Era of Marketing**

The next phase in the evolution of MM was from 1900 to about 1955 (Wilkie and Moore, 2003). By 1900, technological inventions and the rail road expansion had opened up even the remotest parts of the USA for business, and the distribution of products had become a major priority (Jones and Shaw, 2002). The possibility of this mass distribution needed a mass production in factories, and this was the same period in which modern Management in its initial form of scientific management theories of mass production were taking shape in US factories, pioneered by the people like Taylor and Gilbreth (Bodrozic & Adler, 2017). The landmark publication among the initial MM publications was by Shaw (Popesku, 2015), which appeared on the *Quarterly Journal of Economics*, in which he defined the role of businessman (the term 'marketer' was not yet in the jargon) as 'searching out human wants and providing the means for gratification' (Shaw, 1912). This scholarly contribution was essentially a marking of the boundaries of value as envisaged by Walras, Marshall and others to include the consumer in the mix. Shaw equated the term 'consumer's surplus' to 'the difference between the market value for a commodity and the subjective value of the commodity to the individual consumer' carrying the subjective theory of value forward. He also saw an opportunity 'in the difference between the market price that has come to be established for a known commodity and the varying subjective valuations placed upon such a commodity by consumers of differing purchasing power and of differing social position and individual habits' (Shaw, 1912).

The next phase in the evolution in MM was during the World War II (WWII) and in its immediate aftermath (Wilkie and Moore, 2003), with the development of certain innovations: linear programming and mathematical modelling; expansion of business; changes in business education, and the thinking and work of Wroe

Alderson who is considered the father of modern marketing (Jones & Shaw, 2002). While there is no doubt about the fact that these contributed to the development of the discipline immensely, the ground was not yet ready for a big change in the theory of value in marketing to embrace services instead of goods.

#### **2.3.2.1.3 Emergence of Service Marketing**

The early 1980s saw the emergence of a new branch in marketing management which was identified by the name 'service marketing', due to the changing nature of the economies from goods to services, and it evolved through 3 formative stages as: crawling out (pre-1980); scurrying about (1980-85) and walking erect (1986 and after), and was able to publish 76 books and 465 journal articles during the period from 1980-1993 (Fisk, et al., 1993). Despite this abundance of literature, the academia was not still ready to accept the new field (Fisk, et al., 1993), as it still lacked homogeneity and was even confusing at times (Sanches-Fernandez & Iniesta-Bonillo, 2007). The two main concepts of customer value: 'value-in-exchange' and 'value-in-use' were studied and reported only in isolation (Zeithaml, 1988) and not together. Value-in-exchange without value-in-use excludes the customer view point in the service provision and that reduced MM to a mere distribution of goods (Popesku, 2015) and therefore, it was argued that the definition of value should include both value-in-exchange and the value-in-use (Zeithaml, 1988), which is the customer's 'experience of interacting with some product, service or event' (Holbrook & Corfman, 1985). The inescapable question once value-in-use was included in the value mix, was whether was the customer only a passive value destructor or an active value co-creator in the process of using a service, and there was only a small proportion of the service marketing literature that fell in the latter category which accepted value co-creation (Gummesson, 1993; Prahalad & Ramaswamy, 2000).

#### **2.3.2.1.4 Service Dominant Logic**

The principle of value co-creation, integrating all but few previous studies establishing the concept of Service Dominant Logic (SDL), was done in 2004 by Vargo and Lusch (2004). They saw MM as a mixture of economic and social processes and defined services as applications 'of specialized competencies (knowledge and skills) through deeds, processes and performances for the benefit of another entity or to the entity itself'. Their framework defined every offering as a service, including

the ones with tangibles and developed the concept of service-based resources invalidating the historical dichotomy of offerings as goods and services, where resources are seen as 'not only as stuff, but also as intangible and dynamic functions of human ingenuity and appraisal not static or fixed'. In short, 'resources are not; but become'. According to them, the 2 basic forms of resources are: 'operand resources' on which 'an operation or act is performed to produce an effect' and 'operant resources', which are 'employed to act on operand resources or other operant resources.' Operant resources are generally invisible, intangible, dynamic and infinite and often are competencies or processes able to create effects or create more operant resources. Vargo and Lusch (2004) encapsulated these principles into 10 foundational principles of SDL (Appendix AL).

#### **2.3.2.1.5 Service Logic**

The cyclical relationship between theory and practice has been true in the case of SDL theory too. The new theory has been put into practice as expected, analysed and criticized in a practitioner point of view through research, on the points that: multiple value outcomes and value processes make the focus on value creation unclear (Gummerus, 2013; Gronroos & Gummerus, 2014); since value creation is all-encompassing, everything becomes co-creation and everybody becomes a co-creator and that makes less space for further developments (Gronroos & Voima, 2013). In an attempt to address these perceived problems in SDL, a new framework of Service Logic (SL) was developed (Appendix AM) (Gronroos, 2006) and the new logic shifts the scope of VC from an organisation driven, all-encompassing process to a customer driven value creation process (Gronroos & Voima, 2013), as claimed 'the goal of marketing is to engage the service provider with customers' processes to enable reciprocal value creation' (Gronroos and Gummerus, 2014).

#### **2.3.2.1.6 A Comparison of SDL and SL**

The concept of value-in-use, the fundamental commonality between SDL and SL had been theoretically made possible by the neoclassical economic theory of marginality for some time before it is assimilated in marketing (Normann & Ramirez, 1993; Ravald & Gronroos, 1996; Vandermerwe, 1996). An important common logic between the two is that value-in-exchange is only potential value that is to be realized when the service is put into use by the user (Vargo & Lusch, 2006; Lusch, et al., 2008). This



common definition is an acceptance of the fact that the real value emerges in the domain of usage. Beyond this similarity, the two logics have perceptual differences that manifest in the arguments of the proponents of the two. A major difference is related to the idea of co-creation. In SDL logic, an organisation can only offer value propositions; and value is created by the beneficiaries in their day to day lives, and such creation is termed as co-creation for the involvement of more than one party (Vargo & Lusch, 2004). Being a customer dominant marketing and business logic (Heinonen, et al., 2010), SL sees this in a practical marketing perspective and examines co-creation in all thinkable practical scenarios to conclude that co-creation is not absolute as SDL suggests. Pointing to a practical differentiation between 'self-service' and 'full-service', where firm support is passive and active respectively, SL concludes that co-creation is optional (Gronroos, 2008). The argument continues that in a self-service situation (eg. withdrawing money from an ATM), the customer has to exercise his knowledge and skills to create value for himself or herself, possibly with additional resources, without direct involvement of the organisation. Yet Gronroos (2008) agrees that firms should extend its value facilitation efforts to make value co-creation happens as a key marketing concept, as the goal of marketing is value co-creation and it resides in value-in-use. But the passive role played by the organisation in self-service situations, as SL suggests, appears to be mere a technical point, because a value supplier is able play a passive role only to the extent that technology helps. The design and installation of facilities and the training of customers are conscious efforts that take a large burden of co-creation away from the customers shoulders. Even then the supplier has to be stand by to facilitate value creation when technology fails. Vargo & Lusch (2008), the inventors of SDL, quite rightly, stuck to their original position that 'customers only co-create value', while also suggesting certain changes in their framework, based on criticism, to make it more parsimonious. With its narrowed focus on the market, SL seems to be not interested in the employee-organisation interface, and as such, is not in line with the idea of integrated value creation.

### **2.3.3 Theoretical Insights from Marketing**

For reasons explained above, SDL is the preferred choice for theoretical insights here, but that was not a policy to exclude insights from SL altogether. SDL (Vargo & Lusch, 2008) envisages VC 'within and between systems at various levels of

aggregation' within 'networks interacting and exchanging across and through networks' involving both 'social and economic actors', and 'the purpose of exchange is to mutually serve'. These principles explain an all-inclusive system of value co-creation that is broad and deep and compatible with the current agenda, and as such, they qualify to be included in the theoretical principles in the current scheme which would be forming the 4 pillars of a proposed theory according to Dubin (1978).

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TP1 All offerings by suppliers are services.

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TP2 A service is a value proposition for potential value co-creation for the benefit of the suppliers and users.

---

TP3 Value co-creation is the creation of value-in-use by the suppliers and users of services.

---

TP4 Value-in-use is the total benefit enjoyed by the user while using the service.

---

Both SDL and SL envision all offerings by suppliers, including the ones in which goods form a part, to be services, and the real value in services to reside in value-in-use, rather than value-in-exchange (Vargo & Lusch, 2008; Gronroos, 2008) and these too fit to be the theoretical principles of the scheme:

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TP5 The real value in all service offerings resides in value-in-use.

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TP6 Value-in-exchange is the value transferred from the user to the supplier in lieu of the service supplied.

---

"Value-in-use is created for beneficiaries while using the service' means that it happens in the realm of beneficiary's experience (Vargo & Lusch, 2008; Gronroos, 2008) and therefore, another theoretical principle would be:

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TP7 The creation of value-in-use happens in the realm of user's experience.

---

The degree of value-in-use a user is able to derive is determined by the resources, knowledge and skills the user possesses, and therefore, the creation of value-in-use requires resources, and the resources can be either tangible or intangible or both (Vargo & Lusch, 2008; Gronroos, 2008). This too is an essential principle to make the whole scheme meaningful:

---

TP8 The derivation of value-in-use requires the user to possess either tangible resources or intangible resources or both.

---

Since the creation of value-in-use happens in the realm of beneficiary's experience, value-in-use is determined phenomenologically (Vargo & Lusch, 2008; Gronroos, 2008) and therefore another foundational principle would be:

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TP9 Value-in-use is derived by the user phenomenologically.

---

Since the creation of value-in-use happens in the realm of beneficiary's individual domain, value-in-use is determined individually (Vargo & Lusch, 2008; Gronroos, 2008) and therefore, another theoretical principle would be:

---

TP10 Value-in-use is derived by the user personally and individually.

---

The above foundational principles regarding the phenomenological and individual nature of the creation of value-in-use lead to two essential corollaries regarding the nature of the process of measuring value-in-use. If the creation of value-in-use is phenomenological and individual, so ought to be their measurements. Hence, the next theoretical principles would be:

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TP11 The measurement of value-in-use must be phenomenological.

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TP12 The measurement of value-in-use must be at an individual level.

---

Both logics agree that value-in-use is the real value for the beneficiary, and the value generally accrues to the supplier is the value-in-exchange. A gap in the literature on both logics is the lack of clarity on the relationship between the two in order to prevent potential misrepresentation of suppliers as having no interest in value-in-use. Gronroos (2008) makes this indirectly understandable by drawing a distinction between the short-term survival and the long-term profit making of a supplier. If a supplier is interested in value-in-exchange looking for short-term survival, without much concern on the value-in-use derived by the customer through the service supplied, the former runs the risk of losing long-term profit (cumulative value-in-exchange), as the beneficiary may stop receiving the service altogether. This principle seems to be essential to make our model meaningful:

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TP13 Low value-in-use may lead to reduced cumulative value-in-exchange in the long term.

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TP14 High value-in-use may lead to increased cumulative value-in-exchange in the long term.

---

These two principles would hold in other value relationships in an organisation as well, including the value interfaces between the organisation and employees, regulators, shareholders and input suppliers etc. Bowman & Ambrosini (2009), discuss the concept of value creation using the concept of value-in-exchange (Exchange Value or EV in their terminology) and state that value capture is the value-in-exchange that is transferred at the time of the exchange of the service. What can be inferred from these is that continuous receipt of value-in-exchange leads to cumulative value-in-exchange. Since an organisation acts as a supplier and a beneficiary of value at the same time, the total value capture within an organisation can be seen as the difference between the cumulative aggregate value-in-exchange supplied by it and the cumulative aggregate value-in-exchange received by it. This relationship seems needed for completing the relationships between variables in the current theory framework (Dubin, 1978):

---

TP15 Total value capture of an institution is the difference between the cumulative aggregate value-in-exchange received and the cumulative aggregate value-in-exchange supplied.

---

By implication, the relationship between the VC within an organisation can be taken as the difference between the 'cumulative aggregate value-in-use supplied' and the 'cumulative aggregate value-in-use received'. This principle too is needed to establish the relationship between theoretical concepts in the theory framework.

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TP16 Total value creation within an organisation is the difference between the cumulative aggregate value-in-use supplied and the cumulative aggregate value-in-use received.

---

Measuring value-in-exchange is relatively easy as it can be expressed in monetary terms (as in government spending on public institutions). Now that value-in-exchange, under the current scheme, being a function of value-in-use in the long term, organisations have got to look beyond value-in-exchange at the time of exchange, into measuring value-in-use phenomenologically in the realm of user's individual experience. As shown above, the task of accounting in the transaction of goods had been relatively simple in the classical era, and as the service dominance increased in Management, Accounting has moved from Financial Accounting through

Management Accounting and Strategic Management to Performance Measurement & Management today. So, we must recognise an important characteristic of value-in-exchange between the supplier and beneficiary, which is true to the nature of man, and include that as a theoretical principle in the framework. And that is:

---

TP17 A supplier generally looks to maximise value-in-exchange whereas a user would generally look to have it minimised.

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But, the relationship with respect to value-in-use makes the tension between the two relaxed because, both the supplier and beneficiary want value-in-use maximised. And this should be another theoretical principle:

---

TP18 A user generally looks to maximise value-in-use whereas a supplier would also look to maximise it in the long term.

---

Discussing the highlights of the evolution, Vargo & Lusch (2016) point to the 'process nature' of value co-creation in SDL that distinguishes SDL from GDL. It is important to recognise this process nature of SDL as an end-to-end requirement in our theoretical framework to make it practically meaningful.

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TP19 Value co-creation needs end to end processes from users to the first line of suppliers connecting all value co-creating nodes in the value chain horizontally.

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A new foundational premise which reads as: 'value co-creation is coordinated through actor-generated institutions and institutional arrangements' has been added, in the modified SDL principles, along with 5 axioms that describe the 11 foundational principles with improved parsimony, which read as: 1. Service is the fundamental basis of exchange; 2. Value is co-created by multiple actors, always including the beneficiaries; 3. All social and economic actors are resource integrators; 4. Value is always uniquely and phenomenologically determined by the beneficiary; 5. Value co-creation is coordinated through actor-generated institutions and institutional arrangements (Lusch & Vargo, 2014). These principles are relevant in the completion of the current theoretical framework in a Dubinian sense (1978). This new terminology in the words 'actors', 'resources', 'resource integrators' and 'institutions' appear to transcend the conventional 'B2B' or 'B2C' nomenclature of denoting customer as 'C'

and business as 'B' which were limiting in a wholistic perspective. An integrated theoretical framework, as Cooper (1988) noted, needs a 'common linguistic framework' that can work uniformly in all the sub-fields under review. By naming any person involved in value co-creation as an 'Actor' and terming all value relationships as A2A and with other integrative terms, Vargo & Lusch (2011) provide this common linguistic framework. But this is not to mean all actors are identical, it means 'to disassociate them from pre-designated roles' (Vargo & Lusch, 2016). This gives us our next theoretical principle:

---

TP20 An individual who participates in value co-creation is an Actor.

---

Since a service is a process of integrating resources and an Actor is an individual who participates in value co-creation, an Actor becomes a resource integrator.

---

TP21 An Actor is an integrator of operand and operant resources in co-creating value.

---

There are two types of resources needed for integration in order to co-create value and those are operand resources and operant resources, because resources are not but become. The operand resources are resources that are acted upon by the Actors armed with operant resources (Vargo & Lusch, 2011). Thus:

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TP22 Operand resources are the resources acted upon by the Actors in resource integration.

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TP23 Operant resources are the resources the Actors are armed with in resource integration.

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TP24 Human resources are the Actors who integrate operand and operant resources to create value propositions.

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In this day and age dominated by services, operant resources are more responsible for value co-creation than the operand resources. To Vargo & Lusch (2016), operant resources are what give the 'strategic benefit' to an institution over the other organisations. They use the term 'strategic benefit' in place of the more conventional term 'competitive advantage' probably to nullify the competition overtones that might be disruptive in a service ecosystem, which is conceptualized as service-for-service. On account of the centrality of operant resources to the mission of any organisation, and the aptness of the term 'strategic benefit' to express the

advantage any type of an organisation obtains by possessing operant resources, this principle was needed in the theory framework:

---

TP25 Strategic benefit for an institution comes from its operant resources

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It is clear that: the Actors have to participate in 'service exchange' to complete the service processes, and service exchanges in the real world are organised at the level of 'institutions'; An institution is a 'humanly devised rules, norms, and meanings that enable and constrain human action' (Scott, 2001); The institutions are engaged in value networks; A value network is 'a spontaneously sensing and responding spatial and temporal structure of loosely coupled value proposing social and economic actors interacting through institutions and technology to co-produce service offerings, exchange service offerings, and, co-create value' (Lusch, et al., 2010). Since value co-creation is always a process, value networks do not substitute processes. They are needed for the integration of multiple tiers of suppliers (in the supply chain) and of customers who are at the back and forward ends of an institution, in to a single value co-creating arrangement with interactions through technology. A service eco system is 'a relatively self-contained, self-adjusting system/s of resource integrating actors connected by shared institutional logics and mutual value creation through service exchange' (Lusch & Vargo, 2014). These insights are essential for the completion of the current conceptual model.

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TP26 Actors in the process of supplying integrated services generally organise themselves in the form of institutions.

---

TP27 An institution is a form of organisation of actors and resources governed by humanly devised rules, norms, meanings, and logic that enable and constrain human action for the purpose of value co-creation.

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TP28 Institutions in the process of value co-creation build value networks.

---

TP29 A value network is a bundle of integrated processes connecting the entire value chain around an institution pertaining to a value proposition interacting through technology.

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TP30 A service eco system is an integrated, self-contained, and self-adjusting network of value creating nodes with shared institutional logics engaged in mutual value co-creation through service exchange.

---

SDL stresses that the value networks should interact internally and externally through ICT (Lusch, et al., 2010) as it is 'a meta-force altering business and society' (Benkler, 2006) and is 'like a nerve system in supply chain management' (Gunasekaran & Ngai, 2004), and results in increased levels of: service provisioning, self-service, ability of service, knowledge of suppliers and customers, contacts with suppliers and customers, coordination, responsiveness, and, decreased transport requirements (Lusch, et al., 2010). And this is the last theoretical principle derivable from MM.

---

Tp31 Every node of a value network must be fully connected by means of ICT.

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### **2.3.4 Value Based Management and Value**

Value Based Management (VBM) has its roots in Accountancy.

#### **2.3.4.1 Value Based Management as an Evolution of Accounting**

The evolution of VBM was a natural result in the process of the expansion of business in the USA, which can be summarised with respect to certain landmarks.

##### **2.3.4.1.1 Take Over Waves in the Accounting History of US Business**

The modern history of American business has been punctuated by 4 takeover waves in which small businesses were bought over by big companies having excessive capital accumulation (Shleifer & Vishny, 1997; Ravenscraft, 1987):

1. Accumulation of excessive capital in the big companies like the US Steel (65% market share) and American Tobacco (90% market share) in the 1890s, made possible by the steam power revolution and the proliferation of railroad transport (Bodrozic & Adler, 2017), and Antitrust Laws allowing the formation of monopolies resulted in a takeover wave of the small companies until the laws were tightened in 1904.
2. A series of merges within the same industry like the formation of the giant companies like Allied Chemical and Bethlehem Steel took place in the 1920s, amidst a booming stock market situation and a relaxed legal background which allowed the formation of oligopolies, and ended with the Great Depression in the 1930s.
3. A boom in the stock market in the late 1960s resulted in mergers across industries and the subsequent formation of big conglomerates like the ITT and



Teledyne. Managing diversified business units by professional managers in a corporate office using corporate management strategy was the style of management advanced and its inefficiencies made the most acquisitions unsuccessful and the trend waned towards the end of 1970s.

4. A favourable stock market situation and a relaxing of Antitrust Laws by the Reagan Administration in the 1980s paved the way for intra-industry acquisitions allowing a big company to buy another big company to acquire the profitable assets and divest the non-profitable ones, or several firms to buy a conglomerate. To avoid takeovers, the firms should have invested excessive cash flows to buy profitable assets or pay shareholders.

#### **2.3.4.1.2 Emergence of VBM as an Offshoot of Accounting**

The failure of the companies to do either was the reason for reduced market ratios and a 'positive value gap' leading to takeovers. The way to avoid takeovers was to close the value gap by delivering superior value to the shareholders. 'Shareholder wealth maximization', thus became the primary goal of businesses, and VBM was a new way of looking at accounting to help achieve that (Elghabawy & Abdel-Kader, 2013; Morin & Jarrell, 2001; Bausch, et al., 2009; Rappaport, 1986). Morin & Jarrell (2001) define hitherto history as the 'number crunching' stage of VBM evolution, and delineate the late history into two phases in which the focus was on 'strategizing' and 'integrating' respectively. A quite parallel reading to this was the history of accounting charted out by the International Federation of Accountants' (IFAC) in 4 developmental phases (Abdel-Kader & Luther, 2006) straightening out potential doubts about the accounting roots of VBM, as:

1. The period prior to 1950s in which the accounting focus was on the determination of the product cost and financial control.
2. The period between 1950-1965 in which the major concern was on the provision of information for management control. Competition on price being low, the management was more concerned on manufacturing and internal administration (Ashton, et al., 1995).
3. The period between 1965-1985 in which competition and external factors forced companies to reduce process waste and improve quality.
4. The period between 1985-1995 in which accounting had to focus on the creation of value through effective use of resources.

The 3<sup>rd</sup> phase here roughly coincides with the era of conglomerates where managing business units was the primary task. This 4<sup>th</sup> period, which started in mid 1980s, wherein value creation became the primary concern, coincides with the emergence of VBM and confirms the fact that VBM was born out of the accounting efforts focused on creating shareholder value.

#### **2.3.4.1.3 Expansion of the VBM Scope to Strategy and Integration**

The whole attention of businesses during the period initial period of VBM evolution (number crunching) was on the financial side of the business (Morin & Jarrell, 2001). This was quite in keeping with the needs of the management of the day. If we juxtapose this with MM evolution, this was the era of traditional marketing in which the marketing focus was value-in-exchange. Post 1980s, during the strategizing phase, this focus in management 'shifted from the right-hand side to the left-hand side of the balance sheet into the management of internal operations and business strategy evaluation', and onto the alignment between the two. During the 'integrating phase', shareholder value was seen in a broad integrated framework with a shared culture across organisations, and strategic planning and performance measurement were products of this integrating phase. According to Cokins (2013), the current phase since 1990s is a period of predictive analytics in management accounting where the discipline moves to enterprise performance management using tools like the BSC and predictive accounting using customer profitability analysis.

#### **2.3.4.2 Definitions and Scope**

VBM, according to Arnold & Davies (2000), is 'a managerial approach for long-term shareholder wealth maximization. The objective of a firm, its systems, strategy, processes, analytical techniques, performance measurements and culture have as their guiding objective the shareholder wealth maximization.' According to Morin and Jarrel (2001), VBM is 'both a philosophy and a methodology for managing companies. As a philosophy it focuses on the overriding objective of creating as much value as possible for the shareholder...as a methodology, it provides an integrated framework for making strategic and operating decisions.' In order to capture maximum shareholder value, the organisation aligns all its activities, functions, strategy, systems, processes, operations and culture and that is why VBM becomes a methodology and a philosophy (Morin & Jarrel, 2001). From a narrow short-term

focus of capturing value-in-exchange, it has widened in scope, and today, VBM 'calls on managers to use value-based performance metrics for making better decisions. It entails managing the balance sheet as well as the income statement, and balancing long and short-term perspectives' (Copeland, et al., 1996), and, is a 'marriage between a value creation mind-set and the management processes and systems that are necessary to translate that mind into action. Taken alone, either element is insufficient. Taken together, they can have a huge and sustained impact' and without 'that marriage' VBM becomes a 'staff-captured exercise' that has no effect on the overall operational decisions of a company (Koller, 1994). It was to bring this alignment between goals and operational measures that the later developments like the performance measurement systems have emerged (Krzepicka, 2000).

### **2.3.4.3 Evolution and Proliferation**

#### **2.3.4.3.1 Different Value Measurement Frameworks**

Since Rappaport's book 'Creating Shareholder Value' in 1986, numerous value measurement frameworks have been developed by consulting firms (Bausch, et al., 2009), for the purpose of linking the strategic and operational decisions with the goal of value creation. One of such measures was the Economic Value Added (EVA), which was a measure a firm's ability to earn more than the true cost of capital. The Cash Flow Return on Investment (CFROI) was another framework which measured the percentage return made by a company on its existing investments. Another model was the Return on Invested Capital (ROIC) which was the percentage amount a company earns over its cost of capital. Market Value Added (MVA) was another model that calculated the difference between the market value of the company and the capital contributed by investors.

These and other numerous VBM frameworks were focused on creating and capturing shareholder value in terms of value-in-exchange. Since VBM was a response to a common environmental situation, it spread not only in the USA but also in Europe, Asia and other continents as well. By the end of the 20<sup>th</sup> century there was broad consensus in the Anglo-American business world, that corporations should be governed by shareholder theory. Many of the developers of the above measures being management consultants to international companies seem to have helped the spread of the concept globally (Stout, 2013).

### **2.3.4.3.2 Emergence of Stakeholder Value**

However, the premise of the shareholder perspective came to be questioned later due to the collapse of certain well governed corporations like the Enron (Smith, 2003). After Enron, it came to be argued that blind fixation on stock price does not guarantee success against poor decision making and accounting fraud. As a result, an alternative and more inclusive view to the shareholder wealth came about as 'stakeholder value'. Though the term had been used in 1963 (Asia Centre for Social Entrepreneurship and philanthropy, 2015), and discussed in management literature in the 1970s (Freeman, et al., 2010), it only became popular in 1980s and 90s (Laplume, et al., 2008). According to Freeman (1984), a stakeholder is anyone who affects or is affected by the realisation of organisational objectives. All stakeholders, who have an interest in the organisational activities, should be taken considered without exception in sharing of benefits (Greenwood, 2008). The stakeholders include shareholders, customers, employees and the general public (Fontaine, et al., 2006). Thus, the aim of an organisation should be a balance between the competing interests of all these stakeholders (Sternberg, 1996).

### **2.3.4.3.3 Shareholder Primacy Vs. Stakeholder Primacy**

This inclusivity made stakeholder theory to be viewed as a holistic approach to corporate management (Donaldson & Preston, 1995) and gave rise to an unending debate on what should take primacy. Some argue for shareholder primacy (Mauboussin, 2011; Mauboussin & Rappaport, 2016). Others argue for a stakeholder primacy weighing the situational benefits for employees (Smith, 2003). Some others see the danger in not selecting stakeholder primacy that could lead to: accounting sleight of hand to window-dress earnings; management buybacks; profit obsession in the pharma industry over humanity; cost containment over value of human life in the automobile industry; long term shareholder value maximization over long term customer satisfaction; short-term stock price increases over long term planning; adverse impact on the corporation and economy; adverse impact on the environment; hiring the wrong leaders (Clarke & Friedman, 2016).

In spite of the popular belief that the two theories are diametrically opposite, it is far from the truth. The shareholder view does not advocate to 'do anything to make a profit' with a short-term profit orientation. Similarly, the stakeholder theory is misinterpreted as diluting the organisation's focus on making profits, which is not

true. Neither theory is a zero-sum game (Sternberg, 1996). This means that the two theories are not mutually exclusive to each other (Donaldson & Preston, 1995). Also, there is a tendency to see the two as converging. Mouboussin (2011), views stakeholder interests as contained in the shareholder value maximisation agenda.

### **2.3.5 Theoretical Insights from Value Based Management**

Due to the overlapping nature of the stakeholder and shareholder theories, this research holds that they are complementary to each other, and an organisation should take into account the value expectations of all stakeholder groups in the formulation of its values, and at the same time, should have a major stakeholder group on whose primary service or benefit the organisation exists, as otherwise an organisation would not have a unique purpose of existence, and all organisations would look similar. On the one hand, it is essential, for practical and ethical reasons (Freeman, 1994), to include all stakeholders in the formulation of values in the framework of creating value-in-use to make this compatible with the real-life situation, and on the other hand, any organisation should be aligned with the value expectations of a single stakeholder group, in order to unify its efforts in one direction and to have distinctiveness in purpose in the sea of service providers in the outside environment. But the primary stakeholder envisaged here is not the shareholder as the VBM scholars suggest. For, the primary goal in the large framework here is value-in-use. The interest of the shareholders generally is in value-in-exchange, and the current scheme will not operate against the interests of the shareholders, as their share of co-created value-in-use in the long term will accrue to the them.

Deriving value creation insights, one may not fail to see that VBM's major preoccupation has been on the question of how to align the internal operations with the needs of the external environment or the value expectations of the share/stakeholders. The lesson is that it is this alignment that maximises value creation and this insight is very important in our theory framework:

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TP32 The internal operations of the organisation should be aligned with the value expectations of the stakeholders to maximise value co-creation.

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The next insight is related to the need of including the value expectations of all the stakeholders in the value network for sustainable value creation.

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TP33 Value expectations of all stakeholders must be included in a value network for sustainable value co-creation.

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The need of having a major stakeholder for whose primary benefit the organisation is aligned with should also be included as a theoretical principle:

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TP34 An organisation must have a primary stakeholder for whose value expectations the organisation is basically aligned.

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The next theoretical principle is on the definition of the term 'stakeholder' which is required for the completeness of the variable definitions in the theory framework. The term 'Stakeholder' may be identified as a particular category of Actors in a service eco-system who has similar function in terms of value.

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TP35 A Stakeholder group represents a category of Actors who have a similar function in a service eco system.

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### **2.3.6 Value Management and Value**

Value Management (VM) is a discipline born out of the US manufacturing industry's need of supplying for the war efforts amidst a shortage of supplies during the WWII.

#### **2.3.6.1 Origins and Terminology**

The short supply of material during the WWII forced the industry giants like the General Electric Company to find ways of producing goods with the same functionality and quality with substitute material, and the methodology invented to achieve this purpose was 'value analysis', and as this method proved to yield better results at less cost, it became popular (Che Mat & Mohd Shah, 2006). As the most practitioners were engineers in the manufacturing industry and the US Department of Defence, it came to be known as 'value engineering' by the 1950s (Barton, 2002). But the term 'value analysis' was also supported, especially by the Society of American Value Engineers (SAVE). Though the two terms meant the same thing, there was also a tendency internationally to use 'value analysis' with reference to existing products and 'value engineering' in the case of new products. But in Australia and New Zealand the terms 'value analysis', 'value engineering' and 'value management' are considered as synonymous. The SAVE has also adopted 'Value Methodology' as an inclusive term for all three (Barton, 2002).

### **2.3.6.2 Definitions and Scope**

Miles (1989) defined 'Value Analysis' or VA as a disciplined action system aimed at accomplishing 'the functions the customer needs and wants' through the use of hardware, service, people, professional skills, administrative procedures etc. at the lowest cost. The main focus of the whole process was on making the product 'function' as the customer expected. In addition, the other important aspect of value methodology was the recognition of 'the ratio of functions to costs' (Dell 'Isola, 1997; Steward, 2005). These two opposing needs represent value for the customer on the one hand and value for the organisation on the other. Understandably, these opposing needs might not have been fulfilled without the active participation of people from various departments of an organisation and following strenuous process. So, value analysis has been a team approach from the very inception, and Miles (1989) describes it as a 'use of a specific set of techniques, a body of knowledge, and a group of learned skills' in 'an organised, creative approach for the efficient identification of unnecessary cost'. The value analysis method Miles adopted was named as the 'job plan' and it consisted of 5 steps as 'Information, Analysis, Creativity, Judgement and Development Planning' (Steward, 2005) and this method remains to this day (Barton, 2002).

In 1963, Charles Bytheway of the Sperry Rand Corporation introduced an innovation, which was called the Function Analysis System Technique (FAST), changing the way functional analysis was being done, by way of enabling a set of functions performed by a product to be expressed with the help of a diagram that facilitated linking of various functions on the basis of a 'how-why' logic (Barton, 2002). Since then, this technique is part of VE to this day. Another development of value analysis was the Quality Function Deployment (QFD) in Japan (Akao & Mazur, 2003). QFD is about ensuring quality of a product by identifying key value points and applying process control methods on them (Akao, 1997). This technique was later introduced to the other countries as well (Akao & Mazur, 2003).

### **2.3.6.3 Evolution and Proliferation**

Jay & Bowen (2015) tracing the evolution of value management describes it to have come through 8 phases of development. These phases are self-explanatory and are given in a summary form in the table below:

**Table 7: The Evolution of 'Value Management'**

No.	Phase	Description
1	1925-1945: a problem of demand	High demand changes due to stiff competition.
2	1946-1954: a focus on cost structure	Period of value analysis with the 'job plan' to reduce cost started to thrive in the war period
3	1954: design studies and value engineering	The US Bureau of Ships used value analysis in designing new weapon products and first time a government used VA.
4	1959: Value engineering in US defence procurement	became part of procurement regulations for the armed forces and in 1962 it was made mandatory for all defence procurement.
5	Value engineering in manufacturing	required an assessment of market condition and customer needs and gave increased process capacity, reduced costs and simplified product design.
6	1960s development of the value methodology	Further developments such as: Combinex, FAST and QFD by various companies and practitioners making it more powerful.
7	Value analysis in construction	Unlike in the manufacturing a representative from the customer was also involved in the value study.
8	Global use of value management	Spread to countries like Australia, Indonesia, Korea, Hong Kong, Japan, France, Germany, UK and China and has been in use in construction and ship building

### 2.3.7 Theoretical Insights from Value Management

VM has retained its 3 basic concepts: product function, cross-functional teams, and structured process (Thiry, 2004). All these are achieved by taking value in a monetary sense and by eliminating unnecessary costs (Barton, 2002). But later its objectives were extended to include the optimisation of the product in respect of all its qualities including cost, time and performance (Fallon, 1980). Later, its use has spread to strategic planning, process-reengineering, organisational change and concurrent engineering (Thiry, 2004). But, VM is still limited to the fields of manufacturing and construction. Almost all extant literature on VM today is related to construction. Though Thiry (2014) talks about a 'strategic value management' and argues that it has evolved into a 'soft methodology' which could help achieve stakeholder needs and, more recently, into a strategic methodology to help organisations to stay competitive, he makes these points in a construction-based project management perspective. Citing recommendations from popular project management books, he



stresses that VM is one of the methodologies available which can deliver benefits in projects and programs. Yet, it seems not to be the only methodology and he does not cite examples of any widespread use of value management.

Thus, VM does not contribute much to this research, because of its limited application. Nevertheless, the VM insight that there can be multiple ways of delivering customer value and that too may be done with less cost is a revelation. VM much like VBM is important to understand the significance of value capture for the organisation. There should be interest on capturing value for our scheme of theory as otherwise there will be no reason for an organisation to exist. This means that while delivering the maximum value-in-use for customers, an organisation can capture more value by optimising its resource utilisation and this essence of VM qualifies to be a theoretical principle:

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TP36 An organisation can maximise its value co-creation as well as its value capture in the long term by optimising its utilization of resources.

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### **2.3.8 Performance Measurement & Management and Value**

The emergence of Performance Measurement & Management (PMM) is in the process of historical evolution of US business through various stages.

#### **2.3.8.1 Performance Measurement as an Evolution of Accounting**

PMM has its roots in accounting as do many other branches of management.

##### **2.3.8.1.1 Accounting Roots**

As discussed under VBM, PMM and VBM are both products of the evolution of accounting through different stages, where its focus sequentially was on product cost and financial control (pre-1950), providing information for management planning and control (1950-1965), reducing resource waste (1965-1985) and value creation (1985-2000) (Abdel-Kader & Luther, 2006), and now on PMM and predictive accounting (Cokins, 2013). During the period of conglomerates between 1965-1985 (Bodrozic & Adler, 2017), US firms running multiple business units needed two levels of strategy: a competitive strategy for each business unit, and a corporate strategy for the large organisation (Porter, 1987). The corporate strategy having had to control

and manage diverse business units and to reduce resource waste, used Management Control Systems (MCS), defined as: 'the process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives' (Anthony, 1965).

### **2.3.8.1.2 Taking Off in the 1990s**

When the takeover threat had almost lasted and global competition from European and Japanese producers had become stiff (Fanco, 2002) and the ICT revolution had opened up new ways of networking and communication (Bodrozic & Adler, 2017), the US business and industry had changed considerably, by the early 1990s, the focus shifted from corporate strategy to competitive strategy and the conventional definitions of MCS had to accommodate new conditions of business (Otley, 1994), and to be geared to achieve 'competitive advantage and superior performance' (Dent, 1990; Samson, et al., 1991), since the way to superior performance was to match organisational structures, systems, people and strategy to the environment (Govindarajan & Gupta, 1985; Govindarajan, 1988). Also, by this time, Accounting had branched off to Management Accounting (MA) and MA into Strategic MA or SMA (Simmonds, 1981) and MCS had been viewed as SMCS which were described as concerned with 'formulating competitive benchmarks and using non-financial performance measures to develop short-term performance indicators that are explicitly linked to the achievement of long-term strategic goals' (Goold & Quinn, 1990; Langfield-Smith, 1997) and the research emphasis on senior management had dwindled and employee empowerment at all levels of organisations had become a research interest (Otley, 1994). MA was now concerned with 'strategically orientated information for decision making and control' (Ma & Tayles, 2009), concentrating on 'consumer value generated relative to competitors' aiding in 'monitoring the firm's performance in the market place using a whole range of strategic variables over a decision horizon sufficiently long for strategic plans to come to fruition.' (Bromwich & Bhimani, 1994).

The BSC, the first popular Performance Measurement & Management System (PMMS) in the 1990s, had the same agenda of measuring non-financial performance and strategic intent (Goold & Quinn, 1990; Langfield-Smith, 1997), strategic information (Ma & Tayles, 2009) and people involvement (Otley, 1994). Following the same direction as MA, the BSC authors, in addition to the centrality of strategy in their

framework, have projected it as a tool for strategy management (Kaplan & Norton, 2005; Kaplan & Norton, 2001a; Kaplan & Norton, 2001b; Kaplan & Norton, 1996), exhibiting clearly the compulsions of the time.

### **2.3.8.2 Definitions and Scope**

A PMMS is a system which enables an organisation to plan, measure, and control its performance, and helps ensure that sales and marketing initiatives, operating practices, information technology resources, business decisions, and people's activities are aligned with business strategies to achieve desired business results and create shareholder value (Maisel, 2001). Vastly diverse areas of activity in a business such as management accounting, strategy management, operation management, human resource management, organisational behaviour, information systems management and marketing, contributing to PM (Neely, 1999; Marr & Schiuma, 2003; Neely, 2002; Franco-Santos & Bourne, 2005), it has been seen as a field without a coherent body of knowledge (Marr & Schiuma, 2003). Despite Maisel's (2001) high-level definition, this multi-disciplinary nature of PM can lead to a difficulty of having a definition of PM agreeable to all, as Franco-Santos, et al. (2007) notes, because people in those diverse areas of management activity might define PM according to their domain perspectives. From an operations perspective, PM is either 'a set of metrics used to quantify both the efficiency and effectiveness of actions' (Neely, et al., 1995); or a process that gives feedback to employees on the outcome of their actions (Bititci, et al., 1997). From a strategic perspective, PM is a system that helps to cascade the performance metrics down the organisation to implement strategy (Gates, 1999) or a system that helps to obtain information for the purpose of evaluating the strategy (Ittner, et al., 2003). Among all these definitions, the need of linking strategy and execution seems the most fundamental need of PMM in literature (Neely, et al., 1995; Bititci, et al, 1997; Gates, 1999; Ittner, et al., 2003).

### **2.3.8.3 Evolution and Proliferation**

PMM has come through many stages in its evolution.

#### **2.3.8.3.1 Strategic Management Agenda**

With a strategic management agenda to attend to, PM has acquired the name PMM in the process of its evolution. According to (Taticchi, et al., 2010), the interest on PMM

has increased since 1990s across all industries, and its scope has expanded from a financial measurement to non-financial measurement (Taticchi, et al., 2012). The deficiencies of traditional accounting systems to cater to the new realities of 1980s gave rise to the development of the Shareholder Value Added (SVA) and Activity Based Costing (ABC) models. Then came in 1988 the SMART (Smart, Measurable, Attainable, Relevant and Time-bound) system 'linking strategy to operations, using external and internal measures of performance and modelling the company as an integrated structure' (Taticchi, et al., 2012). Since some of these PMMSs were considered also VBM models, this analysis overlaps with that of VBM.

#### **2.3.8.3.2 PMM Evolution and Various PMM Models**

Taticchi, et al. (2010) trace the history of PMM evolution in detail. The Customer Value Analysis (CVA) that came next in 1990s was important, for it was the first attempt to look at PMM from a marketing point of view. The 1990s was important for information revolution (Bodrozic & Adler, 2017), and it was during this period that many integrated PMM systems such as RDF, BSC, SPC, IPMS, CBS, IPMF and BEM as well as specialised PMM systems such as PMQ, ROQ, CPMF and CPMS were developed. Among all these, BSC has received the most widespread attention and it has been applied in numerous industries successfully. All these models and frameworks were concerned with linking strategy to operations, having both financial and non-financial measures but they struggle 'to create quantitative relations incorporating performance indicators and addressing performance measurement as a rational process' (Taticchi, et al., 2012). The 2000s saw the development of PMM models and frameworks such as: DPMS, APL, MSDD, PP, PPVC, CEVITA, PDGBS and UCDF further improving the strengths of the models of the previous decade. Among these, the DPMS is notable because it incorporates the strengths of previous models and ICT technology in managing cause-effect relationships of performance metrics quantitatively (Taticchi, et al., 2012). UCDF and CEVITA are special because they pay attention to the importance of intangible assets and unused capacities. CEVITA has won an 'Impact on Management Accounting Practice Award' sponsored jointly by the American Accounting Association, the AICPA, CIMA and CMA-Canada. UCDF is important in terms of managing fixed cost capacities. PP is notable for its architectural design framework. Yadav, et al. (2013) mentions that Taticchi, et al. (2012) have missed out some frameworks, presumably due to their lack of empirical

verification or lack of originality. A summary of all the frameworks after integrating the two reviews is given in Appendix AN (Taticchi, et al., 2012; Yadav, et al., 2013).

#### **2.3.8.3.3 From an Accounting Tool to a Holistic System**

Yadav, et al. (2013) trace the timeline of the historical evolution of PMM from a traditional accounting tool in early 1900s to the contemporary period through BSC in 1992 to integrated or holistic scorecards by the 2000s, marking the landmarks and outlining the overall direction of the evolution which is given in Appendix A0. According to Yadav, et al. (2013), the later versions of PMM are either have been conceptual frameworks not empirically verified or modifications of the BSC. It is clear from the timeline that PMM has been evolving from a mere financial system to a more integrated, holistic and dynamic system. The stakeholder perspective, according to the time line, has come by 2002. Bititci, et al. (2012) see this inclusion of the stakeholders both internal and external to the organisation as a sign of PMM becoming a social system. To illustrate this evolution, they divide the history of PMM into 4 overlapping phases using carefully selected parameters to show the differences and direction of evolution in each phase as shown in Appendix AP. This illustration by Bititci, et al. (2012) shows that PMM has surely and gradually been evolving into a stakeholder oriented, integrated, holistic, social and networked model in much the same way, albeit with slight time differences, as the other value creation models have, and these parallel evolutions caused by the developments in one and the same business environment strengthen the argument that the most fundamental principles of value creation in these disciplines are common.

#### **2.3.9 Theoretical Insights from Performance Management**

Franco-Santos, et al. (2012) review a large volume of contemporary PMM literature in terms of people's behaviour, organisational capabilities and performance, and analyse the underlying themes in them (See Appendix A0). According to them, the literature reveals PMM as a tool to enhanced organisational capabilities, especially in terms of strategic processes and their alignment, management practices, communication, and corporate control. In terms of people's behaviour too the results are positive, as it helps people to understand their job functions and align themselves with the strategy making them satisfied; helps management to take better decisions and provide powerful tools for manage people and affect change.

In terms of performance, PMM helps improve performance of teams and between firms and managerial performance, by reducing ambiguity and role and goal conflicts, providing clarity and space for organisational learning though there are problems in improving business unit performance due to perceived issues in intervening variables underlining the difficulties of cascading the overall values down to departmental performance targets and achieving alignment. These strengths can be best understood by looking at the most popular MMMS, the BSC. According to the inventors, the central element of the BSC is strategy (Kaplan & Norton, 1996). In a competitive environment, there are two basic types of strategies a business organisation may pursue: a cost-leadership strategy or a differentiation strategy (Porter, 1985). The cost leaders aim to reduce the cost of production and sell at a price lower than the competition and maintain a competitive advantage over its ability to produce at a lower cost. This strategy is totally bent on reducing value-in-exchange and necessitates little concern on value-in-use supplied, and hence, corresponds closely to GDL logic in terms of value. With a low price, fixed according to the market situation, the value capture of such a company would depend on minimizing the value-in-exchange supplied to the suppliers and employees and maximizing the value-in-use received from the suppliers and employees. This unidirectional value transaction scenario does not lend itself to a model of value co-creation either inside the organisation or at the customer interface, and therefore, does not fit in the current conceptual model. Yet, this scenario is more or less out of the question here because, cost leadership does not seem to be the direction the service organisations are heading now.

On the other scenario based on a differentiation strategy, an organisation selects a specific need of the customer segment/market and supply specialized product/s or service/s to cater to the need/s of it. This requires the identification of the aspects of value-in-use for the selected customers to start with, and the management and sustenance of the co-creation of value-in-use for those customers, subsequently. The primary function of the PMM in this scenario is to align all activities, people and resources of the organisation to achieve that strategic objective. But, the underlying intention of these 3 elements of strategy-selection, differentiation and alignment-initially was the maximization of value capture for the shareholders. This has now been challenged by the opposite theory of stakeholder primacy. Kaplan (2010), a co-inventor of BSC, contends that 'stakeholder theory confuses means and ends, and

therefore, ends up less powerful, less actionable, less satisfying than the strategy map/balanced scorecard approach' but it is helpful to 'appreciate the value from nurturing multiple relationships that drive long-term and sustainable value creation'.

Kaplan's (2010) contention that stakeholder theory confuses 'means and ends' is sufficient clarification that BSC starts from shareholder values, and its eliciting of customer values, devising of a strategy on a differentiation idea are all subject to the need of maximising shareholder value. The standpoint of the current review on shareholder-stakeholder debate has already been finalised to be an inclusive one, to gain from the strengths of both, the 3 basic elements of BSC is included here. The first two elements of 'selection' and 'differentiation' are for the finalisation of a major stakeholder to serve to and differentiating a service from the options available. This is to match the general principle of the current conceptual model that each organisation must be distinct in its service offering in the global interconnected service network, to avoid similarity and improve identity. First and foremost, PM seems to be pressing the importance of having a PMMS to establish its identity in the global integrated service network, before starting to create value. This as a theoretical principle is important in the current framework:

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TP37 A Performance Measurement and Management System is an essential part of a value network.

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The BSC requirements of 'selection' and 'differentiation' is fulfilled by identifying a major stakeholder and that principle has already been elicited under VBM. The way to complete the selection and differentiation is to identify the value expectation portfolio of the stakeholders and this is essential as a theoretical principle.

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TP38 A value portfolio of value expectations of all stakeholder groups must be the starting point of value co-creation in a value network.

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The third element of the 3 BSC requirements-aligning all operations and processes with the value expectations of stakeholders- too have already been identified under VBM and included in the theory framework. And the most important feature of this alignment is the vertical cascading down of the performance measures of the organisation from these value expectations, so that, the groups, divisions, sections

and individuals get their job functions from the cascaded performance measures. This is an essential theoretical principle in our theory framework.

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TP39 All performance measures should be cascaded down from the stakeholder value portfolio vertically down to the individuals, for alignment

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The next question was to decide on what PMM component requirements to be included as essential principles for the framework completeness, and there are different views about it (Neely, 1998; Franco-Santos, et al., 2012; McGee, 1992).

**Table 8: Components of a PMMS**

<b>Authors</b>	<b>Required Components in PMM</b>
Neely(1998)	Individual measures, composite measures, supporting data management infrastructure
McGee(1992)	Performance metrics, management and process alignment, measurement and reporting infrastructure
Franco-Santos, et al.(2007)	Strategic objectives, objective and process alignment, reporting structure

PMM can be looked into in terms of roles it plays as well. Franco-Santos, et al. (2007), in a literature review, identify the roles as: strategy implementation and execution, provide alignment, internal communication, measure and evaluate performance, monitor progress, planning, external communication, rewards, performance improvement, managing relationships, feedback, double-loop learning, strategy formulation, benchmarking, compliance with regulations, control and influence behaviour. The Centre for Business Performance at Cranfield School of Management (CBPCSM) (2004), in their famous literature review, classify these roles into 3 as: 'strategic, communicative and motivational'. If we correspond these roles with above components for simplicity, we would see following results:

1. Strategic role: hierarchical performance metrics.
2. Communication role: information collecting and reporting system.
3. Motivational role: compensation tied to performance; motivation for further learning or enhance capabilities.

These implementation requirements are essential in our theory framework specifying the components of the PMMS:



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TP40 The components of a PMMS must be: a system of performance metrics that is hierarchical and integrated; a performance management information system that is integrated and all-purpose; a compensation system that is performance-based; and a capability enhancement system for all Actors.

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The next step was to identify principles related to the procedural requirements of PMM. There are 6 theories on the subject (Franco-Santos, et al., 2012):

1. Agency theory: every organisation is run by agents and the principal-agent relationship is maintained by making agents motivated to focus on principal's goals: through performance evaluation and tying compensation to performance; and by reducing information asymmetry between parties.
2. Resource-based view: attempts to enhance organisational capabilities by conceptualising the organisation as a bundle of resources and as processes an organisation acquires and develops resources (Day, 1994).
3. Goal setting theory: tries to capitalise on the human nature to pursue goals (Latham & Locke, 1991) by having performance measures cascaded down from the stakeholder values down to the individual level.
4. Cognitive and information processing theories: are rooted in the idea that humans have limited information processing capacity (Miller, 1956) and their decision making is not completely rational (Simon, 1976). As such, managers may evaluate information based on their personal preferences (Tayler, 2010) or influenced by 'motivated reasoning' (Kunda, 1990) or ignoring the non-common measures as the general tendency is towards the common ones (Lipe & Salterio, 2000) or may add additional information to improve weights given to certain measures (Dilla & Steinbart, 2005) or make compressed or lenient performance ratings (Moers, 2005). To avoid all these PMM must have information needed by all levels of the organisation.
5. Contingency theory: means that PMM generally depends on the contingencies of the organisation and it cannot be universally applicable and its metrics have to be selected to suit its contingencies.
6. Equity theory: tries to ensure equity for people to make PMM acceptable to all people as their beliefs as to what is fair and unfair for reward differ and they tend to compare their commitments and gains with those of the other and perform accordingly (Adams, 1965). Equity is ensured in PMM by ensuring

distributive (fairness of the 'ends') and procedural (fairness of 'means') justice (Greenberg, 1990). If individuals perceive performance evaluation to be not fair and just, they may respond against it (Ittner, et al., 2003). This is why the issues of fairness and justice should be taken into account in the design and implementation of PMMs (Burney, et al., 2009) and should be allowed to evolve over time before these subjectivities are completely ironed out.

Most of these requirements were elicited above and the remaining ones become the next theoretical principles as follows:

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TP41 PMM may be dependent on the contingencies of the institution.

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TP42 The PMMS must deliver distributive justice and procedural justice to sustain the co-creation of value.

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TP43 Correcting the subjectivities in performance evaluation must be put through a process to evolve continuously.

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### **2.3.10 Public Value Management and Value**

Public Value Management (PVM) is the public sector branch of management concerned with public sector value creation.

#### **2.3.10.1 Public Value as an Evolution of Public Administration**

The idea of public value as shown below has emerged in a recent stage in the evolution of Public Administration (PA) through stages in its history.

##### **2.3.10.1.1 Classical Period of PA**

PVM has its roots in New Public Management (NPM) originated in the USA and UK in the early 1980s (O'Flynn, 2007; Alford & Hughes, 2008), which in turn a development of Public Administration (PA), the management discipline of the public sector born in the Anglo-American countries in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries (Alford & Hughes, 2008). Initially, the basis of selection for government administrative positions was political affiliations, leading to an administrative set up full of incompetence, inefficiency and corruption (Gruening, 2001; Stone & Stone, 1975; Van Riper, 1987). Classical PA was borne out of continuous attempts of a progressive movement to change that, and some of its initial successes were a career civil service (1883), line-item budgets and reduced political interference and corruption

(Lee, 1995). Scientific management in early 1900s influenced PA, and efficiency was seen as a solution to the problems of corruption and incompetence, and by the 1920s it had led to the development of a 'positivist' science of PA, on the scientific management principles like: division of work; specialisation, homogeneity of work, unity of command, hierarchy, delegation of authority, accountability, span of control and staff etc. (Mooney, 1937). The reforms advocated the standard business management practices of the period, such as: planning, organising, staffing, directing, coordinating, reporting and budgeting, or the so-called POSDCORB to be assimilated (Gulick, 1937). During the period of New Deal in the USA, in response to the Great Depression in the 1930s, the government involvement and regulation increased, and the PA came to be governed with social-democratic ideals, material freedom and scientific objectivity (Van Riper, 1987) and this period ending in 1930s was the classical period of PA (Gruening, 2001).

#### **2.3.10.1.2 Neo-Classical Period of PA**

The aftermath of WWII having been a period of review and reassessment for all disciplines greatly influenced by the human relations school, PA also came to be reassessed under the same light and Herbert Simon was a key proponent among the critics who proposed a separation of facts from values in PA. They advocated deriving of laws of human behaviour through scientific observation, and this new school of thought followed behaviourism, structural functionalism and systems theory, and used welfare economics and decision theory as underlying theories (Gruening, 2001). By the end of 1960s, PA was a mixture of classical thought, neoclassical thought, politically oriented outlook and rival approaches, all sharing a belief in an active State and objective knowledge (Gruening, 2001). But other scholars were critical of this view and were creating new approaches.

#### **2.3.10.1.3 Public Choice Theory**

Public choice theory was the first of the rival views, which was active from the 1960s. It advocated a society based on individual freedom and explained social phenomena as an aggregation of the behaviour of individuals on their individual preferences. This doctrine of individual freedom was significantly different from Simon, as its concept of rationality was not bounded by a theoretical optimum or objectivity. It led to a critique of the formation of the society in which minorities are disadvantaged in the

hands of the majority as the latter had an incentive to waste resources for which the former was paying. The solution proposed was a poly-centric administrative system wherein production and provision of services were separated and both public and private vendors could compete for production contracts in a decentralised environment (Ostrom, 1973; Savas, 1982).

#### **2.3.10.1.4 New Public Administration**

In the late 1960s, another dissenting voice to the classical and neoclassical PA in the 1960s came from a movement organised under the banner of 'New Public Administration' (NPA). They saw the separation of facts from values (neo-classical view), accountability in representative democracy as strengthening the status quo, contributing to discrimination, injustice and inequality, and argued that PA should move away from efficient administration towards more democratic structures within and outside public organisations to foster full participation and social equality (Gruening, 2001). But this was only a request for a normative reorientation of the discipline, and the recession and unemployment in the early 1970s proved productivity to be more important and the normative questions raised by the NPA became less powerful (Campbell, 1972).

However, when bureaucratic bashing by the politicians media became a fashion in the early 1980s (Rohr, 1986), the NPA ideas started to appear in various guises once again: Attempts on NPM veterans surfaced as: the Blacksburg perspective; more participative political and administrative structures as the communitarian argument (Cooper, 1991); for a PA to assume a moderator role in public policy networks in finding solutions to problems as discourse theory (Fox & Miller, 1995). All these NPM theories argued that reality was socially constructed based on phenomenology. Another criticism on PA was by the critical theorists who were seeking to unmask the domination in society through critical analysis. Habermas (1979), a notable critical theorist, argued that an ideal communication situation is necessary to overcome domination and increase participation.

#### **2.3.10.1.5 Policy Analysis**

Political scientists in the early 1970s emerged with a view very close to neo-classical PA of separating fact and value using logical positivism, in the form of policy studies seeking solutions to the failures of PA through policy analysis (Parsons, 1995). Policy

analysis had two variants as: analysis of policies and analysis for policies, the former explaining contemporary political developments, the actors and outcomes with a focus on behavioural aspects; while the latter seeking to find solutions for political problems employing decision techniques (Nagel, 1980). Though policy analysis was not theoretically different from PA, the needs of creating a separate identity led to a fragmentation of the discipline.

#### **2.3.10.1.6 Public Management**

The schools of policy analysis when they design academic courses differentiated their courses from PA by the term 'Public Management' (PM) (Moore, 1994). The contents of the PM courses drew from general rational management theories in the 1970s such as management by objectives, techniques of accounting, public sector marketing and strategic management (Gruening, 2001). This was further strengthened with the influence of 'In Search for Excellence' by Peters & Waterman (1982), which showed that even the best American companies were not following rational management styles. Their ideas had a profound impact on both business and public management (Gruening, 2001). By the early 1980s, the field was a mixture of different theories and ideas without a definite conceptual unity to bind them together. As such, the field was not ready to 'take its place alongside more mature and theoretically rich social science disciplines' (Bozeman, 1991). By the time New Public Management (NPM) emerged in the early 1980s, there were two streams as PA and PM which were similar in purpose yet competitive with each other, especially PM scholars were projecting the idea that they had invented a new science independent of PA (Gruening, 2001).

#### **2.3.10.1.7 New Public Management**

New Public Management (NPM) was an important landmark in the history of PV and there is an important background to its emergence.

##### **2.3.10.1.7.1 Political Background**

The reasons for the emergence of NPM were manifold (Leishman, et al., 1995). The early 1980s was 'a time of great domestic and international upheaval with extensive economic, political and social changes occurring simultaneously across a number of countries' (Heyer, 2011). This was also a time in which the Reagan administration in

the USA relaxed the anti-trust laws in order to liberalise the government controls on the public sector enterprises and the Thatcher administration in the UK brought forward similar liberal policies of government. The public sector came under pressure to deliver more with less input forcing the public managers to look inward critically into their organisational structures, budgets and processes (Gorringer, 2001) which were characterised by 'hierarchy and standardisation of processes, with features including structural groupings usually by function' (Alford & Hughes, 2008). The pressure was also for more accountability in the use of public funds and to deliver better and more focused services (Loveday, 1995).

### **2.3.10.1.7.2 Management Agenda**

Despite this pressure for reform, the changes had not been a monolithic set of practices across organisations (Alford & Hughes, 2008) or countries, as New Zealand and UK embraced it earlier than USA (Butterfield, et al., 2004). However, by 2000, a post-bureaucratic paradigm of NPM had firmly embedded in many countries (O'Flynn, 2007). NPM was a clear reaction to the perceived weaknesses of that traditional bureaucratic paradigm of PM and was 'a critique of monopolistic forms of service provision and an argument for a wider range of service providers and a more market-oriented approach to management' (Stoker, 2006). The phrase 'a more market-oriented approach' shows the NPMs readiness to use BM principles in PM like: 'hands-on professional management; explicit standards and measures of performance; greater emphasis on output controls; disaggregation of units in the public sector; greater competition in the public sector; private sector styles of management practice; and, greater discipline and parsimony in resource use' (Hood, 1991).

These were doctrinal components of NPM (Hood, 1991), through which NPM sought 'to dismantle the bureaucratic pillar of the Weberian model of traditional PA. Out with the large, multi-purpose hierarchical bureaucracies, NPM proclaims and in with the lean, flat, autonomous organisations drawn from the public and private spheres and steered by a tight central leadership corps' (Stoker, 2006). Four main themes characterised NPM: management is a higher order function than administration; economic principles (drawn from public choice theory, principal-agent theory, contracting, competition, theory of the firm) can assist NPM; modern management theory and practices can improve NPM; service delivery is important to citizens (Hughes, 2006).

### **2.3.10.1.7.3 Widespread Acceptance of NPM and Issues Faced**

The NPM model originated in the UK and the USA has not only spread to developed countries like Australia, Austria, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden but has also been well received in developing countries in Asia, Africa and Latin America and transitional societies in eastern Europe including the poorest African countries like Uganda, Zimbabwe, Tanzania, Malawi, Ghana and Zambia (Haque, 2004). The main components of NPM such as: principles of market competition, business management, customer orientation and value for money can be observed in various degrees in these countries. However, when it came to the practical application of NPM, it was not without issues or weaknesses, basically in terms of implementation challenges and fundamental tensions (O'Flynn & Alford, 2005). Some of them have been:

1. The competitive regimes adopted to encourage competition were usually costly and hardly delivered real competition (Entwistle & Martin, 2005).
2. Decline of accountability due to restructuring and downsizing of the civil service (Minogue, 2000).
3. 'Fundamental values of public service have been undermined by competition, limited resources and conflicts between individual demands and public interest' (Minogue, 2000).
4. NPM reforms produced some unexpected negative results (OECD, 2003).

O'Flynn (2007) believes that these issues may be due to the wholesale application of private sector models without consideration to the interdependent nature of the public sector. OECD (2003) sees this as a failure to understand the 'deeper governance values.' It may be due to these issues of NPM that a new discourse of 'Public Value Management' (PVM) is emerging and O'Flynn (2007) is of the opinion that this approach forms a basis for potential paradigmatic change. This new discourse has been termed as an 'alternative paradigm' or an 'overarching framework' for post-competitive, collaborative networked forms of governance (Stoker, 2006).

### **2.3.10.2 Definitions and Scope**

The definitions and scope of the PV, especially how they have widened in scope from PA and NPM, is important here in order to understand the concept, and its relative strengths and weaknesses in the current context to be able to draw theoretical insights for the current project.

### **2.3.10.2.1 Widened Scope from PA and NPM**

NPM had many theoretical goals: budget cuts, the separation of service production and provision, user charges, competition between public and private enterprises, separation of politics and administration, accountability for performance, performance measurement and improved accounting, financial management and performance auditing, strategic planning and changed management styles (Gruening, 2001). Even with issues found in 2 decades of experimentation with NPM, there is increased interest in Public Value (PV) approach (O'Flynn, 2007). Mark Moore first formulated the PV framework 'to help imbue public sector managers with a greater appreciation of the constraints and responsibilities within which they work' (Williams & Shearer, 2011). 'The aim of the public manager is to create public value much the same way the goal of the private sector managers is to maximise shareholder wealth' (Moore, 1994). According to Williams and Shearer (2011), Moore's concept of PV was that 'public resources should be used to increase value in a way which is analogous to value creation within a private enterprise.' Kelly, et al. (2002) define PV as value created by government 'through services, law regulation and other actions.' O'Flynn (2005) describes PV as a multi-dimensional construct that is a 'reflection of collectively expressed, politically mediated preferences consumed by the citizenry.' Benington (2009) further expands it as multi-dimensional, including: ecological value, political value, economical value and social & cultural value and argues that PV is not created only by the government but in 'a network of government, market and civil society'. He differentiates among the 3 categories of value: exchange value (value-in-exchange), labour value and use value (value-in-use), and suggests value creation should involve value users (co-creation) and its measurement should be based on the user value satisfaction (value-in-use). This expansion of the scope may be best understood in comparison with its predecessors-PA and NPM, and Appendix AR illustrates this using 7 parameters provided by Kelly, et al. (2002) and cited by other scholars (Stoker, 2006).

### **2.3.10.2.2 Moving towards Value Co-Creation**

Under these definitions, the public interest, determined earlier by politicians, ought to include both individual and public preferences decided by public deliberations. Goals have evolved from 'managing of inputs' to multiple targets consisting of service outputs, satisfaction, outcomes, trust and legitimacy etc. Accountability has



transferred from government departments to citizens. The system of service delivery is now being treated as multi-modal, rather than hierarchical as in the department days. The responsibility of public service ethos is no longer a public sector monopoly, but an all-inclusive system in which no single force dominates. Citizens and stakeholders are not limited to the participation in elections as in the PA days. And most importantly, the public managers are now expected to turn to people and cater to their preferences and renew their trust through good quality of service, rather than to the political masters for direction. These changes signify a paradigm shift in PM outlook quite in sync with value co-creation in MM.

### **2.3.10.3 Evolution and Proliferation**

The details of the evolution and proliferation and of the current state of the field are the other pre-requisite knowledge for the theoretical insights.

#### **2.3.10.3.1 Debate about the Acceptability**

Since Moore's (1994) intervention, a significant question troubling the public managers has been whether PV is just a normative prescription or an empirical theory (Alford & O'Flynn, 2009), as 'the criteria for evaluating aspirations differ from those that seek to assess evidence' (Rhodes & Wanna, 2007). Alford & O'Flynn (2009) believe that this attempt to dichotomize the concept subscribes to a zero-sum logic and obviates the possibility of it being both at the same time. Barzelay (2007) takes an inclusive position, as he calls PV as a 'normative theory', combining the two. However, what is notable in PV research is the lack of research on the subject despite its general significance to the entire world. The lack of research has been ascribed to this on-going debate and 'the inherent complexity and ambiguity of public value as a theory and a framework' (Hartley, et al., 2017).

#### **2.3.10.3.2 Current State of Research**

Williams & Shearer (2011) in a literature survey of all-important past research on PVM, categorise the 78 research studies found into 3 groups as: PV research; PV as analytical frame; and, normative domain applications. The first group which was about the PV framework had only 3 studies: The first study measured the impact of the style of school management by the principals in achieving public programme objectives in the education sector in a US state with the help of 10 performance

metrics (O'Toole, et al., 2005). The second was into 'public participation and engagement rates and their relationship with both institutional forms and social capital' (Lowndes, et al., 2006). The third was an 'empirical case study exploration of how middle managers operating in a German public sector context, perceive PV creation and the determinants of this in their work' (Meinhardt & Metelmann, 2009). The 2<sup>nd</sup> group, which had several studies, was on using the PV framework as a means of analysing research data. For example, one research posed the question: 'does PV theory assist in understanding the limited progress in implementing results-based management within the public sector'. (Try & Radnor, 2007). The third group- Normative domain applications- to which the vast majority of studied fell, used the value concept and framework in prescriptive form for change in certain public sector domains ranging from culture, criminal justice, learning and skills, to employment, higher education and health. Only 3 PV research in 20 years shows the dearth of PV research in extant literature.

### **2.3.10.3.3 Nature of Current PV Applications**

Hartley, et al. (2017), in a quite similar classification to that of Williams & Shearer (2011), observe 3 distinctly identifiable components of PV in contemporary PM thought, as: the notion of PV as a contribution to the public sphere; 'the notion of PV as an addition of value through actions in an organisational or partnership setting; and, a heuristic framework of the strategic triangle'.

1. The first approach, widest in scope, tries to expand the boundaries of the market and public choice theory into providing greater values for the public (Benington, 2011) and, for the same reason, it has to face complicated contests, debates and dialogues in the public space (Bryson, et al., 2015), for the presence of multiple stakeholders with competing interests (Geuijen, et al., 2017), converting the public values 'a democratic practice', rather than a managerial practice, and this may be a reason for rare empirical research (Benington, 2015), or, it may also be because the scholars tend to look at PV generically, without taking its complexities into account or taking a consumerist stand (Hartley, et al., 2017).
2. The second approach attempts PV as mere value addition. The introduction of the public sector equivalents of the business type bottom line, like the public sector BSC, are aimed at this. Public organisations are considered to have

wider responsibilities that transcend the current society to the future generations with a belief that value continuously evolves. Though performance management scholars have investigated into this area, there has been 'less research about the value created (destroyed) in terms of legitimacy, trust, social justice, and so on, or, how PV is often co-produced with citizens and other partners and stakeholders' (Hartley, et al., 2017).

3. The third approach is using 'a heuristic tool enabling public managers to get things done in a strategically smart and practically feasible fashion' based on Moore's 'strategy triangle' which is not a 'proper' academic theory (Hartley, et al., 2017). It is only a tool providing high level normative guidance to create PV, and it does not offer any social mechanisms, conditions or variables to facilitate implementation. Also, there is little empirical research except case studies in this area. The most notable is the uncertainty that surrounds the skills of political astuteness needed to overcome the challenges of strategy triangle implementation (Hartley, et al., 2015).

#### **2.3.10.3.4 Frameworks Available for Measuring PV**

There are about 7 popular frameworks for measuring PV (Cwiklicki, 2016), namely: Accenture Public Sector Value Model (APSVM) (Accenture consulting); Management of Value (MoV) (a variant of Value Analysis/Management); Performance Management System (PMS) (by PMM scholars); Competing Values Framework (CVF) (Institute of Government and Policy Studies/State University of New York in Albany, 1980s); Public Value Framework (PVF) (Jorgensen & Bozeman (2007)); Public Value Scorecard (PVS) (Moore, 1994); and, Public Sector Balanced Scorecard (PSBSC) (Kaplan, 1999):

1. APSVM is a value grid with two dimensions as 'cost-effectiveness' and 'outcomes', shows an organisation's positional coordinates along the dimensions, which offers little help in guiding VC.
2. MoV is a variant of value engineering which is limited to engineering applications.
3. The term PMS captures the numerous value measurement attempts by the PMM scholars with the help of the tools not specific to a particular framework in the public domain (Cwiklicki, 2016).
4. CVF is an approach similar to APSVM, which helps an organisation to recognise its position and offers very little help in guiding VC.

5. PVF looks at PV in an effort of improving the quality of management in the process of creating PV in a particular service.
6. PVS tries to provide an understanding of the common value ingredients present in various PVs.
7. PSBSC is an adaptation of the BSC to suit the public sector by incorporating a new value dimension as 'mission'.

#### **2.3.10.3.5 PVS's Weaknesses as a Framework for Value Creation**

The 6<sup>th</sup> and the most popular framework of PV, the PVS developed by Moore (1994), does not offer insights for the current theory framework, primarily because the importance it attaches to politicians. When PV is wanting public managers to turn to the public for direction, this dependence represents a characteristic of the PA days. It has been criticised for certain fundamental weaknesses. It lacks 'empirical investigation of either the normative propositions of PV or its efficacy as a framework for understanding PM' (Williams & Shearer, 2011), and that, according to Morrell (2009), may be due to its form of origin as an executive education programme of a university, and not on the basis of research or theory. Rhodes & Wanna (2007) criticize the whole idea of PVF claiming that it is difficult to implement it in the Westminster countries, because it invents roles for public servants for which they are not appointed or not protected if things go wrong; and for asking public managers to supplant politicians, to become directly involved in the political process. But this far from the real truth, because the problem with PVS is actually its lack of encouragement for such 'manager activism' and accepting a significant role to politicians in the devising of strategy. One of the tests of strategy in PVS is that, 'it must be legitimate and politically sustainable, that the enterprise must be able to continually attract both authority and money from the political authorising environment to which it is ultimately accountable' (Moore, 1994). If the 'political authorising environment' is what 'is ultimately accountable' in PVM, PVS cannot be described as a model that is forward looking. If it were a heuristic model aiming perfection with time and experience, it should have avoided that dependence and attempted to improve in an outward direction.

#### **2.3.10.3.6 PSBSC's Weaknesses as a Framework for Value Creation**

The Kaplan & Norton's Public Sector Balanced Scorecard (PSBSC) too does not offer theoretical insights or research experience for the current research. The PSBSC is

being used widely in the public sector (Hoque, 2014): in the local government organisations and municipalities (Umashev & Willett, 2008; Askim, 2004; Chan, 2004; Farneti & Guthrie, 2008; Lang, 2004; Kloot & martin, 2000); in hospitals (Gumbus, et al., 2003); SMEs (Manville, 2007); sport services (Bolivar, et al., 2010); and, custom services (Nieplowicz, 2013). The PSBSC is a different version of the original BSC adapted to the requirements of the public sector (Kaplan, 1999) by substituting the customer and financial perspectives with 3 different themes in which 'political legitimacy' is one (See Appendix AS for the PSBSC framework) (Kaplan, 1999). Though the involvement of politicians is not as absolute here, as it is in the PVS, it is an important pillar on which the whole framework is built. There seems to be significant normative similarities between the two, and Moore (2003) admits to the fact that his PVS was built on Kaplan & Norton's BSC, it appears that Kaplan's PSBSC too has similar views of the public sector as Moore's PVS.

### **2.3.11 Theoretical Insights from Public Value Management**

Even though the weaknesses associated with PV limits the chances of contributing much theory to the current project, there are certain important value principles it brings forth regarding loftier goals of service provision seeing the world as one service eco-system, which are essential for a good value framework.

#### **2.3.11.1 Areas for Potential Insights**

The different conceptualisations of PV 'have hampered the development of a cumulative body of empirical research' (Hartley, et al., 2017). However, they correspond to the different trajectories the field has taken and can take. The first corresponds to a line of thought which can be identified as the ultimate goal of PA- the creation of PVs of all kinds by various organisations, and that would entail a democratisation of the society to a large extent, and the efforts of public managers alone would not be adequate to achieve that (Geuijen, et al., 2017; Benington, 2015) and appears a far greater and a remoter a task. But, however much difficult it would be to reach there, it will surely be the ultimate goal of PV. The second stream of thought corresponds to the current PV attempts through which public institutions are trying to expand their organisational and societal boundaries further. The history of the evolution of PA from a spoil system to PVM is a story of this constant search. This is where PA is today and which is why the most research into PV has been about,

using it as an analytical tool, as Williams & Shearer (2011) noted. The discipline is still trying to grasp the idea of PV, while putting it into 'small' uses. The third stream corresponds to the systems, tools and techniques (or frameworks) available for organisations to reach at the destination of PVs from where they are today, through the intermediate step of creating PV in their own service domains. Even though the PV scorecard of Moore (1994) has been the pioneering and most popular PV framework available (Rhodes & Wanna, 2007), research in this stream has been less (Hartley, et al., 2017; Williams & Shearer, 2011).

### **2.3.11.2 Public Value and Public Values Insights**

Since PVF and PVS goals are different they belong to different research streams (Witesman, 2016). In other words, the two are related to PVs and PV respectively. 'PV' in the public value stream is 'something like worth or utility' in a given service (Alford, et al., 2017) and 'PVs' are related not to a particular service, but values present in many services or good governance criteria like integrity, openness, participation, lawfulness, professionalism (Jorgensen & Sorensen, 2013; de Graaf, et al., 2016) and incorruptibility, accountability, honesty, lawfulness, reliability, transparency etc (Rosenbloom, 2017). Though the two parallel streams of research which share similar terminology have been attempted to be brought together by various scholars (Witesman, 2016), the researchers of the two streams, especially the ones in the 'values' stream, have sought to differentiate themselves from the other camp (Bozeman & Johnson, 2015). As stated earlier, as the PVs are the ultimate purpose of public management and it is rather a distant goal for now, it appears that the current use of the PVF is providing a vision for the future. Since this vision is relevant for all institutions, both public and private, it is appropriate to identify it as a theoretical principle of the conceptual model, along with the definitions of the basic terms PV and PVs, in line with their meanings:

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TP44. Public value is value-in-use experienced by a public user with respect to a single service offering by a public institution

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TP45. Public values are values-in-use experienced by a public user that are common in more than one service offerings by an institution or institutions

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TP46. The ultimate aim of a service eco system is public values

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Since this vision contains in itself boundaries which both business and public institutions should refrain from crossing, for the benefit of everyone and the world, they also qualify to be recognised as a theoretical principle:

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TP47. A service eco system/value network/institution should not undermine any of the values of the public or world-at-large or the future generations

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### **2.3.11.3 Insights from the Similarities in Public and Private Sectors**

Thus, if a public institution should not undermine public values, it imposes a condition on the role of politicians not to limit or destroy any PV or PVs, and that would be applicable both in the public and private sectors, because politicians have a hold on the private sector as well. This condition enables to draw an analogy between shareholders politicians in the two respective sectors. Clearly, politicians do not expect any public institution to create any value-in-use for them. Their legitimate concerns are limited to low capital expenditures and the generation of high value-in-exchange to offset the recurrent expenditures, whenever it is possible. Except in some services where direct value-in-exchange is not possible, the basic services such as water, electricity and education etc. in many countries being provided at a fee, the trend seems to be towards direct value-in-exchange in the public sector as well. The increased formation of public companies in recent times to reduce governments' stake in the public service is surely intended at more value-in-exchange and bear testimony to the fact that the public private differences are slowly but surely diminishing.

This background makes it possible to draw a similarity between shareholders in the private sector and the politicians in the public sector, on the point that their interests generally are in value-in-exchange, and not in value-in-use. In other words, the value interests of both groups are a foregone conclusion that are not required to be elicited and managed. In this sense, both groups are passive stakeholders in the respective sectors, a similarity worth included in our theory framework.

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TP48 Shareholders in business institutions and government politicians in public institutions are both passive stakeholders whose value expectations are not managed in the institutional value portfolio

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## **2.3.12 Strategic Management and Value**

Strategic Management (SM) is an evolution of general management of business in the USA and elsewhere.

### **2.3.12.1 SM as an Evolution of General Management**

And its evolution coincided with the evolution of business and industry in the USA and a short history of its evolution follows to set the stage for understanding the essence of its value principles to be able to gather theoretical insights.

#### **2.3.12.1.1 Period of Conglomerates with an Internal Focus**

The origin of SM was in the diversification wave in early 1960s (Gurerras-Martin, et al., 2014; Bowman, et al., 2002). The management function identified today as SM was 'long range planning' before 1960s, and financial planning before 1950s (Gluck, et al., 1980). The 1960s was a period of both post war (WWII) recovery and prosperity, in which US business was burgeoning, and moving towards conglomerates for further growth, transferring the academic and research focus on to subjects like growth, expansion, acquisition, diversification and corporate control of conglomerates (Christensen & Montgomery, 1981; Rumelt, 1982; Chattergy, 1986), as the biggest management challenge of the time was how to devise a profitable strategy for each business unit and control the units to contribute to the strategic needs of the corporate. The management response to the challenge was to contribute with cases, histories and planning systems to overcome it. Chandler (1962) and Rumelt (1974) were among the first contributors (Bowman, et al., 2002) in this so called 'Corporate Strategy' period of SM in which 'integrating organisational functions' was the focus rather than on the outside environment (Chandler, 1972).

Stagnation and inflation brought challenges for US business in the 1970s, and the internal managements had to adopt more conservative styles of management with an increased focus on financial control to overcome problems, and the focus of management transferred to portfolio management and Strategic Business Units (Henderson, 1979) and the conglomerates were just starting to match the internal organisation to external circumstances. In response, Chandler (1972) and other scholars initiated a research tradition identified as the 'processual approach to strategy' and came to be known as 'Institutionalists' and the period was identified as the period of 'strategic planning' (Bowman, et al., 2002).



### **2.3.12.1.2 Competition Shifts the Strategy Focus to the Environment**

The late 1970s and early 1980s brought forth additional problems for conglomerates, as the difficulties for business arose with increased foreign competition and the globalisation of business (Bowman, et al., 2002). The academic response to this was 'competitive strategy', as exemplified in the work of Porter (1980), who along with other economists asked the question whether 'industry structural characteristics constrain the strategies of competing firms' (Bowman, et al., 2002). The conglomerates becoming increasingly unviable due to stiff competition, 'competitive advantage' became the basis of a company strategy. At the same time, the macro-economic situation in the USA and Europe being unstable due to budget deficits and foreign trade imbalances compared to a rising Japan, a lot of emphasis was given by the companies on having financial strategies (Bowman, et al., 2002) and quality drives to offset the differences (Powell, 1995). In response, the external prominence in strategy changed to a dual focus in an attempt to match the internal configuration with the external environment. This was when the term SM became popular, and the term included in itself both planning and implementation (Bowman, et al., 2002).

### **2.3.12.1.3 Strategy Becomes a Dual Focus**

The cold war free world and the opened-up Europe in the 1990s were enabled by the ICT revolution to grow corporate networks connecting businesses across borders. The rise of the concepts of 'knowledge worker' and 'knowledge-based organisation' helped this globalisation trend. Though the internet-based industries faced a collapse of internet firms in USA, the technology helped the spread of the corporate networks far and wide. The academic contributions during this period were by the 'behaviouralists' concerned with the study of 'the functioning and survival of the organisation, and the behaviour of its people and the intra- and inter-organisational networks they adopt' (Bowman, et al., 2002). The 1990s onwards has been a period in SM of searching for various ways of building competitive advantage based on various organisational configurations.

### **2.3.12.2 Definitions and Scope**

SM is an elusive concept that is hard to define and its interpretations have changed under different periods in its evolution due to environmental changes. An understanding of these realities is essential to understand its value concepts.

### 2.3.12.2.1 Difficulty of Defining SM

SM is a field whose conceptual meaning might appear to be fragile, and even lacking (Nag, et al., 2007), due to various factors, such as, the heterogeneity in its practitioners' backgrounds and training, the intellectual pull of the adjacent fields, and the ever-shifting body of knowledge and theory (Whitley, 1984; Astley, 1985), which serve to dilute or blur consensus. Its participant members come from as diverse traditions as economics, organisational behaviour, marketing and SM and so on (Nag, et al., 2007) and its subjects of interest overlap as diverse fields as economics, marketing, finance, sociology and psychology (Hambrick, 2004). Due to this heterogeneity of themes in SM, Mintzberg, et al. (2009), equated the attempt of defining SM to the definitions of elephant by the 7 blind men in that famous fable, 'the 7 blind men and the elephant', where each defined the elephant the way he felt it. Mintzberg, et al. (2009) suggested 10 points of view (or schools) people have looked at strategy formation, and those view-points are given in the table below:

**Table 9: Different viewpoints of looking at strategy**

<b>School</b>	<b>Definition</b>
Design School	Strategy formation as a process of conception
Planning School	Strategy formation as a formal process
Positioning School	Strategy formation as an analytical process
Entrepreneurial School	Strategy formation as a visionary process
Cognitive School	Strategy formation as a mental process
Learning School	Strategy formation as an emergent process
Power School	Strategy formation as a process of negotiation
Cultural School	Strategy formation as a collective process
Environmental School	Strategy formation as a reactive process
Configuration School	Strategy formation as a process of transformation

### 2.3.12.2.2 Compulsions of Time as a Determinant of the View Point

These different viewpoints seem to be reflecting the needs of different periods in SM evolution. The 'design school' corresponds to the era of corporate strategy in the 1960s. The 'planning view point' started in late 1960s at the time of portfolio management, peaked in the 1970s and waned in the 1980s as the 'competitive strategy' became the norm. Understandably, both these were concerned about how to build strategy rather than what they were. The 'positioning view point' in the 1980s was

more concerned about the contents of a strategy than its formation, because the strategic objective at that time was the organisational positioning in the market. The field becoming more eclectic from 1990s for survival, amidst global competition, the subsequent viewpoints reflect the specific ideas as to what a strategy does to an organisation, more than anything else. The 'entrepreneurial school' thought that it was best the entrepreneur as a visionary creates the strategy, whereas the belief of the 'cognitive school' was that the knowledge of cognitive psychology should inform the strategic mindset of the creators. The following 4 schools-'learning', 'power', 'cultural', 'environmental'- view strategy as something to be opened for many actors and forces. To the 'learning school', strategy is something that evolves, as the world around is too complex to be captured in one go, whereas the 'power school' believes that strategy formation is a negotiation process by conflicting groups within an organisation, as they deal with the external environment. The 'cultural school' believes that strategy formation should be made to evolve through the culture of the organisation and as such the whole process to become something collective and cooperative. For the 'environmental school', strategy formation is a reaction to the situations in the external environment. The 'configuration school' looks at strategy as something to be built by integrating all the other viewpoints into distinct stages of the process of strategy formulation in a time sequence into describing the life cycles of organisations so that the strategy could be used to help transforming of organisations. The most popular today are the configuration school and the learning school, and they 'have really taken off in recent years' (Mintzberg, et al., 2009). The popularity of the configuration school, which is only seen in practice, according to them, is because strategic transformation is a pressing need today. The learning school is popular in the guise of 'strategic learning' and 'dynamic capabilities' because they have been important in organisations today (Mintzberg, et al., 2009).

### **2.3.12.3 Evolution and Proliferation**

The following is a short summary of SM evolution and proliferation to understand how its value concepts have evolved.

#### **2.3.12.3.1 Strategic Belief as a Determinant of View Point**

The presence of diverse definitions in no way has undermined the agreement among the participants regarding a shared motivation of the discipline-the discovery of why

certain firms are successful while others are not (Guerras-Martin, et al., 2014). The diverse opinions as to how to make an organisation successful explains the diversity in view-points. SM is fundamentally concerned with the success or failure of the firm (Rumelt, et al., 1994) and therefore depending on the strategic belief on where the success lies, internally or externally, the strategic focus has changed. Hoskisson, et al. (1999) describes the history of SM evolution with the help of a metaphor of two pendulums, one oscillates between an internal and external focus in strategy, and the other between micro and macro concern in the internal organisation. Guerras-Martin, et al. (2014) captures the history of SM in a two-dimensional grid that explains the behaviour of SM along those two dimensions with 4 view-points as: internal-macro, internal-micro, external-macro, and external-micro.

### **2.3.12.3.2 Scope Dimensions Describe SM Evolution**

In the 1960s, the scholars such as Chandler and Ansoff, who studied strategy as organisational theory taking the whole organisation as unit of analysis, were taking a macro viewpoint of strategy, whereas Cyert, March and Simon who studied certain aspects of management in organisations were taking micro viewpoints, thereby contributing to theory (Guerras-Martin, et al., 2014). The evolution of SM since 1990s can also be described using the same metaphor. One internal-macro view point during this period has turned towards a Resource Based View (RBV) of the firm, with a belief that the possession of valuable resources is the source of competitive advantage. Another internal-macro viewpoint has been the Knowledge Based View (KBV), which advocates intangible knowledge as the source of competitive advantage (Nonaka, 1994; Grant, 1996). A view that is covering both internal and external macro viewpoints is to focus on dynamic capabilities with a view to improve resources on a continuous basis to match organisations to environments (Teece, et al., 1997; Wang & Ahmed, 2007). Another similar stream of thought is 'resource orchestration', which deals with the subject of how to create resources and capabilities through managerial action, by going beyond the mere possession of resources (Sirmon, et al., 2007; Sirmon, et al., 2011). As an internal-micro viewpoint, a more recent line of research has come up since 2005 and that focuses on behavioural aspects of individuals to see how they impact strategy (Felin & Foss, 2005; Powell, et al., 2011). The intention behind this stream of research is to apply the knowledge of psychology and organisational behaviour to analyse strategy through

assumptions on human cognition, emotions and social behaviour (Powell, et al., 2011). As for the external-micro viewpoint, the work of Austrian economists shifts the external focus on the macro picture to a micro one, specifically to the uncovering of opportunities available outside the organisation through economic agents, as the market evolution is difficult to predict in advance (Guerras-Martin, et al., 2014).

### **2.3.13 Theoretical Insights from Strategic Management**

The SM value insights have to be elicited by defining certain SM concepts in the larger context of value co-creation.

#### **2.3.13.1 Competitive Advantage as a By-Product of Value Co-Creation**

The foregoing discussion revealed that the focus of SM now is on competitive advantage. And that, understandably, is to create sustainable maximum value capture or maximised value-in-exchange. That sustainable maximised value-in-exchange is only possible through the co-creation of higher value-in-use is already known, the competitive advantage can be interpreted as a favourable position an organisation may enjoy over its competitors, on top of such higher co-creation of value-in-use in the selected service. Thus, the competitive advantage in SM can be viewed as a by-product of better value co-creation than competition, and the theories and practices of SM as serving the purpose of better value-co-creation. Since the theory that the primary purpose of business is 'creating and maintaining value' (Conner, 1991) is common to the public domain as well, this can be expanded to state that the 'primary purpose of all institutions is to create and maintain value'.

#### **2.3.13.1.2 Need to Ensure Future Value Creation through R&D**

But, since SM is also concerned today on 'future value' into external perspectives than current competitive advantage, as Hoskisson, et al. (1999) and Guerras-Martin, et al. (2014) stress, this has to be further extended including future value. The importance of the external perspective beyond competitive advantage becomes more relevant to organisations today particularly in their efforts to deal with the uncertainties related to technology and changing markets. The method used generally by business organisations to handle such uncertainty is to forecast future customer value expectations through the work of R&D departments. The aim of R&D work translates to 'value anticipation' in the value domain. As such, the concern on

environmental uncertainty can be captured in the domain of value, if continuous value anticipation is made part of the value agenda along with value creation and value maintenance. As this SM principle is valid, amidst rapid technology advancements and environment changes, across the business and public divide, the above statement has to be included with this to make the next theoretical principle of the current theoretical framework.

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TP49 The primary purpose of all institutions is to co-create and co-maintain value and co-anticipate future value on a continuous basis.

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Since, current value creation and maintenance being the most important tasks for survival for the vast majority of organisations, it is natural that they would generally consume the most resources, efforts and time, pushing value anticipation into an inferior position. It is better, therefore, to maintain a specialized department making value anticipation as its only priority. Hence, the next theoretical principle would be:

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TP50 Value anticipation must be the job of a specialised institutional R&D department.

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### **2.3.13.1.3 Relevance of the Configuration and Learning Viewpoints**

Turing to more specific insights from SM, this review sees the configuration and learning viewpoints at strategy (Mintzberg, et al., 2009), the most relevant in the current context: the former because of its ability to help transformation, and the latter for the relevance of learning in the task at hand. Transformation, the final aim of configuration, which is also the primary aim of the solution proposed by the current conceptual model, is about 'strategy, technology, systems and routines configuring into a thematic, synergetic whole' by way of developing a 'a committed, enthusiastic cadre of people who collaborate seamlessly to get and keep customers who value their services' (Miller & Whitney, 1999). It is against the outsourcing of all sorts, as outsourcing denies the opportunities of learning, and sees the importance of human resources as the chief resource an organisation possesses. Configuration, at a basic level, can be seen as two constellations of intra and interconnected organisational elements, one core and the other supportive, serving the same set of objectives (Miller & Whitney, 1999) among which the causality is characterised by 3 qualities: conjunction, equifinality and asymmetry (Misangyi, et al., 2017):

1. 'Conjunction' expresses the realisation of a given outcome is a result of an interplay between various conditions and therefore proper management of conditions determine the final outcome.
2. 'Equifinality' describes the existence of multiple ways to do something and that there may always be better or more cost-effective ways of doing things.
3. 'Asymmetry' expresses one of the most intriguing aspects of management, that the presence of an attribute that is causally related to a given outcome in one setting may be totally unrelated or even inversely related in another setting (Meyer, et al., 1993).

The presence of these rather complex relationships among organisational elements, causes, and outcomes makes synergetic configuration vital for better value co-creation. According to Miller & Whitney (1999), The core constellation consists of: *mission, fundamental resources, and abilities* to accomplish the mission, and the supporting constellation, of: *systems, processes, structures* etc., where the supporting constellation must be in harmony with the core for better results. They also recommend tasks of a supporting constellation as in the table below:

**Table 10: Supporting Constellation Tasks of a SM configuration**

<b>Task</b>	<b>Description</b>
Directing attitudes	a corporate culture that engenders widespread enthusiasm for the mission, means and market
Directing attention	Information systems that flag issues most central to the mission
Directing influence	A structure that empowers and facilitates collaboration among those performing primary tasks
Directing resources	Strategic plans that identify, fund and staff the most important activities and functions
Directing motivation	Recruiting training and rewarding to support prime tasks and goals
Directing efforts	Routines that delineate and monitor key activities

These supporting tasks can be roughly summarized as-culture, information systems, structure, plans, training & rewarding and performance measurement. While these appear to be system requirements for the current conceptual model, they have to be read in conjunction with the knowledge of the recent SM developments such as Resource Based View (RBV), dynamic capabilities and knowledge management etc. as well, in order to derive integrated insights.

#### **2.3.13.1.4 Resource Based View and Dynamic Capabilities**

RBV emphasizes that the competitive advantage comes from resources and capabilities (Wang & Ahmed, 2007), and specifically, when 'valuable, rare, inimitable and non-substitutable' resources are acted upon with distinctive capabilities (Wernerfelt, 1989). From 1990s onwards, the scholars, who studied the evolutionary nature of resources amidst market dynamism, challenged the RBV to accept the importance of dynamic capabilities (needed to create future value) in place of capabilities (Eisenhardt & Martin, 2000) and since, these two have been treated as complementary to each other, by many scholars (Makadok, 2001; Williamson, 1991). Having identified the need of anticipating future value through a specialized R&D department already, this review has taken the importance of dynamic capabilities into account for sustained value creation.

Another recent development in RBV is the idea of Resource Management (RM) and Orchestration. RM is a process of structuring (acquiring, accumulating and divesting), bundling (stabilizing, enriching and pioneering) and leveraging (mobilizing, coordinating and deploying) of resources for competitive advantage (Sirmon, et al., 2007). While these RM functions are useful for a value creation system, the definition of resources in RBV seems to be less helpful in formulating a clear idea about the term 'resource'. According to Barney (1991), resources are assets, processes, capabilities, attributes, information and knowledge etc. that helps an organisation to improve its effectiveness and efficiency. According to Barney & Arian (2008), resources are the tangible and intangible assets firms use to plan and implement their strategies. These 2 definitions by the same author use different terminology. On top of that, the same author adopts an incoherent categorization which provides less clarity and support for implementation, as: physical capital resources (physical technology, plant & equipment, location, access to raw material); human capital (training, experience, judgement, intelligence, relationships, insights); organisational capital (reporting structure, planning, coordinating and controlling systems, informal relations)(Barney, 1991).

#### **2.3.13.1.5 Theory of Resource Advantage**

A better definition of resources is provided by the theory of Resource Advantage (RA) (Madhavaram & Hunt, 2013), which has its roots in Competence-Based View (CBV) which in turn has its origins in the RBV (Freiling, 2004; Sanchez & Heene, 1996). A



competence is an ability to sustain the coordinated deployment of assets in a way that helps a firm achieve its goals (Heene & Sanchez, 1997). A capability is ‘an ability to sustain the coordinated deployment of assets in a way that helps a firm achieve its goals’ (Winter, 2003). Dynamic capabilities are ‘the antecedent organisational and strategic routines by which managers alter their resource base to generate new value creating strategies’ (Grant, 1996). Similarities make competencies and capabilities practically interchangeable (Day, 1994; Hunt & Madhavaram, 2006). Conceptually, the RA theory is a combined form of the RBV, and the ‘Heterogeneous Demand Theory’, which views intra-industry demand as ‘significantly heterogeneous with respect to consumers’ tastes and preferences’, and firms as ‘combiners of heterogeneous, imperfectly mobile entities that are labelled as resources’ (Madhavaram & Hunt, 2008). The RA theory classification is informed by research including marketing, and therefore, is compatible with SDL classification of operand and operant resources. That classification identifies 4 clear categories of operant resources as: human, organisational, informational and relational (Hunt, 2004). This basic classification is expanded here also with inputs from the support constellation proposed by Miller & Whitney (1999), and adopted as the resource view of the current theory framework, as below:

**Table 11: Operand and Operant Resources of an Organisation**

<b>Category</b>	<b>Sub-category</b>	<b>Resources</b>
Operand	physical	Financial, raw material, equipment, facilities etc.
Operant	human	Individual knowledge, skills, capabilities etc.
	Organisational	Technology, processes, PMM systems, culture etc.
	Informational	Atomic and integrated information about organisation
	Relational	Stakeholder networks

### **2.3.13.1.6 Knowledge Based View**

Knowledge-Based View (KBV), another development of RBV (Roos, 1998; De Carolis, 2002), which treats knowledge as the premier strategic operant resource, can also be included in the above categorization of resources. Madhavaram & Hunt (2008) propose a hierarchy of operant resources with 3 layers from top to bottom as: Interconnected, Composite and Basic: Interconnected being the most complex form of operant resources that integrates the entire organisation, providing more strategic benefit than the basic resources at the bottom, this hierarchy offers a

framework that is compatible with the configuration of core and supporting constellation proposed by Miller & Whitney (1999). When both are read together, it becomes clear that, the interconnected resources or core constellation identify the most high-level operant resources of an organisation. First and foremost, these include the mission or the value portfolio. Culture, information system, PMMS, learning skills, knowledge, capabilities, competences can be considered as the important integrated operant resources of a value eco-system. Since, the requirements of the value portfolio, processes, and PMM have already been included, the other insights qualify to be theoretical principles in our theory framework:

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TP51 Sufficient operand resources and operant resources must be present to accomplish sustained value co-creation.

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TP52 Operant resources at the top level of an organisation are more of a strategic nature and operand resources at the bottom are of a fundamental nature.

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TP53 Organisational structure should enable resource orchestration from bottom to top empowering and facilitating collaboration of tasks at each level.

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TP54 A consolidated culture should bind all resources in a service eco-system.

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TP55 A value eco-system must have an all-purpose information system that provides atomic as well as integrated information of the entire system.

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TP56 A value eco-system must have a capability enhancement system connecting all parts of the system holistically.

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## **2.4. Integrating the Review Outcome into A Theory Framework**

The outcome of the literature synthesis conducted above, to find the determinants that fulfil the requirements of Dubin's (1978) 4 pillars of theory, is 56 theoretical principles. With those in hand, the next step is to categorise these theoretical principles according to the 4 pillars to see whether they fulfil the basic requirements of the pillars. There are 18 theoretical principles in the framework which answer the question 'what' related to VC, or in other words, describe the constituent elements of the framework of VC. For ease of reference, these principles were identified as the Definitive Principles (DP) of VC and are listed below with a serial number for each theoretical principle for easy identification. Taken together they define and describe the basic theoretical principles of VC reasonably without identifiable gaps and therefore can be taken as to fulfil a part of the Dubinian (1978) requirements.

**Table 12: Definitive Principles of Value Creation**

<b>No.</b>	<b>Definitive Principle</b>
DP1	All offerings by suppliers are services (TP1)
DP2	A service is a value proposition for potential value co-creation for the benefit of the suppliers and users (TP2)
DP3	Value co-creation is the creation of value-in-use by the suppliers and users of services (TP3)
DP4	Value-in-use is the total benefit enjoyed by the user while using the service (TP4)
DP5	An individual who participates in value co-creation is an Actor (TP20)
DP6	An Actor is an integrator of operand and operant resources in co-creating value (TP21)
DP7	Operand resources are the resources acted upon by the Actors in resource integration (TP22)
DP8	Operant resources are the resources the Actors are armed with in resource integration (TP23)
DP9	Human resources are the Actors who integrate operand and operant resources to create value propositions (TP24)
DP10	A Stakeholder group represents a category of Actors who have a similar function in a service eco system (TP35)
DP11	An institution is a form of organisation of actors and resources governed by humanly devised rules, norms, meanings, and logic that enable and constrain human action for the purpose of value co-creation (TP27)
DP12	Value-in-exchange is the value transferred from the user to the supplier in lieu of the service supplied (TP6)
DP13	A value network is a bundle of integrated processes connecting the entire value chain around an institution pertaining to a value proposition interacting through technology (TP29)
DP14	A service eco system is an integrated, self-contained, and self-adjusting network of value creating nodes with shared institutional logics engaged in mutual value co-creation through service exchange (TP30)
DP15	Total value capture of an institution is the difference between the cumulative aggregate value-in-exchange received and the cumulative aggregate value-in-exchange supplied (TP15)
DP16	Total value creation within an organisation is the difference between the cumulative aggregate value-in-use supplied and the cumulative aggregate value-in-use received (TP16)
DP17	Public value is value-in-use experienced by a public user with respect to single service offering by a public institution (TP44)

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DP18 Public values are values-in-use experienced by a public user that are common in more than one service offerings by an institution or institutions (TP45)

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The next step in the process is to identify the theoretical principles which would answer the question ‘how?’ in a Dubinian (1978) sense. There are 22 theoretical principles in the framework that can be put under this category. As they establish and elaborate the relationships among the constituent elements in the framework they were identified as Elaborative Principles (EP) of VC and are listed in the table below each with a serial number.

**Table 13: Elaborative Principles of the Value Co-Creation Framework**

No.	Elaborative Principle
EP1	The real value in all service offerings resides in value-in-use (TP5)
EP2	The creation of value-in-use happens in the realm of user's experience (TP7)
EP3	Value-in-use is derived by the user personally and individually (TP10)
EP4	Value-in-use is derived by the user phenomenologically (TP9)
EP5	The derivation of value-in-use requires the user to possess either tangible resources or intangible resources or both (TP8)
EP6	The measurement of value-in-use must be phenomenological (TP11)
EP7	The measurement of value-in-use must be at an individual level (TP12)
EP8	Low value-in-use may lead to reduced cumulative value-in-exchange in the long term (TP13)
EP9	High value-in-use may lead to increased cumulative value-in-exchange in the long term (TP14)
EP10	A supplier generally looks to maximise value-in-exchange whereas a user would generally look to have it minimised (TP17)
EP11	A user generally looks to maximise value-in-use whereas a supplier would also look to maximise it in the long term (TP18)
EP12	An institution can maximise its value co-creation as well as its value capture by optimising its utilization of resources (TP36)
EP13	Strategic benefit for an institution comes from its operant resources (TP25)
EP14	Value co-creation needs end to end processes from users to the first line of suppliers connecting all value co-creating nodes in the value chain horizontally (TP19)
EP15	Actors in the process of supplying integrated services generally organise themselves in the form of institutions (TP26)
EP16	Institutions in the process of value co-creation build value networks (TP28)

EP17	A service eco system/value network/institution should not undermine any of the values of the public or world-at-large or the future generations (TP47)
EP18	The ultimate aim of a service eco system is public values (TP46)
EP19	Shareholders in business institutions and government politicians in public institutions are both passive stakeholders whose value expectations are not managed in the institutional value portfolio (TP48)
EP20	The primary purpose of all institutions is to co-create and co-maintain value and co-anticipate future value on a continuous basis (TP49)
EP21	PMM may be dependent on the contingencies of the institution (TP41)
EP22	Operant resources at the top level of an organisation are more of a strategic nature and operand resources at the bottom are of a fundamental nature (TP52)

The steps remaining in the process now are to find the theoretical principles related to the 3<sup>rd</sup> and 4<sup>th</sup> pillar of the Dubinian (1978) requirements. The 3<sup>rd</sup> pillar is related to the question ‘why?’ and the elements under this should ‘explain the underlying psychological, economic, social, process and other dynamics that govern the relationships including assumptions.’ And the 4<sup>th</sup> pillar is connected to the questions, ‘who, where, when?’ and the elements under that should set out the ‘contextual factors/boundaries limiting the generalisability of the theory’. In fact, both these pillars set out the limitations under which the proposed theory would be valid. Since the current theoretical principles were derived for all situations of VC, without being bounded by any external or contextual factors, these pillars are not applicable in the current theoretical framework. In this sense, the proposed theoretical framework, can be argued as a theory that is truly generic and implementable in any type of organisation for VC. Since the process of implementation needs a conceptual model as a guide, and this research also needed a conceptual model, the current review also derived certain principles related to practical implementation of the theory. The review yielded 16 such principles and they were categorised as Implemental Principles (IP) of VC and each is given a serial number for easy reference below:

**Table 14: Implemental Principles of Value Creation**

No.	Implemental Principle
IP1	A value portfolio of value expectations of all stakeholder groups must be the starting point of value co-creation in a value network (tp38)
IP2	Value expectations of all stakeholders must be included in a value network for sustainable value co-creation (TP33)

IP3	The internal operations of the organisation should be aligned with the value expectations of the stakeholders to maximise value co-creation (TP32)
IP4	An institution must have a major stakeholder for whose value benefit the institution primarily exists (TP34)
IP5	Organisational structure should enable resource orchestration from bottom to top empowering and facilitating collaboration of tasks at each level (TP53)
IP6	A Performance Measurement and Management System is an essential part of a value network (TP37)
IP7	All performance measures should be cascaded down from the stakeholder value portfolio vertically down to the individuals for alignment (TP39)
IP8	The components of a PMMS must be: a system of performance metrics that is hierarchical and integrated; a performance management information system that is integrated and all-purpose; a compensation system that is performance-based; and a capability enhancement system for all Actors (TP40)
IP9	The PMMS must deliver distributive justice and procedural justice to sustain the co-creation of value (TP42)
IP10	Correcting the subjectivities in performance evaluation must be put through a process to evolve continuously (TP43)
IP11	Sufficient operand resources and operant resources must be present to accomplish sustained value co-creation (TP51)
IP12	A value eco-system must have a capability enhancement system connecting all parts of the system holistically (TP56)
IP13	Every node of a value network must be fully connected by means of ICT (TP31)
IP14	A value eco-system must have an all-purpose information system that provides atomic as well as integrated information of the entire system (TP55)
IP15	Value anticipation must be the job of a specialised institutional R&D department (TP50)
IP16	A consolidated culture should bind all resources in a service eco-system (TP54)

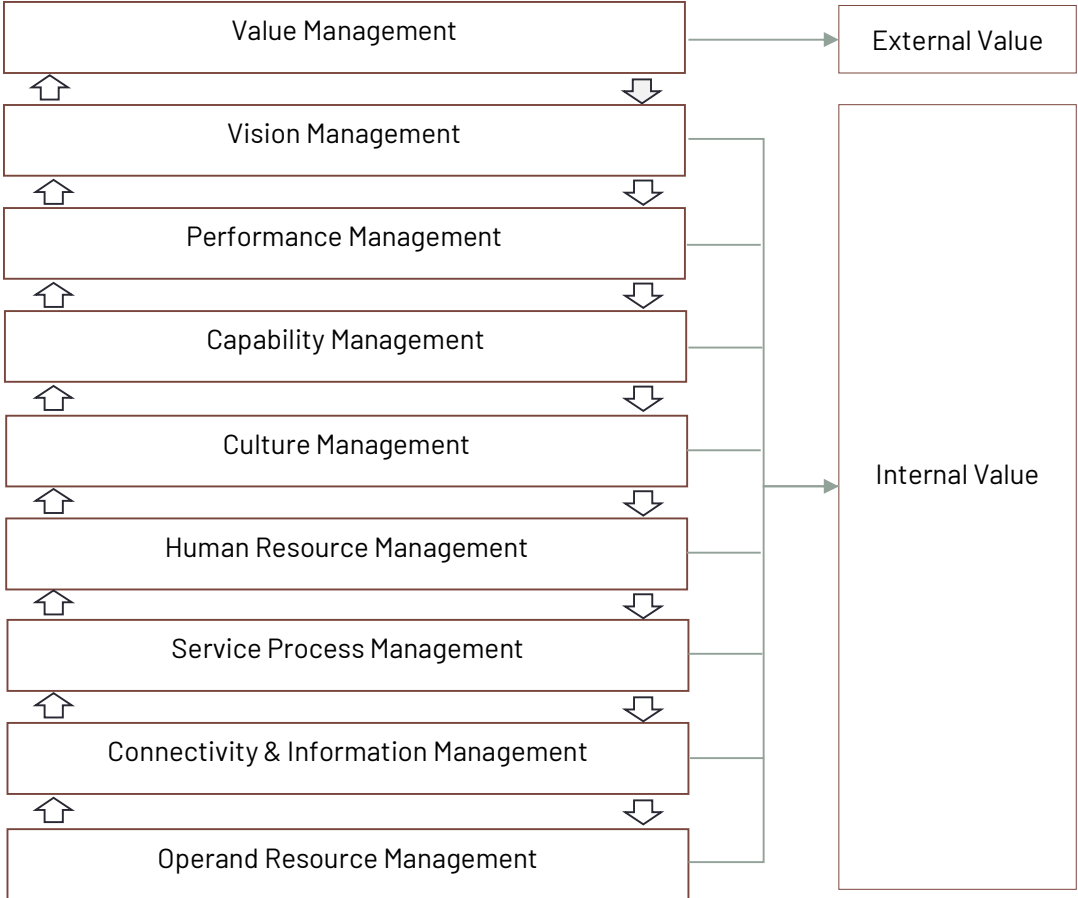
## 2.5. Building the Generic Conceptual Model

While the Definitive and Elaborative Principles provide the foundation of the current theory framework, the Implemental Principles set out the ways of how to put those theoretical principles to work. Hence, it is logical to think that the principles captured in IPs should be the building blocks of the conceptual model on the foundation built by the DPs and EPs. EP14 states that VC needs end to end processes through the entire value chain horizontally. DP13 states that this value chain is a value network. DP14 talks about a service eco-system that is created for the purpose of

providing services along the value chain. These principles read together mean that the value is co-created along the entire value chain that cuts across the full value network and processes connect every node in it. Such configuration pre-empts any incidence of managing in isolation and ensures end to end connectivity along the entire value chain horizontally. What happens along the entire value chain is a series of value co-creation instances along processes (EP14), in the form of services involving value suppliers and beneficiaries at each node (DP2). When these are read in conjunction with IP5 which states that the organisation structure should enable resource orchestration from bottom to top empowering and facilitating collaboration of tasks at each level, it means that there should be levels in the organisational structure, and each such level or layer (for parsimony) has is a horizontal value chain along the entire network. These principles put together picture a stacked up or layered architecture, where value creation at each layer is well coordinated along from end to end through processes. Since, the resources which are more operant in nature should come on top of the resources which are of more fundamental in nature (EP22), the higher the operant nature of a resource it should feature the higher in the layered architecture. Now, it is easy here to figure out what is the bottommost layer of the architecture. Since the raw physical resources are of the most operand in nature in any value network or organisation, we can safely conclude that the bottommost layer is 'Operand Resource Management'. IP13 specifies that every node of a value network is fully connected by means of ICT, which is partly operand and partly operant, the 'Connectivity & Information Management' is the 2<sup>nd</sup> layer from the bottom. Since the entire value chain should be connected through end-to-end service processes (DP13), it follows from the nature of the 1<sup>st</sup> and 2<sup>nd</sup> layers that the 3<sup>rd</sup> layer should be 'Service Process Management', as service processes are generally built on physical resources and ICT. According to DP9, Human Resources are the Actors who integrate operand and operant resources to create value propositions and it is human resources who integrate the physical resources (1<sup>st</sup> layer), ICT connectivity (2<sup>nd</sup> layer) and service processes (3<sup>rd</sup> layer) to create value propositions for the beneficiaries, and therefore, the 4<sup>th</sup> layer becomes the 'Human Resource Management'. The other system requirements under the theoretical principles were: a PMMS (IP6); a capability enhancement system (IP12); and, a consolidated culture management (IP16). It is logical to think that, the capability enhanced system should be guided by the PMMS and the culture should be

shaped by the capability enhancement system. Since the resources more operant in nature come above as a general rule, the 5<sup>th</sup> layer becomes the 'Culture Management'; the 6<sup>th</sup>, 'Capability Management'; and, the 7<sup>th</sup>, 'Performance Management.'

According to IP4, there should be a major stakeholder for whose value benefit the institution primarily exists. According to IP7, all performance measures should cascade down from the major stakeholder value portfolio vertically down, for alignment. These two principles make it clear that the topmost layer should be about the major stakeholder value management and therefore it was named as the 'Value Management' Layer. Since these values should be elicited from the major stakeholder outside the organisation, there should be another layer in the architecture, to coordinate the work between the value management and performance management by way of providing policy and vision for the layers below and to fill this gap a layer by the name 'Vision Management' was proposed. And the generic conceptual model proposed is given in the figure below:



**Figure 2: Generic Conceptual Model**



The External Value is dependent on the independent variable 'Value Management' and the Internal Value is dependent on the independent variables, 'Vision Management', 'Performance Management', 'Capability Management', 'Culture Management', 'Human Resource Management', 'Service Process Management', 'Connectivity & Information Management', and 'Operand Resource Management'.

## **2.6. Chapter Summary**

This chapter on literature review was a synthesis of 6 value related bodies of management literature to extract generic theoretical principles of value creation in the way prescribed by Dubin (1978) identifying basic constituent elements of a generic theory framework that could be used for value creation. The theory framework consisted of definitive, elaborative and implemental principles that could be used for value creation in any organisation irrespective of its type or scale. As the theory framework built had implemental principles to support implementation in addition to theoretical principles, it was possible to develop an initial conceptual model for value creation in the form of a generic value creation model architecture. Since this research was about developing a conceptual model from the first principles as there was no previous theory or literature on generic value creation to be found, the proposed conceptual model yielded by the literature review, the variables and structure were the only generic features in the model. As the value measures differ from a context to another, this generic model will have to be customised (operationalised), by determining value measures under each variable through exploration in the context it is going to be used. This task of operationalisation of the model in the current problem domain will only possible after that exploratory data is available. The next chapter is about research methodology which will be used to accomplish that and the testing of the model that follows.



## 3. Research Methodology

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### 3.1. Chapter Overview

As this research followed from the void that there was hardly any previous theory or literature addressing a problem of the nature or scale of the current one, and had not much literature support for the determination of the variable measurement scales to operationalise the conceptual model, the conceptual model developed through a literature synthesis in the previous chapter made an exploratory study into the problem domain compulsory to ascertain the variable measurement scales of the conceptual model to complete the model before it is ready for testing through a quantitative study. This chapter discusses all aspects of research methodology, starting from the operationalisation of the model till its final testing. It opens with a discussion on applying the model in the problem domain to:

1. Validate its acceptability in the problem domain.
2. Set the background for the remainder of the research process.

This research identifies a generic national school education system as a System of General School Education (SGSE), and the Sri Lankan system as the SGSESL and contextualise the conceptual model using these entities. The validation of the model helps the development of the research purpose, questions and hypotheses. The next subsection is dedicated to the research design- including the research philosophy, approaches, strategy, choices, time horizon, methods of data collection and analysis-which would help finding solutions to the research questions and the subsection ends with a summary of the research design. The next subsection discusses the sampling design including the sample sizes, sampling schemes and sampling techniques used for data collection in both qualitative and quantitative phases of the research.

## **3.2. Validation and Contextualisation of the Conceptual Model**

The following subsections attempt to validate and contextualise the generic conceptual model situating it within an SGSE.

### **3.2.1 An SGSE in the Light of Definitive Principles**

This subsection attempts to contextualise the generic conceptual model by seeing an SGSE of a country in the light of the definite principles of the theory framework.

#### **3.2.1.1 Final User of SGSE Services is the General Public**

Since every offer under the definitive principles is a service (DP1) in the form of value propositions for the users for potential value co-creation (DP2), public education becomes a service under the proposed theory. Value co-creation is the creation of value-in-use in the realm of user's individual experience by the suppliers and users together (DP3) and the value-in-use is the total benefit enjoyed by the user while using the service (DP4). An SGSE value network is a mesh of value creating nodes activated by the Actors (DP5), who in the process integrate operand and operant resources (DP6) before coming to the final users. The Actors who do the task of resource integration here are educators, administrators and educationists. The students here are not the final users of services offered, but they become included in value proposition offered. It is the general public who co-create value with an SGSE becoming the final users of educational services. This is quite contrary to the widely accepted belief that the final user of public educational services are the students or parents. It is the public not parents who co-create value using the value propositions in which educated students are part of. The proposed theory puts things in to real perspective by establishing the fact that forging future citizens out of students is not a service done unto students themselves or their parents, but to the country at large.

#### **3.2.1.2 Importance of Operant Resources**

Operand resources are the resources acted upon by the Actors (DP7) in co-creating value. The operant resources are the intangible resources the Actors are armed with in resource integration (DP8), like the skills, competences, abilities, value expectations, educational programmes etc. 'Human resources' is the general term used to refer to all Actors who participate in value co-creation (Dp9). The actors who have a similar function in the service eco-system represent one stakeholder group

(DP10), and educators, educationists, administrators, parents, and the public etc. are the stakeholder groups in an SGSE.

### **3.2.1.3 An SGSE as a Value Network**

As an institution has a certain set of parameters that 'enable and constrain' human action for the purpose of value co-creation (DP11), the major functional departments such as the curriculum developer, text-book printer or the policy maker each can be interpreted as an institution, in the large SGSE value network, which connects all such institutions through integrated processes (DP13). This is how, SGSESL and SGSEUK become the school education value networks of Sri Lanka and the UK respectively. Since a service eco system is an integrated network of value creating nodes with shared institutional logic engaged in mutual value co-creation through service exchange (DP14), the education service eco-system of a country is the network of all education value networks, such as the school system, university system and technical school system etc.

### **3.2.1.4 An SGSE value-in-Exchange is Paid by the Public**

The value-in-exchange is the value that flows from the user to the supplier for the services offered (DP12), and within an institution, value-in-exchange manifests in two forms as: supplied and received; where value-in-exchange supplied is the salaries/payments to the employees or suppliers by the institution, and value-in-exchange received is the prices paid by the users to the institution. In some public institutions like public education, value-in-exchange received comes in an indirect way in the form of government annual budgets for which the users (general public) pay through the agency of the government on an annual basis (This again confirms that the final user of educational services is the general public not parents). The total value capture of an institution is the difference between the cumulative aggregate value-in-exchange received and cumulative aggregate value-in-exchange supplied in a given period (DP15). In the case of business institutions this accrues to the shareholders and in public institutions to the government. The total value creation within a SGSE is the difference between the cumulative aggregate value-in-use supplied and the cumulative aggregate value-in-use received in different forms by it within a specific period (DP16). Public value by an SGSE is the specific values-in-use to be co-created by the public from the services offered (DP17). In contrast, the SGSE

'public values' are the aspects of value that are commonly expected of the public services (GP18), e.g., when educational services produce human resources with 'creativity', and health services, with 'health', both services produce people with one of the common 'public values' - 'efficiency'.

### **3.2.2 An SGSE in the light of Elaborative Principles**

This subsection attempts to see an SGSE in the light of elaborative principles.

#### **3.2.2.1 SGSE Value Co-Creation Happens Outside School Boundary**

The elaborative principles that: 'real value in all service offerings resides in value-in-use' (EP1); 'value-in-use happens in the realm of user's experience (EP2); 'value-in-use is derived by the user personally and individually' (EP3); 'value-in-use is derived by the user phenomenologically' (EP4); 'the derivation of value-in-use requires the user to possess either tangible resources or intangible resources or both' (EP5) enable a whole new way of looking at public education. Under these principles, human resources produced by schools are only value propositions to be converted into value-in-use through co-creation phenomenologically and individually by the general public quite outside the school.

#### **3.2.2.2 Current Value Co-Creation Depends on Past Value Creation**

In order to maximise value-in-use, not only must the value propositions offered by public education be rich in value ingredients, but also must the general public be resourceful enough (EP5) to phenomenologically co-create value. As the resourcefulness of the general public to co-create value-in-use at a given time is dependent on the richness of the value-in-use made to be created by public education during the years before, the ability of a country's value co-creation becomes a function of the cumulative value-in-use produced by its SGSE in the past. This might explain why a country with a poor historical performance record in public education finds it difficult to achieve development, and at the same time, why public education is important for a country for development.

#### **3.2.2.3 Less Value Co-Creation Means Low Economic Development**

Since value-in-exchange depends on the amount of cumulative value-in-use (EP8 & EP9), a SGSE will not be able to attract increased value-in-exchange (annual

educational budget and public fees) in the long term, if the cumulative value-in-exchange over time is less. This is easily verifiable in the fact that the less accumulated value-in-use leads to less development, and that in turn can reduce the educational budget in the long term. Since, value co-creation everywhere is done by the past produce of a given SGSE, less value co-creation will reduce budgets in all other sectors in the long-term leading to economic impoverishment.

#### **3.2.2.4 Value Co-Creation Not Measurable Through Exams**

The principles that value-in-use has to be measured phenomenologically (EP6) at an individual level (EP7) by the members of the public challenge the popular belief that real value is created inside schools, and measured through standardised tests. The new theory proposes that educational value can only be measured by the real users of the educational services when they co-create value enjoying the services of an SGSE in real life situations.

#### **3.2.2.5 Vice and Crime as Results of Poor Value Propositions**

The institutional and network nature of public education (EP15, EP16) has already been discussed. An important principle of the proposed theory is the requirement of not undermining public values by any service eco-system (EP17). This includes values upheld by the country, world-at-large, and posterity. Since an SGSE is responsible for providing human resource services for a country, who could co-create public values, the high accumulated negative value-in-use in the form of crimes or wrong doings against people and environment or society is a sign of poor value propositions which will offset any positive value contributions to the society and external environment.

#### **3.2.2.6 Resource Optimisation Needs End-to-End Processes**

Another principle captures the general desire of any institution to maximise its value-in-exchange whereas, the general desire of a beneficiary is to minimise it (EP10). This is true even in the case of a public institution, as it would like to have more funds, whereas the general public would like to minimise the budget under general circumstances. But, on the other hand, both the supplier and the user would look to maximise value-in-use (EP11) because, it is only then that a supplier may be able to attract more value-in-exchange in the long term. One way to maximise value co-creation and value capture is to optimise the utilisation of resources (EP12) and

the strategic benefit of an institution comes from its operant resources (Ep13). Even without having to face competition, this principle is relevant to public institutions as well, as value co-creation today is largely determined by the strength of operant resources. Resource integration must be managed along processes of value co-creation that flows from the final users inwards connecting value co-creating nodes as appropriate (FP14). This can work to end current isolated management in SGSEs.

### **3.2.2.7 Politicians are Passive Stakeholders in an SGSE**

The principle that the ultimate aim of a service eco-system is public values (EP18) has already been discussed. The value co-creation is done by the public. It is only that, the public pay for value-in-exchange through the agency of politicians and hence latter's value expectations are not managed in an SGSE (EP19). And this reduces the politicians to passive stakeholders in an SGSE. This is contrary to all available value creation frameworks which assign an important role for politicians.

### **3.2.2.8 Performance Management Depends on Contingencies**

A PMMS is an essential component in a value network. A PMMS should be dependent on the contingencies of the network or its stage of development with respect to its value co-creation status (EP21). But this does not mean a PMMS of an SGSE differs from another completely. There can have common and different elements depending upon the commonalities and differences.

## **3.2.3 An SGSE in the Light of Implemental Principles**

This subsection attempts to see an SGSE in the light of implemental principles.

### **3.2.3.1 Need of Stakeholder Value Portfolios**

The first 3 IPs prescribe that: value expectations of all stakeholder groups must be the starting point of value co-creation efforts (IP1); value expectations of all stakeholder groups are needed (IP2); and, the entire network should be aligned with the value expectations of the stakeholders to maximise value co-creation (IP3). Since the value expectations of passive stakeholders are not managed (EP19), these principles prescribe that all non-passive stakeholder value expectations should be included in the value portfolios for maximising value co-creation. Hence, the active SGSE stakeholder groups should be identified and included in the value portfolios.



### 3.2.3.2 SGSE Stakeholders

Students, parents, politicians, educators, policy makers, curriculum developers, intellectuals, educationists, general public, and the posterity are the potential stakeholders of an SGSE. The politicians and students are not active stakeholders have been made clear already. The parents' role in value co-creation too is an inactive one, as they do not participate actively in value co-creation in schools or in the society. In fact, their value expectations are expected to be a subset of the value expectations of the general public. The educators are the actors who participate actively in value co-creation in schools and in various other agencies and they belong to 4 general educator categories in an SGSE, as: teachers, principals, teacher educators and administrators. Educationists represent the group of active stakeholders who are veterans in the field of education, whose vision and ideas matter in policy making and curriculum building etc. The curriculum developer and policy maker roles are generally passive stakeholder roles, as those roles are played by the educationists. Intellectuals of a country represent an active stakeholder group as they always have a high stake in a country's education. As explained earlier, the country and the posterity are the ultimate owners of an SGSE, as whatever the final educational outcome has to be borne by the country and the posterity. The determination of who represent the country representative was challenging. Though the general public are the most active group in value co-creation, the level of knowledge and understanding of a random sample of people from the public would surely have been a questionable choice as country representatives, because of the perceived lack of competence in such a group to pass value judgements on behalf of a country. To overcome this difficulty, the most prudent approach seemed to be to consider the educationists and intellectuals as the representatives of the country, as they are intelligent active co-creators of educational value. Thus, the two active stakeholder groups are the Educators and the Educationists & Intellectuals. A full description of stakeholder groups, their roles, and status is given in the table below:

**Table 15: SGSE Stakeholder Groups**

<b>Stakeholder Group</b>	<b>Role</b>	<b>Status</b>
Students	Part of the service	Passive
Parents	Part of the owners	Passive
Educators	Co-create value	Active
Government politicians	Mere representatives of public	Passive

Country/posterity	Owners	Passive
Intellectuals & educationists	Key stakeholders	Active
General public	represented by key stakeholders	Passive
Policy makers/programme developers	Mere representatives of key stakeholders	Passive

### 3.3. The Conceptual Model in the Problem Domain

The above discussion to validate and contextualise the conceptual model in an SGSE yielded 14 validated applied principles which would help the design of the research, and those principles are given in the table below:

**Table 16: Generic applied principles valid in an SGSE**

No.	Validated Applied Principle
1	Final user of an SGSE services is the General Public.
2	Operant Resources are important for educational value co-creation.
3	An SGSE is a value network.
4	An SGSE value-in-exchange is paid by the general public.
5	Educational value co-creation happens outside school boundaries.
6	Current educational value co-creation depends on past value co-creation.
7	Less educational value co-creation means low economic development.
8	Educational value co-creation is not measurable through standardised examinations.
9	Poor educational value propositions result in vice and crime.
10	Resource optimisation needs end-to-end processes.
11	Politicians are passive stakeholders of an SGSE.
12	Educational performance management depends on contingencies of the SGSE.
13	Educational value co-creation needs stakeholder value portfolios
14	Educators and educationists & intellectuals are the active stakeholder groups of an SGSE.

The knowledge on stakeholder groups and validated applied principles above dictate that the variable measurement scales or the value measures or the stakeholder value portfolios (all mean the same) have to be extracted from the 2 active stakeholder groups—educators and educationists/intellectuals. Since the educators are internal to the SGSE they will provide the internal value measures. The external value measures will have to be obtained from the educationists/intellectuals as they are the representatives of the public. And it is after these value measures are learnt the conceptual model will be ready for testing in order to ascertain the applicability of it.

### 3.4. Research Purpose

According to Babbie, social research can serve many purposes, and three of the most popular and useful purposes are exploration, description, and explanation (Babbie, 2010; Robson, 2002). According to Saunders, et al. (2009), exploration is required when the researcher needs to examine a new interest or the subject of study is new. According to Robson (2002), it is used studies to find ‘what is happening; to seek new insights.’ Descriptive studies, according to Babbie (2010), are studies where the researcher observes and then describes what was observed, and the description answer the questions: what, when, where and how. Explanatory studies answer the question: why. The research problem, and the conceptual model operationalization and testing requirements discussed above require that the first phase of the study to explore the problem domain and extract the value expectations of the stakeholder groups in order to operationalize the conceptual model; and, the second phase of the study, to test the conceptual model and hypotheses and describe ‘what is the extent of current value creation?’ and ‘how the variables in the conceptual model are related?’ and ‘what are the recommendations for policy change and future research’. So, the purpose of the current research is a mix of exploration and description. So, the twin purpose of conducting this research is:

1. **To explore** the problem domain and extract the value measures under each internal variable from the educators, and value measures under each external variable from the educationists/intellecuals to finalise the conceptual model.
2. **To describe** the extent of SGSESL current internal and external value creation in order to ascertain the model’s usability in the practical world, by way of testing the model and the hypotheses.

### 3.5. Research Questions

The first purpose of finalising the value creation model architecture (conceptual model) needed answers to the research questions:

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RQ1: What fundamental problems have the SGSESL had making its internal value co-creation problematic over time?

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RQ2: What essential value co-creation measures should the SGSESL possess in order to optimise its internal value creation?

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RQ3: What values do the serving educators expect from the SGSESL to maximise its internal value creation?

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RQ4: What values do the intellectuals & educationists expect the students to possess in order to maximise SGSESL external value creation?

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Testing the conceptual model with the data collected in the descriptive stage of the research was expected to provide answers to the research questions:

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RQ5: What is the impact of educator value expectations on the final internal value creation?

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RQ6: What are the correlations among educator value expectations?

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RQ7: What is the impact of lower layer educator value expectations on the final internal value creation vis a vis the impact of upper layer educator value expectations on the final internal value creation?

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RQ8: What is the impact of educationist-intellectual value expectations on the final external value creation?

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RQ9: What is the extent of current internal and external value co-creation?

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### **3.6. Research Hypotheses**

A hypothesis is 'a conjectural statement of the relationship between two or more variables' (Kerlinger, 1986); 'a tentative statement about something, the validity of which is usually unknown' (Black & Champion, 1976); 'a proposition that is stated in a testable form and that predicts a particular relationship/s between two or more variables' (Bailey, 1978), which can be proven or disproven by valid and reliable data (Grinnell, 1988). The research questions RQ1-RQ4 lead to the exploratory study and do not contain testable variable relationships. The research questions, RQ5, RQ6 and RQ8 which contain testable variable relationships require hypotheses to find answers to them. RQ5 calls for testing the relationships between educator value expectations and the final internal value creation. RQ8 calls for testing the relationships between educationist/intellectual value expectations and the final external value creation, and the first 2 hypotheses of the current hypotheses design are proposed to represent these 2 relationships as below:

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H1: The fulfilment of educator value expectations has a positive impact on the co-created final internal value.

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H2: The fulfilment of educationist-intellectual value expectations has a positive impact on the co-created final external value.

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The research question RQ6 calls for testing the correlations among the educator value expectations and the next hypothesis representing this variable relationship is proposed as follows:

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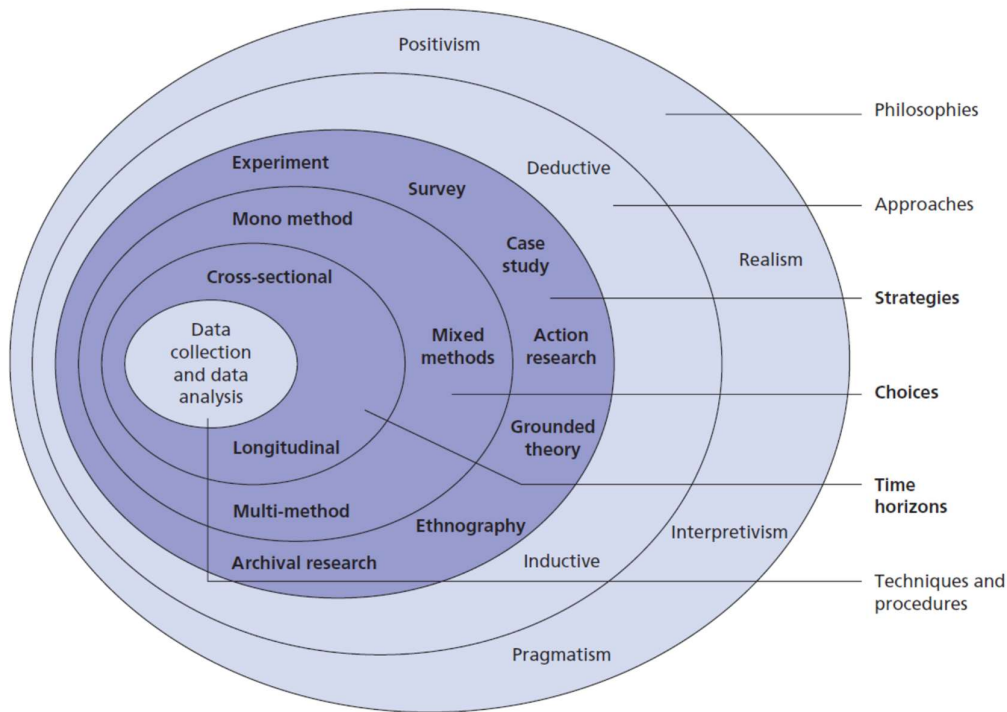
H3 The individual educator value expectations have a positive correlation with one another.

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The research questions RQ7 and RQ9 do not contain testable variable relationships which come under the above definition, and they are research questions which could be resolved with the help of the outcome of the quantitative data analysis.

### **3.7. Research Design**

Having the research purposes, questions and hypotheses identified, the next step it is to set out a plan for conducting the research to fulfil research objectives. Research design is the plan/strategy/road map a research study follows in order to find answers to the research question/s (Kerlinger, 1986; Thyer, 1993). According to Trochim (2005), the research design is the plan for successfully carrying out a research study, and is what 'shows 'how all of the research project work together to try to address central research questions" and is 'the backbone of the research protocol'. According to Jonker & Pennink (2010), a good research design connects the theory, research context, and methodology. According to Saunders, et al. (2009), it is the general plan of how a research study goes about answering its research questions and they conceptualise the steps to be followed in designing a research study pictorially in what they called the research onion, which is shown below. Saunders, et al. (2009) recommend that the process of research design should start at the outermost layer and proceed inwards like peeling off an onion. The two outer layers deal with the research philosophy and research approach. The 4 inner layers deal with research strategy, research choice, time horizon and techniques and procedures, which together describe the methodology of the research.



**Figure 3: Research onion-research design components**

### 3.6.1 Research Philosophy

The fundamental purpose of research in any discipline is the production of knowledge. Without there being a reality and an inquirer into that reality, the knowledge production process simply cannot get started, And the knowledge produced should be acceptable by the 'research canon' in that discipline. A canon is 'a general rule, fundamental principle, aphorism, or axiom governing the systematic or scientific treatment of a subject' (Sousa-Posa & Brewer, 2009). and takes different forms depending on the requirements of the discipline, as: rules (Munck, 1998), procedures (Corbin & Strauss, 1990) etc., as the validity of results would depend on the course of action followed. According to Saunders, et al. (2009), research philosophy specifies certain important assumptions about the way in which the researcher looks at the world and knowledge production. And there are 3 major dimensions with the help of which a certain philosophy could be described, as: ontology, epistemology, and axiology. Ontology describes the nature of reality with respect to the inquirer; epistemology is concerned with the relationship between the inquirer and the reality, the nature of knowledge acquired, and specifically, the mode of inquiry (Hirschheim, et al., 1995); axiology reflects the researcher values in research choices and process (Saunders, et al., 2009).

### **3.6.1.1 Descriptive Dimensions of Philosophy**

The following subsections define descriptive definitions of philosophy briefly.

#### **3.6.1.1.1 Ontology**

Ontology has to do with the nature of reality (Bozkurt & Sousa-Poza, 2005). The way an inquirer perceives reality reflects his or her ontological viewpoint (Allison & Pomeroy, 2000). If the reality is perceived to be external and independent of the inquirer, then that ontology is defined as 'objective', and if the two are dependent and the reality is created through the perceptions and actions of the inquirer, then that ontological position is described as 'subjective' (Saunders, et al., 2009).

#### **3.6.1.1.2 Epistemology**

Ontology and epistemology are related concepts. While ontology describes the nature of reality with respect to the inquirer, epistemology is concerned with the nature of knowledge acquired, and specifically, the mode of inquiry (Hirschheim, et al., 1995) to decide whether it is acceptable knowledge in the given field of study. The inquiry can take 2 fundamentally different forms: it can acquire value-free 'hard facts' without human feelings and attitudes etc. which could be generalised across situations; or, it can acquire value laden human feelings and attitudes etc., which could not easily be generalised across situations or contexts (Saunders, et al., 2009).

#### **3.6.1.1.3 Axiology**

Axiology is concerned with the role the researcher's values plays in the research choices (Saunders, et al., 2009). According to Heron (1996), one's intrinsic values provide the reason for one's own action and one's values are autonomous and 'they stand on their epistemological ground' and need no justification. They are generally relative to one's personal and cultural context. At the same time, they are relevant to the needs and interests of the society as well. In short, values straddle two worlds at the same time. When it comes to research, no research outcome which may be good in itself is ever final, but if it had been put together thoughtfully, it can claim general relevance (Heron, 1996). Thus, the researcher should have axiological skills to be able to articulate 'a set of shared values, as a basis for making judgments of relevance about what they are doing and how they are doing it.' (Heron, 1996) to be able to make the outcome acceptable.

#### **3.6.1.1.4 Philosophical Paradigms**

A certain unique philosophical perspective which could be described in terms of the above descriptive dimensions of philosophy is referred to as 'a philosophical paradigm'. The term 'paradigm' has been defined in many ways: A paradigm represents 'a worldview that defines, for its holder, the nature of the world, and the individual's place in it, and the range of possible relationships to that world and its parts' (Guba & Lincoln, 1994); It is 'an integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools.' (Kuhn, 1962); It is 'a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research' (Bogdan & Biklin, 1998); It is the philosophical intent in undertaking research (Cohen & Manion, 1994); a paradigm is 'one way to look at reality' or 'a systematic system of values' (L'Abate, 2011). The scholarly views about what descriptive dimensions constitute a paradigm vary. A paradigm can be described using: 'a belief about the nature of knowledge, a methodology, and criteria for validity' (Mac Naughton, et al., 2001); ontology and epistemology (Neuman, 2014) ; epistemology, ontology and methodology (Neuman, 2000; Creswell, 2003; Terre Blanche & Durrheim, 1999; Crotty, 1998; Durrheim, 2006); ontology, epistemology, and methodology; ontology, epistemology, methodology, nature of knowledge, knowledge accumulation, goodness of quality criteria, values, ethics, inquirer posture and training (Lincoln & Guba, 2000); ontology, epistemology and axiology (Saunders, et al., 2009). The current research adopts what was followed by Saunders, et al. (2009) and treats methodology as an important dimension which will be discussed under research choices.

#### **3.6.1.2 Popular Research Philosophies**

According to Guba & Lincoln (1994) there are 4 distinct research philosophies as: positivism, postpositivism, critical theory and constructivism. According to Creswell's (2003), they are: postpositivism, constructivism, advocacy/participatory and pragmatism, and he also identifies new developments under the advocacy/participatory viewpoint as feminist perspectives, radicalized discourses, critical theory, queer theory and disability inquiry. According to Saunders, et al. (2009), there are 4 popular paradigms as: positivism, realism, interpretivism and pragmatism. As this research follows the research onion as a design template, these are the paradigms in term of which the current research philosophy is elaborated.



### **3.6.1.2.1 Positivism**

*Positivism* was the philosophical response in the period of enlightenment during the 16<sup>th</sup> and 17<sup>th</sup> centuries to the authoritarian decree that ruled the world in the medieval period, and is predicated on the assumption that there is a single reality that exists quite independent of the inquirer which is apprehensible in its entirety through human experience (Guba & Lincoln, 1994). If a researcher adopts a positivist philosophical viewpoint, he or she is acting like a natural scientist and the research outcome 'can be law-like generalisations similar to those produced by the physical and natural scientists' (Remenyi, et al., 1998). *Postpositivism*, which was borne out of the dissatisfaction with the absolutist view of the certainty of empirical knowledge and other aspects of 'positivistic viewpoint' (Ponteretto, 2005) in a period of 'multiple perspectives and diverse points of view gained ascendancy' (Patton, 2005) in the late 20<sup>th</sup> century, was a somewhat similar yet distinctive disposition. Its argument is that, there is a reality independent of the inquirer but, it is only partially apprehensible (Bozkurt & Sousa-Poza, 2005) for the human intellectual mechanisms are not fully capable of comprehending the reality in its entirety due to the intractable nature of the latter (Ponteretto, 2005). This 'internal' difference helps to explain a distinction between the two: the former stresses 'theory verification' whereas, the latter 'theory falsification' (Lincoln & Guba, 2000). Yet, the two perspectives share much in common as can be seen in other respects: both have a common goal of explaining that leads to prediction and control of phenomena; both stress cause-effect relationships between phenomena that can identified, studied and generalised; both share an objective and a detached role for the inquirer; and, both have nomothetic and etic perspectives about the reality (Ponteretto, 2002), which came to be viewed as limiting in the latter period.

### **3.6.1.2.2 Realism**

*Realism* is a philosophy that is close to *positivism* as its essence is that reality has an existence independent of the human mind and human senses can lead to grasping the reality. *Realism* is often described in contrast to *idealism*, the philosophical position which opines that only the mind and its contents exist. On the opposite, *Realism* assumes a scientific approach to knowledge production (Saunders, et al., 2009). According to Saunders, et al. (2009), *Realism* has two classifications as direct and critical. *Direct Realism* is the realistic position that humans experience the world

accurately through their senses; and, *critical realism* argues that what humans experience through their senses are not the objects in the real world directly but are the images of them. Critical realists argue that researchers are able to understand what is happening in the world through their observations only if they understand the social structures that give rise to those social phenomena (Bhaskar, 1989).

### **3.6.1.2.3 Interpretivism**

The rise of *interpretivism* in the social science research in the late 20<sup>th</sup> century was in response to the positivist and postpositivist preoccupation with a single reality and 'perceived stripping of the context, the exclusion of meaning and purpose, disjunction of grand theories with local context, inapplicability of general ideas to individual cases, exclusion of a discovery dimension in inquiry, theory-ladenness of facts, under-determination of theory, value-ladenness of facts and a failure to account for the interactive nature of an inquirer-inquired based dyad' (Parker, 2009). *Interpretivism* argues for the existence of multiple realities for multiple inquirers, all apprehensible and equally valid (Schwandt, 1994), and, hence, holds that the reality is a perception that is interpreted in the mind of the inquirer, rather than a singular entity that is detached from him/her (Hansen, 2004) of which the meaning is generally hidden and therefore, needed to be unearthed through deep reflection (*phenomenologically*) (Sciarra, 1999), which can be stimulated by a continuous interactive dialogue between the inquirer and the participant (*symbolic interactionism*) in the process of knowledge production in a hermeneutical fashion. Thus, *interpretivism* espouses a centrality of interaction among the reality, the inquirers, and the participants where, the inquirer and the participants jointly create or co-create findings through interactive dialogue (Ponteretto, 2005) unearthing idiographic and emic perspectives of reality. In interpretivist thinking, the reality cannot be partitioned out objectively, as the positivism suggests, from the actors who are experiencing, processing and labelling the reality (Sciarra, 1999).

### **3.6.1.2.4 Pragmatism**

As shown, the positivism and interpretivism are diametrically opposite philosophies: the former is interested in extracting nomothetic and etic perspectives, and the latter in idiographic and emic perspectives, leading to law-like generalisations and subjective conclusions respectively. The general research practice for a long time

has been to choose between these two philosophies. On the positivist side, the argument is that social science inquiry should be purely objective, context-free and absolutely generalizable (Popper, 1959; Ayer, 1959; Schrag, 1992; Maxwell & Delaney, 2004). On the interpretivist side, positivism is absolutely rejected in favour of a pure empiricist inquiry (Smith, 1983; Guba & Lincoln, 1989; Lincoln & Guba, 2000; Schwandt, 2000). This insistence on purity has led to a strong advocacy from both sides that either should not be mixed, and this ideological position has been expressed as an 'incompatibility thesis', between the two (Howe, 1988). But, *pragmatism*, the philosophical viewpoint advanced by the American philosophers like William James and John Dewey, argues that both can be used in the same study (Saunders, et al., 2009). Pragmatism argues that the most important determinant of the research philosophy is the research question and the pragmatists are driven by the need of finding 'what works' in finding solutions to the problems rather than the philosophical biases (Creswell & Plano Clark, 2018).

All arguments for the incompatibility thesis share a common belief that, there should be only one way of inquiring into aspects of reality, at a time. This absolutist viewpoint is not very dissimilar to the one prevailed in the era of 'the flat world', which precluded everything that had to do with a 'round world' (Guba, 1987). Like the idea of the 'round world', the interpretivist views arose due to the practical limitations of the dominant ideology, amidst lot of opposition. Against all these absolutist viewpoints, new modes of inquiry have born out of the limitations of the existing modes of inquiry in terms their practical usefulness or ability to solve real life problems. Pragmatists' inquiry is into 'existential' and 'experiential' reality with different layers of experience, some objective, some subjective and some a mixture of the two (Dewey, 1925). Objectivism and subjectivism helping to inquire into the first two layers of experiential reality belong in the same paradigm family, as both use a singular lens to look at the world (Dewey, 1925). Smith & Heshusius (1986) argument above is tantamount to an invitation to pragmatists to reduce the power of their lens and make it black and white. Pragmatists' mode of inquiry is 'anti-dualist' and the dualist view point is a mere representation of the reality and not the 'reality in itself' (Rorty, 1999). Thus, pragmatist mode of inquiry transcends that duality and mere representation of reality, by way of offering a mode of inquiry that accepts singular as well as multiple realities to solve problems in the real world (Creswell & Plano Clark, 2007; Dewey, 1925; Rorty, 1999). If 'all knowledge is knowledge from some point

of view' (Fishman, 1978; Mounce, 1997), the determining factor of such knowledge must be utility (Rorty, 1999), and not puritanical ideals of any school of thought.

### **3.6.1.3 Philosophy of the Current Research**

A researcher's personal philosophical preferences can determine the philosophy of a research, since 'without nominating a *paradigm* as the first step, there is no basis for subsequent choices regarding methodology, methods, literature or research design' (MacKenzie & Knipe, 2006) and the latter is derived from the former (Hesse-Biber, 2010). But, in the current case, more than the researcher preference, the research questions determine the research philosophy. The first 4 research questions dictate that the participant value expectations should be extracted phenomenologically. This is only possible in an interpretivist study aimed at idiographic/emic perspectives. On the other hand, the last 5 research questions have to do with testing the conceptual model, to arrive at generalised conclusions through nomothetical/etic perspectives. This would require a positivistic study. Thus, it is obvious that the nature of current research questions makes it imperative to use interpretivism in the first stage and positivism in the second stage of the current research. Pragmatism is relevant as philosophy in addressing 'a real-world problem' (Felizer, 2010), 'common to multiple disciplines and if the research question determines the research approach' (Jogulu & Pansiri, 2011), and needs 'both reflection and action (Biesta, 2010). And, for all these reasons, pragmatism appeared to be the ideal choice as the philosophy of the current research.

### **3.6.2 Research Approach**

The nature of research questions determines whether finding answers to them require the researcher to collect data and develop a theory using that data, or to develop a theory and hypotheses and test them. If the research questions require the first approach it is inductive in approach and if they require the second approach it is deductive in approach (Saunders, et al., 2009; Trochim, 2005). The current research process did not start with a readymade theory. The literature review led to the building of a conceptual model which was not complete. And hence, the first research questions called for the collection of operationalisation data through an interpretivist study to complete the conceptual model (theory) in an inductive approach in the first stage of the research. Consequently, to find answers to the

latter research questions which were to be answered by testing the conceptual model and hypotheses required a deductive approach. Thus, the current research had to adopt a **mixed approach**-inductive in the first stage and deductive in the second stage-as required by the nature of research questions.

### **3.6.3 Research Strategy**

Research strategy is concerned with the overall methodology a researcher adopts to collect and analyse data in order to answer the research questions and fulfil his/her research objectives. It follows from this that the research strategy is guided by the research questions, objectives, the extent of existing knowledge, the amount of time and resources available and the philosophical underpinnings of the research (Saunders, et al., 2009). Due to the fact that the current research had to go through an inductive and a deductive stage in its process to fulfil its research objectives, it was obvious that the research strategy in each stage could be overtly similar.

The first task in devising a strategy in the current research concerned the inductive stage. Inductive research has no distinct strategies that are entirely its own (Denzin & Lincoln, 2005), because it is 'an interdisciplinary, transdisciplinary and sometimes counter disciplinary field' that 'crosscuts the humanities and the social and physical sciences and is many things at the same time' (Nelson, et al., 1992). Denzin & Lincoln (2005) identify case study, ethnography, phenomenology, grounded theory, historical method, action research and clinical research as inductive research strategies. Saunders, et al. (2009) identify case study, ethnography, grounded theory, action research and archival research as inductive strategies. Creswell (2007) identifies 5 strategies as: narrative study, phenomenology, grounded theory, ethnography and case study. Creswell (2007) provides definitions for each strategy: ethnography is a study into 'a living cultural group for long duration by collecting observational data'; grounded theory attempts to derive 'a general theory out of a process, action or interaction grounded in the views of participants'; case studies are in-depth explorations of a program, an event, an activity, a process or individuals' using variety of methods over a sustained period of time; narrative research attempts to study the lives of individuals in order to be narrated collaboratively with the that of researcher's life experience. A phenomenological research is concerned with extracting the 'living experiences' of participants' (Cresswell, 2007; Holloway, 1997; Kruger, 1988; Kvale, 1996) and study a small number of subjects through extensive

and prolonged engagement to develop patterns and relationships of meaning (Moustakas, 1994). This strategy seems to resonate with the requirements of the current inductive stage as the aim of the research questions necessitated an inductive inquiry was to extract value expectations of the participants in their living experience. And also, those experiences were to be derived phenomenologically (EP6), and individually, (EP7) under the proposed theory. Thus, of all strategies, the strategy that suits here seems to be **phenomenology**.

As deductive research is grounded in mathematical and statistical techniques emphasizing measurement to arrive at general conclusions about social phenomena (Guba & Lincoln, 2005), deductive strategies help accomplish that in steps of collecting, analysing and evaluating numerical values using deductive logic (Williams & May, 1996; Nueman, 2000; Rocco, et al., 2003) and by helping to uncover important relationships among variables and to test general propositions or hypotheses (Guba & Lincoln, 2005). The deductive procedures are more standardised and enable inferences which are independent of the investigator (Mauthner & Doucet, 2003). The second stage of the current research wanting to establish relationships among variables and testing of hypotheses, the strategy needed was a deductive one. The most popular deductive strategies—experiments and surveys collect data on predetermined inquiry instruments that yield statistical data (Williams, 2007; Mackenzie & Knipe, 2006). The popularity of these strategies seems to be linked with their compatibility with the different types of investigations deductive studies take. Kumar (2014) identifies these types as experimental, non-experimental and semi-experimental, whereas Leedy & Ormrod (2001) identify them as descriptive, experimental and causal comparative. Experimental research is characterised by measuring the effect of an intervention into the study group (Leedy & Ormrod, 2001), which was not an objective in the current study. Survey, under Leedy & Ormrod's (2001) classification, is used to capture phenomena from a sample representative of a large population (Williams, 2007). Since **survey** is ideal for collecting data from a large sample as in the current case which goes to several hundreds of sampling units, it suits the current application. It also allows easy comparison of data using descriptive statistics as required in the current study, and is widely used in business and management research, for allowing data collection from very large samples (Saunders, et al., 2009).

### 3.6.4 Research Choices

The research choices are the results of the decision regarding what methods to be used in data collection and analysis. The first choice is between whether to use single method (mono-method) or multiple methods. If the first choice is multiple methods, then the next choice is whether to use multiple similar methods (multi-method) or multiple different methods (mixed method) (Saunders, et al., 2009). Scholarly opinion on methodological choice is divided, and it is dependent on: academic texts in traditional management (Jogulu & Pansiri, 2011); economic factors and stakeholder interests (Hesse-Biber, 2010); preferences of the academic discipline (Jogulu & Pansiri, 2011); research questions when the research questions stem from the literature (Popesku, 2015). Hanson & Grimmer (2007) report that, between 1993-2002, research published in management journals had a quantitative bias. But methodological appropriateness is preferred to the methodological orthodoxy (Baum, 1995), and that is the view widely accepted now (Baum, 1995; Brause, 2000; Phillips & Pugh, 2005; Finn, 2005; Calabrese, 2006). And as certain research questions called for inductive methods and others deductive methods, this was the policy adopted in this research, and the decision was further simplified by the selected philosophy. The methodology of a research is to be in the way specified by the research philosophy (Grix, 2010) and flows from its epistemology (Sale, et al., 2002). Since the current research is based on pragmatism and on a mixture of subjective and objective modes of inquiry epistemologically, the methodology selected should also be in the same philosophical lines, as prescribed in the extant literature (Guba & Lincoln, 1989; Sale, et al., 2002; Ponteretto, 2005). Mixed-methods research is almost certainly the term used to refer to pragmatist methodology in the extant literature (Johnson & Onwuegbuzie, 2004; Feilzer, 2010; Howes, 2015; Mayoh & Onwuegbuzie, 2015; Heyvaert, et al., 2013; Johnson, et al., 2007). Hence, the current research in terms of methodology was a **Mixed Methods Research** (MMR).

Johnson, et al. (2007), after reviewing the themes in the definitions of 19 leading scholars, propose a definition of MMR as: the type of research which 'combines elements of qualitative and quantitative research approaches (use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding or corroboration'. The current methodology fits in this definition, as it needs combining qualitative and quantitative approaches for understanding the research problem fully. MMR is an established

research methodology now with a history since 1988 (Creswell, 2010), many university courses, research articles, doctoral studies, and a new dedicated journal, having been published from 2007 (Fetters & Molina-Azorin, 2017; Fetters & Molina-Azorin, 2017a; Fetters & Molina-Azorin, 2017b; Howes, 2017), and the percentage of MMR has increased in journals from 0% to 20% from 1990 to 2018 (Timans, et al., 2019).

The current methodology should be distinguished from multimethod research where, multiple methods are conducted completely and rigorously to be triangulated at the end (Morse, 2003); and, multi-model research where qualitative data is analysed quantitatively and vice versa to answer the research questions. The current research does not fall in either of these categories: as, the findings of its 1<sup>st</sup> stage were to be fed into the 2<sup>nd</sup> stage of the research, making the two stages sequential, without triangulation; and, there was no need to analyse qualitative data quantitatively and vice versa as well. The purposes of MMR are varied: According to Greene, et al. (1989) the purposes are 5-fold: triangulation of results; take advantage of the complementarity of methods; development of other methods by the results of one method; initiation of the discovery of results from one method leading to another; expansion of inquiry combining quantitative and qualitative methods. The current research shares all these purposes except triangulation. Newman, et al. (2003) identify 9 purposes as: prediction; knowledge; having a personal, social, institutional impact; measuring change; understanding complex phenomena; testing and generating new ideas; inform constituencies; examining past. Understanding complex phenomena, generating and testing new ideas are some of the purposes shared by the current research. complementarity allowing a fuller understanding of the research problem; the results from one method informing the other method; findings of one stage may initiate raising questions or contradictions that will require clarification in another stage; extending the breadth and range of the inquiry (Greene, et al., 1989) are other methodological purposes of the current research.

### **3.6.5 Time Horizon**

Time horizon (the 5<sup>th</sup> layer of the research onion) of a research study means whether its process is a snapshot of a particular time or a series of snapshots over a time period (Saunders, et al., 2009). The time horizon is cross-sectional if the process is a single snapshot, and longitudinal if it is otherwise. The choice of time horizon generally depends on the research questions. The current research questions do



only need data to be collected once and not several times over a period for their resolution. This makes the current research a **cross-sectional study**.

### 3.6.6 Data Collection

The core of the research onion (Saunders, et al., 2009) belongs to the methods of data collection and procedures of data analysis. The types of data needed and their sources are needed for the determination of methods of data collection and analysis.

#### 3.6.6.1 Types of Data Needed and their Sources

The answers to the research questions 1-4 were to be obtained phenomenologically through exploration from the educationists-intellectuals of Sri Lanka, and the educators serving in the SGSESL. Exploratory inquiries generally produce qualitative data. The research questions 5-8 needed the collection of quantitative data from the same respondents to measure the extent of current external and internal value creation. The types of data needed and the sources were determined by the research questions, and the following table shows the type of data and the data source as required by each research question:

**Table 17: Types of Data Needed and their Sources**

Research Question	Data Type	Source
1	Qualitative	Educators
2	Qualitative	Educators
3	Qualitative	Educators
4	Qualitative	Intellectuals & Educationists
5	Quantitative	Educators
6	Quantitative	Educators
7	Quantitative	Intellectuals & Educationists
8	Quantitative	Intellectuals & Educationists

#### 3.6.6.2 Methods of Data Collection

Research methods are 'precise procedures' used to find answers to research questions, and are 'inextricably linked to the research questions posed and to the sources of data collected' (Grix, 2010). The current design a sequential MMR, the methods used include both qualitative and quantitative methods sequentially. Qualitative methods are wide ranging empirical procedures for studying experiences

of a relatively small number of research participants in a context-specific setting (Denzin & Lincoln, 2000). In contrast, quantitative methods use strict quantification of data, and focus on careful control of empirical variables, and incorporate large-scale sampling and the use of statistical procedures for analysis (Ponteretto & Grieger, 1999), and facilitate measurement and analysis of relationships, causal and correlational, between variables (Denzin & Lincoln, 2000). The use of both types of methods enables better understanding of the research problem and make the research findings more meaningful (Cresswell, 2008), if the strengths of both methods are combined to compensate for the weaknesses of each in order to produce synergistic results. Johnson & Onwuegbuzie (2004) list the strengths and weaknesses of both types of methods (Appendix AT). The strengths of qualitative research lie in its facilitation of studying: complex phenomena; participants' meaning; individual information; limited number of cases in-depth; emic viewpoints; phenomena embedded in local contexts and stakeholder needs; dynamic situations; how and why phenomena occur; idiographic causation. The weaknesses of qualitative methods constitute in its difficulties in: making quantitative predictions; making generalisations; testing hypotheses and theories; time consuming data collection; and, researcher bias etc. The strengths of quantitative research methods lie in their facilitation of: testing of theories and hypotheses; making generalisations; making quantitative predictions; easy data collection of large samples; establish cause-and-effect relationships between social variables; lack of researcher bias. The weaknesses of quantitative research constitute in their: inability to capture local realities; providing of too abstract way to generalised knowledge. The list produced by Johnson & Onwuegbuzie (2004) indicate that the weakness of one type of methods is almost precisely the strength of the other. Hence, the current research uses the two types of methods in a complementary fashion and takes advantage of the strengths of both.

#### **3.6.6.2.1 Methods of Qualitative Data Collection**

Certain strategies 'seem more directed toward specific types of data collection than others' (Creswell, 2007). Narrative studies and case studies use multiple forms of data in order to develop in-depth storied experiences and cases. Ethnographers use participant observation and interviews; Phenomenological and grounded theory studies rely on interview data. According to Creswell (2007), there are differences in

strategies in the unit of analysis as well. Grounded theorists, phenomenologists, and narrative researchers study individuals, whereas case study researchers examine groups of individuals, while Ethnographers study entire systems, sub-cultures or cultures. Strategies vary in terms of the required intrusiveness in data collection as well. Phenomenological and grounded theory need much less intrusiveness than personal narratives or the ethnographies which need prolonged stays with the participant/s or the case studies which need total immersion in the context on the part of the researcher. Thus, the selection of **interviews** here appears to be a relatively straightforward decision as all parameters pointing in that direction.

#### **3.6.6.2.1.1 Qualitative Data Collection Method**

Interviewing is a powerful research method that helps researchers in understanding people's views (Denzin & Lincoln, 2005) regarding 'whats' and 'hows' of their lives (Gubrium & Holstein, 1997; Dingwall, 1997) and one of the most popular and frequently used methods of data generation (Silverman, 1993; Atkinson & Silverman, 1997; King & Horrocks, 2010), producing data for rich explanation and in-depth understanding (Van Manen, 1996). Interviewing can be done in many modalities: researcher with an individual or a group, face to face or via teleconference or videoconference. The content of interviews can be structured, unstructured or semi-structured (Denzin & Lincoln, 2005). Structured interviews strictly follow an interview schedule with an intention of narrowing down the scope in order to obtain pointed answers to questions whereas, unstructured interviews encourage participants to talk freely in a wide area of concern with a view to allow problems to surface in the discussion. The 2 methods aim 2 opposite aims: first narrows the scope of the discussion obtaining the etic view, and the other allows new knowledge to surface uncovering the emic view. **Semi-structured interviews** follow the middle path by narrowing the interview down to few questions and allowing the responses to go into some depth and requiring answers to few questions this seemed the best method for this research.

However, interviewing had to be conducted avoiding certain risks owing to respondents' tendencies (Denzin & Lincoln, 2005): to provide socially desirable answers instead of their own; omit certain important information; inaccurate responses, and memory issues etc. requiring the researcher to have a mix of observational and interpersonal skills, intellectual judgement and empathic sensitivity (Gordon, 1992), and a knowledge of the respondent's thinking in addition to

interview technique (Kahn & Cannell, 1957). Since the possession of these skills was no guarantee against ambiguity (Denzin & Lincoln, 2005), the current research was conducted with precautions and measures to mitigate these risks.

### 3.6.6.2.1.2 Interview Schedules

An interview schedule is a document that contains the list of research questions operationalised into simple questions that is understandable to research participants (Lindlof & Taylor, 2002) and it should also provide the researcher help to guide the interview process by maintaining focus (Denzin & Lincoln, 2005). Two interview schedules were needed (See tables below), to operationalise the conceptual model as usage episodes, as it was well established that final value creation takes the form of usage episodes (Verhoef, et al., 2009; Roggeween, et al., 2012; Kleinaltenkamp, et al., 2012).

**Table 18: Interview schedule for Educator sample**

<b>IQ#</b>	<b>Question</b>	<b>Rationale</b>	<b>RQ#</b>
1.1	What is school education, providing a service or a manufacturing of products?	This was a question aimed at validating the conceptual model and priming the participant to talk freely and at identifying his/her thinking on education, specifically on its nature of delivery.	RQ1, RQ2, RQ3
1.2	Who are the owners of children, parents or the country?	This was a question to validate the external stakeholders as active or passive.	RQ1, RQ2, RQ3
1.3	Who are the essential Actors in the SGSESL in order to create value?	This was a question to validate the internal stakeholders as active or passive. Essential Actors would be identified as active stakeholders.	RQ1, RQ2, RQ3
1.4	Do you think that the method of measuring educational value through students' test scores is better than measuring it by educationists and intellectuals?	This was a question to validate the current method of value measurement through student's examination scores. If the current method would be accepted as superior, then the proposed method was to be considered as invalidated and if the answer was on the opposite, the proposed method was to be treated as validated.	RQ1, RQ2, RQ3
1.5	Will you be able to measure on a scale those values in school students who pass out of the SGSESL?	This was a question to validate the feasibility of the current research. If the answer would be in the affirmative, then the research was to be validated to go ahead and if it was on the opposite, the research would not have been validated.	RQ1, RQ2, RQ3

1.6	Are current educational goals clear to you?	This was a question to validate the assumption regarding the SGSESL vision and direction.	RQ1, RQ2
1.7	What basic areas do you think are problematic in the current SGSESL, and what value creating components should we add or enhance to address current problems?	This was a question to elicit insights to populate the layers in the conceptual model developed through the literature review. If the respondents recognise value-co-creation elements related to the model they were to be populated in the model as metrics and if they recognise additional problems and processes, the model was to be modified.	RQ1, RQ2
1.8	What additional resources are needed in the SGSESL to improve value creation?	This was a question aimed at recognising the resource requirements for value co-creation in order to elicit insights to populate the model.	RQ1, RQ2
1.9	What do you expect from the SGSESL as an employee?	This was a question aimed at recognising the value expectations of employees in order to elicit insights to populate the conceptual model.	RQ2, RQ3
1.10	What other things would make you function better?	This question was aimed at eliciting any value expectation that is missed out.	RQ2, RQ3
1.11	What factors determine the level of perfection of your work at its final creative delivery?	This question was aimed at eliciting the prerequisites of better final value as manifested in an episodic act of value creation by the educators.	RQ2, RQ3

**Table 19: Interview schedule for Educationists & Intellectuals**

<b>IQ#</b>	<b>Question</b>	<b>Rationale</b>	<b>RQ#</b>
2.1	What is school education? providing a service or a manufacturing of products?	This was a question aimed at validating the conceptual model and priming the participant to talk freely and at identifying his/her thinking on education, specifically on its nature of delivery.	RQ1, RQ2, RQ4
2.2	Who are the owners of children, parents or the country?	This was a question to validate the proposed stakeholder categorisation as active and passive.	RQ1, RQ2, RQ4
2.3	Who are the essential Actors in the SGSESL in order to create value?	This was a question to validate the stakeholder identification as active and passive in the proposed framework.	RQ1, RQ2, RQ4
2.4	Do you think that the method of measuring educational value through students' test scores is better than measuring it by	This was a question to validate the current method of value measurement through student's examination scores. If the current method was accepted as superior, then the proposed method was to be considered as invalidated and if the	RQ1, RQ2, RQ4

	educationists and intellectuals?	answer was on the opposite, the proposed method was to be treated as validated.	
2.5	Will you be able to measure on a scale those values in school students who pass out of the SGSESL?	This was a question to validate the feasibility of the current research. If the answer would be in the affirmative, then the research was to be validated to go ahead and if it was on the opposite, the research would not have been validated.	RQ1, RQ2, RQ4
2.6	What basic areas do you think are problematic in the current SGSESL, and what value creating components should we add to address current problems?	This was a question to elicit insights to populate the layers in the conceptual model developed through the literature review. If the respondents recognise value-co-creation elements related to the model they were to be populated in the model as metrics and if they recognise additional requirements, the model was to be modified.	RQ1, RQ2, RQ4
2.7	What additional resources are needed in the SGSESL to improve value creation?	This was a question aimed at recognising the resource requirements for value co-creation in order to elicit insights to populate the layers in the conceptual model.	RQ1, RQ2
2.8	What fundamental categories of values do you expect a just passed out student from the SGSESL should possess?	This question was a question aimed at recognising the categories of value expectations and was added to the schedule later, on finding that there were categories used earlier in education, which are now deemed to be inadequate.	RQ4
2.9	What specific values do you expect a school graduate should possess?	This question was aimed at recognising the specific value expectations of the educationists and intellectuals to populate the value management layer of the conceptual model.	RQ4
2.10	What values in graduate students would determine the final value when you co-create value with them?	This question was aimed at eliciting the prerequisite values in graduate students for better final value as manifested in an episodic act of value co-creation with them by the educationists and intellectuals or the citizens.	RQ4

### 3.6.6.2 Methods of Quantitative Data Collection

The selection of the method of quantitative data collection for the current application was not complicated.

### **3.6.6.2.2.1 Quantitative Data Collection Method**

The questionnaire, is most popular in survey research for the ease of collecting data from large samples. It also yields standardised quantitative data for easy comparison (Williams, 2007; Mackenzie & Knipe, 2006; Kumar, 2004). The purpose and nature of the current quantitative study made the questionnaire an automatic choice. Of the different methods of administering questionnaires-personally (public or collective), mailed or online (Kumar, 2014; Sekaran, 2006), personal administration was preferred in the current application for its efficiency. While the size of the educator sample needed the questionnaire administration to be collective for manageability, the educationist-intellectual sample needed individual administration as the collective method was not practical there. The inherent disadvantage in the questionnaire method- respondents' limited ability to understand the questions (Kumar, 2004) was not an issue here, given all the respondents were educated people. The potential effects of low response rate, self-selecting bias, failure to return, lack of opportunity to clarify issues, responses being influenced by other responses and others influencing the responses were all minimised by personal administration. The issues of no opportunity for instantaneous responses, responses not being supplemented with other information were not relevant in the current application.

### **3.6.6.2.2.2 Questionnaires**

Since the value measures which were to be the items in the questionnaires were not ready until the qualitative first stage of the current research was complete, the questionnaire design in this report is discussed under Qualitative Data Analysis.

## **3.6.7 Data Analysis**

Being a qual->QUAN study using different methods in the two stages, the methods of data analysis in the current research had to be presented separately.

### **3.6.7.1 Methods of Qualitative Data Analysis**

Qualitative data analysis, according to Saunders, et al. (2009), can be approached either inductively and deductively. A deductive approach is generally more suitable in a context where there is strong theory shaping the project, and where the purpose of analysis is building a theory, an inductive approach is the more suitable approach for data analysis (Saunders, et al., 2009). As the purpose here is building a theory, **inductive analysis** was the choice as the approach to qualitative data analysis.

The inductively based analytical procedures of qualitative data analysis are: data display and analysis; template analysis; analytic induction; grounded theory; discourse analysis; and, narrative analysis. The procedure of data display and analysis is helpful where the need is to identify related patterns to order them into tabular or network form in display and as such this is also close to a deductive strategy (Miles & Huberman, 1994). Template analysis uses a prior template to develop categories and they in turn are attached to units of data (King, 2004) and as such, it is closer to a deductive perspective more than an inductive one. Analytic induction is 'the intensive examination of a strategically selected number of cases so as to empirically establish the causes of a specific phenomenon' (Johnson, 2004) and is suited for developing a theory from scratch. Discourse analysis is an inductive procedure used generally to analyse how people use language in specific social contexts (Phillips & Hardy, 2002), and is very distant from the purpose of the current analysis. Narrative analysis is used to explore linkages, relationships and connections among elements in data to uncover hidden truths that surface through those linkages (Gabriel & Griffiths, 2004) and this procedure is also distant from the requirements of the current analysis. **Grounded theory** uses specific analytical methods to build a theory around a central theme that emerges from data (Strauss & Corbin, 2008) and that more than any other procedure matches the objective of this analysis, and therefore, was selected as the procedure for current data analysis. The selection was also influenced by the presence of systematic analytical methods- **open coding, axial coding and selective coding**-available in this procedure to help guide the process ideal for the process requirements of the current analysis. These were the selected analytical methods in the current analysis.

The sequence of the methods was quite in sync with the requirements of the current application. Since the qualitative data collected in the current research is supposed to contain chunks of fragmented and scattered responses, they were to be disaggregated into conceptual units to open the process of analysis, and this was precisely what **open coding** means. The next step was to look for the relationships between those conceptual units and to arrange them in a hierarchy as sub-categories and this was **axial coding**. The next step-**selective coding**-is to integrate the subcategories into core themes and name them as categories complete the process. This was the last requirement of the current analysis both in terms of the educator educationist/intellectual value measures.



Since the data to be analysed in the current research and making sense of such a large volume of data can be overwhelming (Patton, 1990), the current data analysis was through a computer program (Cresswell, 2007). Computer programmes for data analysis have been available since 1980s and have become more refined now and are helpful in computerizing the process of analysing text and image data (Weitzman & Miles, 1995) in numerous ways as: providing an organised storage file system; helping to locate material easily; facilitating a close look at data; helping to draw a visual model of codes and themes; enabling easy retrieval of memos associated with codes, themes or documents (Cresswell, 2007). Cresswell (2007) mentions Atlas.ti, QSR NVivo, HyperRESEARCH and MAXqda as popular data analysis programmes with above features. This research used MAXqda as its choice of a computer programme for its flexibility, ease of use, and affordability.

### **3.6.7.2 Methods of Quantitative Data Analysis**

The current conceptual model consisted of 2 sets of independent-dependent variable relationships: one related to internal values (dataset 1, educator values), and the other to external values (dataset 2, educationist-intellectual values), needing differential analytical treatment to accomplish the research objectives.

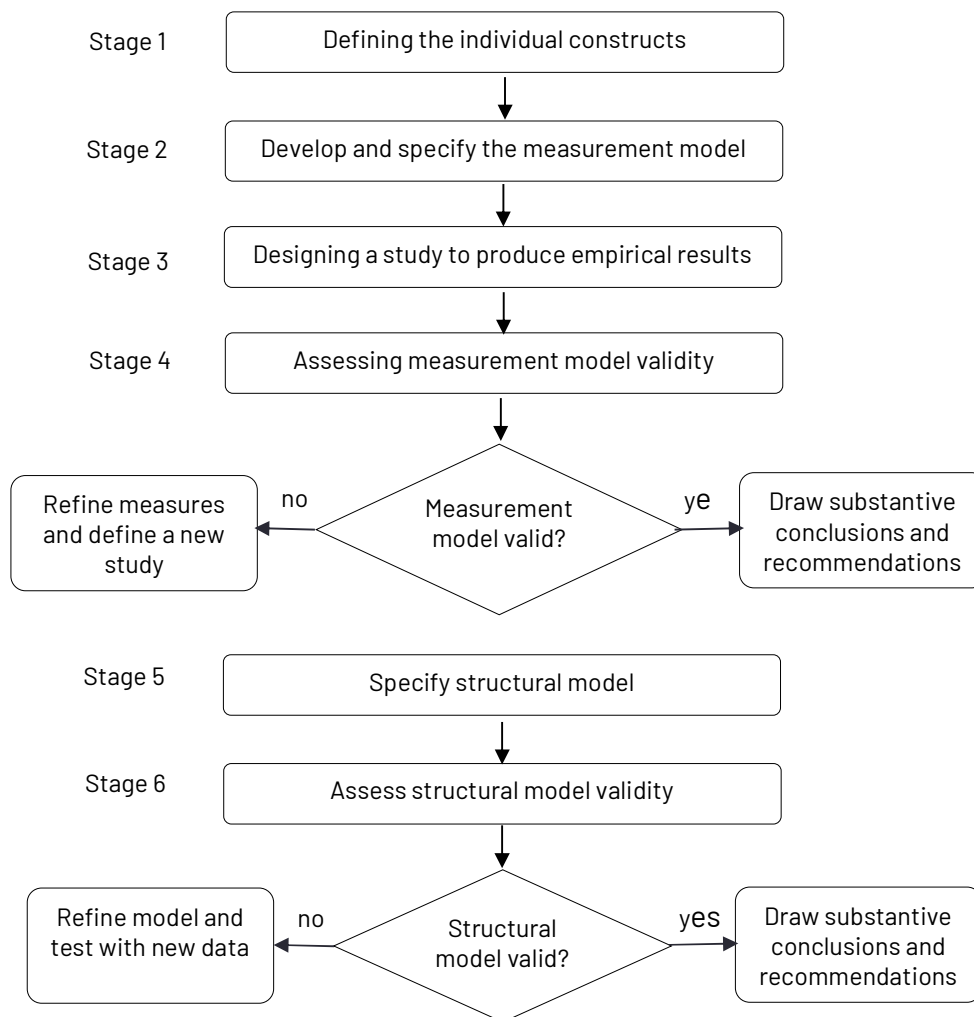
#### **3.6.7.2.1 Multivariate Techniques**

The multivariate techniques used in respect of the internal and external value models in the current analysis were different.

##### **3.6.7.2.1.1 Internal Value Model**

The dataset 1 needed further variable subdivision, by grouping the highly correlated items into subgroups in order to make the measurement model sound and strong to withstand stringent statistical tests. Exploratory Factor Analysis (EFA), a highly useful and powerful multivariate statistical technique for effectively extracting information from large bodies of interrelated data (Hair, et al., 2014), was selected for the task of further refining the measurement model. As Confirmatory Factor Analysis (CFA) is complementary to EFA, by being a way of testing how well a measurement theory, or a set of measured (observed) variables, represent a smaller set of latent (unobserved) constructs (Hair, et al., 2014), CFA was the procedure used to test the educator value measurement model so developed. Structured Equation Modelling (SEM) is a family of statistical models that help explain the relationships among

multiple variables, and hence makes CFA easy to manage, and more than that, helps analysing a series of dependent relationships simultaneously (Hair, et al., 2014) as is the requirement here, since measuring the relationships among independent variables is a research question. SEM is an ideal multivariate model to estimate the relationships among latent variables in a measurement model (Byrne, 2010) and it also has been very popular in social research in the recent past (Modelling, 2008). These factors made SEM most suitable here as the analytical technique for the internal value model. To facilitate the process, there are software packages like LISREL and AMOS (Hair, et al., 2014). The SPSS Amos 27 for SEM was selected as the software package of the current application for reasons of availability and affordability. The SEM process was done on the individual constructs, yielded by the qualitative analysis discussed in chapter 4, and the process followed was the 6-stage SEM process recommended by Hair, et al. (2014) which is shown below:



**Figure 4: Six-stage process for Structural Equation Modelling**

### 3.6.7.2.1.2 External Value Model

The external value model had distinctly different objective characteristics to the internal value model. While the latter needed confirmation of relationships among the independent value variables representing value creation layers which were developed through a literary synthesis and a subsequent exploratory study, the former represented independent value variables related to a single layer of the value creation model architecture, needing the dependent variable to predict the independent variables, rather than establishing the relationships among the independent variables. Also, owing to the fact that they belonged to a single layer of the value creation model, what they had were less strong underlying theory and unsure correlations, unqualifying them to undergo FA or SEM (Hair, et al., 2010; Tabachnick & Fidell, 2013). The analytical objective of prediction and the unfitness for SEM were the factors informing the decision on Multiple Regression Analysis (MRA) as the multivariate technique for the external value model. MRA is a technique often used in research when the intent of analysis is prediction (Tabachnick & Fidell, 2013). That regression techniques 'can be applied to a dataset in which the IVs are correlated with one another and with the DV to varying degrees' (Tabachnick & Fidell, 2013) was another factor that was in favor of selecting MRA as the multivariate technique for the internal value model.

### 3.6.7.2.2 Methods of Testing for Non-Violation of Assumptions

Statistical multivariate techniques yield accurate results only if certain assumptions regarding data are satisfied (Tabachnick & Fidell, 2013). This subsection discusses those assumptions and the tests performed to ensure their non-violation.

#### 3.6.7.2.2.1 Normality

**Outliers** are extreme responses on one variable or multiple variables (Tabachnick & Fidell, 2013) resulting in the data set to skew to either side of the variable scale and to acquire kurtosis (Hall & Wang, 2005), making it to become non-normal and the use of statistical techniques questionable (Bai & Ng, 2005). To ensure univariate normality of each data item, the **Mahalanobis Distance** greater than 27.877 ( $p < .001$ ) (Tabachnick & Fidell, 2013) was the test used. The normality of variables is assessed using the measures of **skewness and kurtosis**. A skewed distribution is one in which the mean is not in the centre of the distribution. Kurtosis is the term used to

describe the occurrence of a too peaked or a too flat distribution (Tabachnick & Fidell, 2013). In large datasets, the skewness and Kurtosis indexes should be less than 3 and 10 respectively (Kline, 2011). The **Kolmogorov-Smirnov Statistic** was the test used to verify skewness and kurtosis of each variable in both datasets.

### **3.6.7.2.2 Factorability**

Factorability was relevant to the dataset 1 in the current analysis. According to Tabachnick & Fidell (2013) and Worthington & Whittaker (2006), a dataset should pass through 3 levels of statistical tests specified by 3 sets of criteria to qualify for EFA, as: 1. criteria for factorability of the correlation matrix; 2. criteria for item retention, and, 3. criteria for factor retention. The criteria for factorability measure the degree of correlations among variables and they are two-fold: 1. **'the Bartlett's test of sphericity'** to ensure the probability of correlations among the factors in the dataset (Bartlett, 1950); 2. **'the Kaiser-Meyer-Olkin measure of sampling adequacy'**, which is the ratio between the squared correlations and the partial correlations between the variables (Field, 2013). According to Kaiser (1974), the levels of sampling adequacy are:  $KMO > 0.5$ -barely acceptable,  $0.6 < KMO < 0.7$ -mediocre,  $0.7 < KMO < 0.8$ -good and  $KMO > 0.9$ -superb, whereas Tabachnick & Fidell (2013) suggest that  $KMO > 0.6$  is acceptable. The probability of correlations had to be less than 0.05 ( $p < .05$ ) to be significant and the cutoff used for KMO was 0.9, for a superb sampling adequacy.

The second category of tests i.e., tests for item retention are to ensure the **reliability and adequacy of the indicator variables** in FA. The initial test under this was the **factor loading on items**, which was a measure of what percentage of the variance in a variable is explained by a factor and it should be above 0.5 to be practically significant (Hair, et al., 2014). The current test adopted a cut-off of 0.5 to ensure all factor loadings are significant. The next step was to test the solution for **Cross loadings** to avoid any single variable loading on more than one factors, in order to ensure all factors having 'pure' variables (Tabachnick & Fidell, 2013) and the current analysis was to be remove cross-loadings. The next test was the **Cronbach's alpha**, a measure of what proportion of total variance in a scale/factor attributable to a common source (DeVellis, 2012) and as alpha values greater than 0.7 are generally considered to be indicative of strong internal scale consistency (Nunnally & Bernstein, 1994), and expecting strong internal scale consistency the cut-off selected here was 0.7.

Another test under this category measured **inter-item correlation**. The minimum correlation coefficient acceptable here is a matter of debate, as some suggest that it should be above 0.4 (Clark & Watson, 1995), and, for others, a score of 0.3 is sufficient (Tabachnick & Fidell, 2013), the current study used a cut-off of 0.5 looking for a strong structure. The next test was for **communalities**, which represent the amount of variance accounted for by the factor solution for each variable, and the minimum communality score should be 0.4 (Worthington & Whittaker, 2006) and that was the cut-off maintained in the current analysis. Another test ensured adequate **Corrected Item-Total Correlations** by measuring the correlation of each item to the total if it is deleted (Norusis, 2005) and it should be above 0.5 to be valid (Bearden, et al., 1989; Zaichowsky, 1985) and that was the cut-off used in the current analysis. The 3<sup>rd</sup> category of tests, i.e., **tests for factor retention** centre around the question of the number of factors to be extracted, and scholarly opinion on this is not settled (Tabachnick & Fidell, 2013). One way of looking at it has given rise to **Kaiser Criterion** based on eigenvalues, which looks at factoring with the intention of deriving a solution that accounts for a maximum variance in factors (Worthington & Whittaker, 2006; Tabachnick & Fidell, 2013), and therefore factoring should continue till eigenvalue reaches 1. Field (2013) argues, however, that concluding extraction process at less than 1 is also acceptable based on pragmatic rationales. Tabachnick & Fidell, (2013) stress that it depends on the objectives of the research. The other approach to factoring is to obtain a simple structure. This is done when a research study has sound theoretical basis when coming into factoring, and the need is to further confirm it (Tabachnick & Fidell, 2013). In this approach, factoring might not stop at eigenvalue 1, and would end at reaching at a simple solution. Since the objective of the current analysis was to further expand the conceptual framework by recognizing factors closely correlated, the plan was to continue factoring till the solution explained a minimum of 70% of the total variance.

#### **3.6.7.2.2.3 Reliability**

Reliability of a variable instrument refers to the occurrence of same results across multiple measurements, and therefore, is an indicator of the stability and consistency of a measure (Sekaran & Bougie, 2016). In summated scales, reliability is the degree to which the observed variable measures the 'true' value and is 'error' free (Hair, et al., 2014). **Cronbach's alpha** is the most popular measurement of testing internal consistency among the individual measures in a summated scale (Sekaran &

Bougie, 2016). The Cronbach's alpha measures the total variance in a scale attributable to a common source (DeVellis, 2012) and should yield a value greater than 0.7 to be considered adequate (Nunnally & Bernstein, 1994). According to Sekaran (2006), it must be between 0.6 and 0.8 to be acceptable. The consistency of items in terms of correlation of each item to its scale is measured by 'Cronbach's alpha if the item is deleted' (Norusis, 2005), and each item should yield a value greater than 0.5 to be retained (Bearden, et al., 1989; Zaichowsky, 1985). The policy adopted to ensure acceptable alpha was to delete items with poor individual alpha if the total scale alpha was less than 0.7.

#### **3.6.7.2.2.4 Linearity**

Linearity refers to express a relationship between an independent and a dependent variable that can be plotted using a straight line as there is a constant unit change of the dependent variable for a constant unit change of the independent variable (Hair, et al. (2014). An implicit basic assumption in all multivariate models is linear relationships among exogenous (IVs) and endogenous (DVs) variables as they are expected to possess correlations between them, and therefore is applicable for both internal and external value models here. The easiest way to verify linearity among variables is through scatterplots (Hair, et al., 2014), and therefore, the current analysis would use scatterplots to verify linearity everywhere it is required.

#### **3.6.7.2.2.5 Homoscedasticity**

The assumption of equal variance of the population error (E) is critical to the validity of many multivariate techniques, and when the variance of the error terms (e) is constant over a range of predictor variables, the data are said to be homoscedastic (Hair, et al., 2014). The analysis of the residuals against the predicted values of the IVs can illustrate the presence or absence (heteroscedasticity) of homoscedasticity and a scatterplot between the is the easiest way to verify homoscedasticity (Hair, et al., 2014), and hence, scatterplot would be the method to verify homoscedasticity in the current analysis.

#### **3.6.7.2.2.6 Multicollinearity**

Collinearity is a term used to express the relationship between 2 IVs, and multicollinearity between more than 2. If 2 IVs exhibit complete collinearity, their correlation coefficient is 1, and if there is no correlation between them at all, their

correlation coefficient should be 0. An extreme case of collinearity/multicollinearity is singularity, where an IV is perfectly predicted by another IV (Hair, et al., 2014). It happens when the same phenomenon is explained by more than 2 IVs, and reduces the fit of a multivariate model. As the Tolerance (TOL), and Variance Inflation Factor ( $VIF=1/TOL$ ) are the commonly used measures of multicollinearity (Klinebaum, et al., 1988), the current analysis would use those measures in testing the models.

### **3.6.7.2.3 Methods of Testing Goodness of Fit/Measurement Model Validity**

The multivariate models being different, the methods of testing the goodness of fit/measurement model validity were also different for the 2 value models.

#### **3.6.7.2.3.1 Internal Value Model**

Connected with the decision on selecting the model estimation technique was determining what fit indices to use as test statistics to test the goodness of model fit. There is controversy over the usefulness of fit indices other than  $\chi^2$ . Some researchers do not believe that fit indices add anything to an analysis, and argue that they only allow claims of miss-specified models are not bad models (Barrett, 2007). Others argue that cut-offs for a fit index can be misleading (Hayduk, et al., 2007). Most researchers seem to be believing in fit indices but are exercising caution against strict reliance on cut-offs. The current research takes the stand that fit indices are useful to test the model and uses the most common ones to measure the goodness of fit of the measurement model. The fit indices which are in common use are limited (Hu & Bentler, 1999; Kahn, 2006) and the following would be the fit indices to be used in the current estimation.

##### **3.6.7.2.3.1.1 Model $\chi^2$ Statistic**

Model  $\chi^2$  statistic evaluates the magnitude of the discrepancy between the two matrices (Hu & Bentler, 1999). Since the null hypothesis is a zero difference between the covariance matrices, a zero  $\chi^2$  value is a perfect fit, and a small value, a good fit and a large value, a bad fit (Wang & Wang, 2012).

##### **3.6.7.2.3.1.2 Relative $\chi^2$ Statistic**

Relative  $\chi^2$  equals the  $\chi^2$  value divided by the degrees of freedom. This statistic is less sensitive to sample size and the cutoff for acceptance varies from less than 2 (Ullman, 2013) to less than 5 (Schumacker & Lomax, 2004). The common statistic GFI,

developed by Jöreskog & Sörbom (1989) as a parallel in LISREL to the  $\chi^2$  statistic, is not part of SPSS AMOS and as such was not to be used here.

### **3.6.7.2.3.1.3 Incremental Fit Indices**

The Normed Fit Index, NFI, which assesses fit by comparing the tested model with a more restricted null model in which all observed variables are assumed to be uncorrelated was one of the earliest fit indices (Bentler & Bonett, 1980). Since NFI was sensitive to sample size for its dependence on  $\chi^2$ , they proposed NNFI, an alternative with a correction including the degrees of freedom in the calculation. In a further development they proposed IFI (Bentler & Wu, 1995), and later, based on Tucker-Lewis Index (TLI), they proposed a further improvement of NNFI and, CFI, a much-improved version of all its predecessors. The current estimation was to use the indices **NFI, IFI, TLI/NNFI, and CFI**.

### **3.6.7.2.3.1.4 Root-Mean Square Error of Approximation (RMSEA)**

RMSEA is a most recently developed as well as a most widely used test in SEM/CFA applications (Quintana & Maxwell, 1999) and has been found to perform better than most fit indices (Steiger, 1990; Sugawara & MacCallum, 1993), because it estimates the lack of a model fit by comparing the model to a perfect model (Tabachnick & Fidell, 2013) and by measuring the average error of approximation per degree of freedom based on the sample size (Browne & Cudeck, 1993; Kline, 2011) and that enables to evaluate the model in terms of how close it fits the data (Matsunaga, 2010). RMSEA scores have been interpreted as: 0=perfect fit; <.05=close fit; .05-.08=fair fit; .08-.10=mediocre fit; and, >.10=poor fit (Byrne, 1998; Browne & Cudeck, 1993). This test is also the only test, other than  $\chi^2$  that gives a confidence interval for estimation (Tabachnick & Fidell, 2013) and its output consists of 4 figures: RMSEA, LO90, HI90 and PCLOSE. RMSEA measures the exact fit. LO90 is the lower limit of a 90% confidence interval which should be close to zero, whereas the HI90 is the upper limit which should be less than .08 (Wang & Wang, 2012). PCLOSE is the p value for testing the null hypothesis that RMSEA is less than .05 (Browne & Cudeck, 1993). The current estimation would use **RMSEA, PCLOSE, LO90 and HI90** as fit indices.

### **3.6.7.2.3.1.5 Parsimony Fit Indices**

Parsimony fit indices are also late developments to remedy the issues with  $\chi^2$  statistic at large samples and higher degrees of freedom (Tanaka, 1993) and PRATIO



is an index reported in SPSS AMOS 26 to measure the parsimony fit. It expresses the number of constraints in the model as a fraction of the independence model (James, et al., 1982; Mulaik, et al., 1989). The current estimation would also use **PRATIO**.

#### **3.6.7.2.3.1.6 Hoelter Index**

Hoelter's Critical Index, which gives the size of the largest sample when the model fits well, which is available in SPSS AMOS 27 is an important criterion to summarize the results of the fit indices, and therefore, would be used in the current estimation.

#### **3.6.7.2.4 Methods of Testing Validity**

The methods of testing validity would be relevant in the current analysis in assuring structural model validity of the internal value model.

##### **3.6.7.2.4.1 Indicator Reliability**

The test of indicator reliability verify that the factor loadings were large enough to explain an appreciable amount of variability represented by each indicator construct (Kline, 2011), by making sure that the factor loadings ( $\lambda$ ) of indicators were strong ( $>0.6$ ), statistically significant ( $p < .05$ ), and were greater than the corresponding error terms ( $\delta$ ) (Lloria & Moreno-Luzon, 2014). To assure indicator reliability in the case of all indicators, a cut-off of 0.6 would be used in EFA.

##### **3.6.7.2.4.2 Composite Reliability**

The test of composite reliability (CR) tests whether a single common factor underlies the multiple variables under a construct (Raykov, 1998). This was in addition to the Cronbach's alpha test, as Raykov (1998) showed that alpha, in some instances, may lead to biased estimates of scale reliability. In general, a scale is accepted to have good reliability if it has a CR above 0.7 (Raykov, 1998), and this is the cut-off that would be used in assuring the structural model validity of the internal value model.

##### **3.6.7.2.4.3 Convergent Validity**

The test of convergent validity tests how well a construct is measured by its indicators (Yau, et al., 2007). A scale has convergent validity if the indicators have strong correlations among one another (Kline, 2011; Lloria & Moreno-Luzon, 2014), and is evident if the average variance extracted (AVE)  $> 0.5$  (Fornell & Larcker, 1981), and this is the cut-off that would be used in assuring the structural model validity of the internal value model.

#### **3.6.7.2.4.4 Discriminant Validity**

The test of discriminant validity tests each construct for displaying a correlation with itself larger than its correlation with other constructs (Fornell & Larcker, 1981), showing that the measurements in the construct bear no relationship to measurements in the other constructs (Anderson & Gerbing, 1988). A correlation matrix containing Cronbach alpha values between each pair of constructs in the model would be used to evaluate discriminant validity of the internal value model.

#### **3.6.7.2.4.5 External Value Model**

When sequential search methods like the backward elimination is used in multiple regression, the presence of multicollinearity among IVs impact the final model substantially, because there is very little chance a highly correlated IV, with an IV already in the regression model, to enter the regression (Hair, et al., 2014), and therefore, the most important test to be used in assuring the validity of the Multiple Regression Model (MRM) was the test of ascertaining the absence of multicollinearity. In addition to that, the other tests of model fit planned to be used were: the linearity of the variate, normality, independence of the residuals, and homoscedasticity, as recommended by Hair, et al. (2014).

#### **3.6.7.2.5 Models of Testing Hypotheses**

The multivariate models being different, the models of hypothesis testing were also different for the internal and external value models.

##### **3.6.7.2.5.1 Internal Value Model**

In SEM, there are 2 basic models of analysis as: Partial Least Squares SEM (PLS-SEM) and Covariance Based SEM (CB-SEM) (Hair, et al., 2017). PLS-SEM is a causal modelling approach for maximising the explained variance of the dependent latent constructs whereas, CB-SEM is an approach aimed at reproducing the theoretical covariance matrix without focusing on explained variance (Hair, et al., 2011). Though PLS-SEM is gaining popularity of late, CB-SEM has been the more popular approach to SEM (Henseler, et al., 2009). Despite this recent popularity, some scholars view PLS-SEM as less rigorous and less suitable for examining relationships between variables, while others view it as a panacea for dealing with empirical research challenges such as the smaller sample sizes (Marcoulides & Saunders, 2006; Sosik, et

al., 2009). Despite these notions of competition between the two, some scholars view the two methods as complementary rather than competitive and choice of the method originates from the goal of the research (Joreskog & Wold, 1982). According to Hair, et al. (2011), 'the philosophical distinction between CB-SEM and PLS-SEM is straightforward', if the research objective is theory testing and confirmation, the method appropriate is CB-SEM, and if it is theory development and predication, the method appropriate is PLS-SEM. Since the current objective is theory testing and confirmation, **CB-SEM** appeared to be the automatic choice as the appropriate SEM model. CB-SEM operates by estimating a set of model parameters in such a way that the difference between the theoretical covariance matrix and an estimated covariance matrix is minimised (Rigdon, 1998), and therefore, requires a set of assumptions to be fulfilled, including the multivariate normality of data, minimum sample size etc. (Diamantopoulos & Siguaw, 2000).

The measurement model validity in the internal value model was to be assured through CFA. Each measurement model hypothesizes an estimated covariance matrix of its own (Hair, et al., 2014) and CFA validates it by comparing it with the covariance matrix generated by the observed data. If the model fits the data well, the two matrices will not be statistically different (Bentler, 1990; MacCallum, et al., 1996), and it is by showing the two matrices are not statistically different, researchers validate fit. There are several methods of model estimation in CFA, such as: Maximum likelihood (ML), Generalised Least Squares (GLS), Elliptical Distribution Theory (EDT), Asymptotically Distribution Free (ADF) (Ullman, 2013). **ML** stood out as the most suitable **estimation method** for the current application for its fitness for purpose. ADF is poor with sample sizes under 2500 and EDT accepts far too many models as does the GLS, though it is a little better with smaller sample sizes. The scaled ML is very similar to ML and GLS, but is computer intensive (Ullman, 2013). ML is the more efficient and unbiased method when the assumption of multivariate normality is met (Hair, et al., 2014) and the most widely used method (Kline, 2011). The following table illustrates the steps followed to ensure measurement model validity and structural model validity for hypothesis testing.

**Table 20: Steps for Internal Value Model Hypothesis Testing**

Step	Task
1	Fill missing data.

2	Exclude outliers and ensure normality of the dataset.
3	Test for assumptions underlying multivariate techniques.
4	Run statistical tests of factorability to fulfil the requirements of EFA.
5	Run EFA.
6	Specify the outcome of the factored solution as exogeneous variables.
7	Ensure measurement model validity by testing the model fit with: relative $\chi^2$ , NFI, IFI, TLI/NNFI, CFI, RMSEA, PCLOSE, LO90, HI90, PRATIO, Hoelter.
8	Specify the final measurement model.
9	Ensure structural model validity by the tests of: indicator reliability, composite reliability, convergent validity, discriminant validity and multicollinearity.
10	Test the structural model against several alternative models.
11	Specify the final structural model.
12	Test hypotheses.

### 3.6.7.2.5.2 External Value Model

The external value model using multiple regression as the multivariate technique in the case of the external value model, had to use an estimation technique to find the best regression model. The approaches to regression model estimation available were: confirmatory, sequential search and combinatorial (Hair, et al., 2014). In the confirmatory approach, the researcher specifies the IVs to be included in the model, and therefore, is best suited for a model that has sound theoretical foundation. Without similar previous research, there was no way the researcher could select the IVs based on theory here. The combinatorial approach is a search process where the researcher tries all possible combinations of IVs to find out the best fit with the least number of variables (Tabachnick & Fidell, 2013). The approach was not warranted here either, since the best fit with the least number of variables was not the specific aim of the current estimation. The sequential search methods work by adding or deleting variables until a fit is achieved. Since the objective of the current specification is to have a model fit with the maximum number of variables. The sequential search has 3 sub-approaches to choose from as: step-wise estimation, forward addition and backward elimination (Hair, et al., 2014). Backward elimination was selected here for the want of maximum number of variables in the model. Hypothesis testing would be done based on the significance values of the regression

coefficients explaining the relationship of each IV to the DV in the best model fit given in the ANOVA table produced by the process of backward elimination. The following table illustrates the steps followed to ensure measurement and structural validity of the Multiple Regression Model (MRM) for hypothesis testing.

<b>Step</b>	<b>Task</b>
1	Fill missing data.
2	Exclude outliers and ensure normality of the dataset.
3	Test scale reliability of each independent variable to verify measurement scales.
4	Test the compatibility of the research design with the requirements of regression in terms of: sample size and the absence of non-metric variables.
5	Test the data for non-violation of assumptions, in terms of: Linearity of the phenomenon; homoscedasticity; independence of error terms; and, normality of error term distribution.
6	Estimate the regression model using backward elimination.
7	Identify the best model fit using the ANOVA model summary output.
8	Assess the statistical significance of the overall model.
9	Verify the model by assuring: absence of multicollinearity; linearity of the variate; homoscedasticity; and, independence of the residuals
10	Interpret the regression variate by: assessing the relative importance of independent variables; and, measuring the degree and impact of multicollinearity.
11	Validate the results.
12	Test hypotheses.

### **3.6.8 Summary of the Research Design**

MMR designs are characterised by 7 dimensions: research purpose; theoretical drive; timing of the components (simultaneity v dependence); point of integrating components; nature of design (typological v. interactive); approach to design (planned v. emergent); and, complexity (Schoonenboom & Johnson, 2017). The purpose of the current design is exploration and theory testing. The theoretical drive is 'the conceptual direction of the project overall and is identified in the research question' (Morse & Niehaus, 2016) and is determined by the core method used in the research. The core methodology is denoted by 4 capital letters (as QUAL or QUAN) and the supplemental methodology in 4 simple letters (qual or quan) as the case may be. The 3<sup>rd</sup> design dimension refers to the timing or pacing (Morse & Niehaus, 2016),

of methods, whether they are 'concurrent' or 'sequential'. Concurrent components are indicated with a '+' and sequential ones with a '→'. The current research is a quantitatively driven sequential design and can be denoted as, qual→QUAN. The 4<sup>th</sup> design dimension points to the time at which the different components are brought together in the research process. According to Teddlie & Tashakkori (2009), integration can happen at 4 points: in conceptualisation, during data collection, during data analysis or during the inferential stage. The bringing of the two components of the current research was at the time of conceptualisation as its second phase could not be conceptualised without the findings of the first one. The 5<sup>th</sup> dimension is about the use of design typology. A typological approach is distinguished from an interactive approach where the former is a kind of a mould into which the research fits (Maxwell, 2013) and, the latter views design as a process that evolves during the research process (Schoonenboom & Johnson, 2017). The current design was typological owing to the academic requirements. The 6<sup>th</sup> design dimension describes the design in terms of its use of a planned or emergent approach. An emergent design is one in which there is space for components to emerge during the process of the research (Cresswell & Plano Clark, 2011). Such a design can arise in the emergence of a method to remedy a shortcoming not identified earlier (Morse & Niehaus, 2009). This research is planned in order to avoid the risk of subsequent modifications to the design. The 7<sup>th</sup> dimension explains the presence of complexities related to multiple points of integration (Guest, 2012). The current research design was a planned one with one point of integration without complexities. The following table is a summary of the current research design:

**Table 21: Design Dimensions of the Current Research**

No.	Dimension	What is adopted in the Current Research
1	Purposes	Exploration to a small extent and theory testing to a large extent
2	Theoretical drive	Qualitatively informed quantitatively driven
3	Timing	Sequential
4	Point of integration	Conceptualisation
5	Nature of design	Typological, qual→QUAN
6	Approach to design	Planned
7	Complexity	Simple

### 3.8. Sampling Design

Sampling is the important process of selecting a segment of a population which is representative of the whole, in order to draw inferences valid for the whole population. Sampling design sets out important aspects of sampling in research, and in MMR, 2 important aspects of a sampling design is the sample size and the sampling scheme (Onwuegbuzie & Collins, 2007).

#### 3.6.9 Sample Sizes

The size of the sample in both qualitative and quantitative research is a key factor because, the legitimation of the research outcomes depends on it (Onwuegbuzie & Collins, 2007). Sample sizes for the 2 stages of the research were different.

##### 3.6.9.1 Qualitative Sample Sizes

Qualitative sample sizes are generally much smaller compared to the quantitative sample sizes (Denzin & Lincoln, 2005). Yet, the acceptable adequate sample size for a qualitative inquiry is ambiguous (Saunders, et al., 2009). Some scholars argue against any rule, on the belief that the sample size should depend on the purpose of the researcher (Sandelowski, 2007), the objectives and the research questions (Paton, 2002; Saunders, et al., 2009). Following this line of thinking, some scholars collect data up to a saturation point (Mason, 2010). Others criticise the idea of saturation arguing that it fails to provide guidance for good qualitative research. According to Guest, et al. (2006), 12 interviews would suffice if the research purpose is to understand commonalities in a homogeneous population. Creswell (2007) provides an upper limit of a 25 to 30 participants for an interview sample with a maximum of 10 per a homogeneous group in phenomenological studies as he sees a less requirement of large sample sizes, as phenomenology does not need recoding data from a large number of participants who have really experienced the phenomenon to understand the phenomenon. Morse (1994) sets a minimum limit of 6 for a qualitative sample size. This study, hoping to extract the broadest possible value insights from the participants, planned interviewing till saturation, and conducted 36 interviews, with 6 interviews per stratum from the 6 strata.

**Table 22: Interview samples**

Population	Stratum	No. of Interviews
Educationists/Intellectuals	Educationists	6

	Intellectuals	6
Educators	Teachers	6
	Principals	6
	Administrators	6
	Teacher Educators	6
<b>Total</b>		<b>36</b>

### 3.6.9.2 Quantitative Sample Sizes

As the quantitative sample sizes had to be determined to make the statistical inferences drawn from them would represent the populations with desirable levels of precision and confidence, selection factors such as: the precision or accuracy needed; confidence level desired; variability in the population; and, type of sampling plan used (Kumar, 2014) were relevant. Precision indicates how close a sample statistic is to the corresponding population parameter; and, confidence shows how confident the researcher is that his/her estimates will really hold true for the population. As the confidence level conventionally accepted in social science research is 95%, and it corresponds to a significance level of  $p=.05$  (Kumar, 2014), this research adopts a precision of 95% and a significance level of .05. The formula to calculate the required sample size, 's' is (Krejcie & Morgan, 1970):

$$s = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$

where,  $X$  = the table value of chi-square for 1 degree of freedom at the desired confidence level of 95% (1.96);  $N$ =population size;  $P$ =population proportion (0.5, for optimal sample size); the degree of precision expressed as a proportion (.05).

The current sample sizes were ascertained using the sample calculation table provided by Krejcie and Morgan (1970) (see Appendix AU). The two sampling frames were 254374 (this was obtained by the researcher by visiting the Ministry of Education, SL, as the category numbers were not available in publications) and 60 respectively as shown in the table below. The sample size required for the educator population was 384 (Krejcie and Morgan, 1970), and it was stratified using a disproportional stratified sampling technique, because proportional sampling yielded a very small inadequate sample sizes for the 3 smaller strata (Kumar, 2014). The multipliers used and the calculated sample sizes are shown in 4<sup>th</sup> and 5<sup>th</sup> columns respectively in the table. But the sample sizes selected as shown in the 6<sup>th</sup> column



were greater than the calculated figures to make them adhere to the 2<sup>nd</sup> of the rules of thumb proposed by Roscoe (1975), which requires a minimum of 30 for each sub-sample, when a sample is broken down into categories. The same principle was adopted in determining the stratified purposive-quota sample sizes for the educationist-intellectual population as the sample sizes selected for the 2 categories were 30 each to make a total of 60 drawn from different specialisations in order to increase the generalisability of the results.

**Table 23: Quantitative sample sizes**

<b>Population</b>	<b>Stratum</b>	<b>Population Figure</b>	<b>Multiplier</b>	<b>Calculated Sample Size</b>	<b>Selected Sample Size</b>
<b>Educators</b>	Teachers	241,591	.0012	305.25	310
	Principals	9,708	.0050	48.54	50
	Administrators	2,105	.0120	25.26	30
	Teacher educators	970	.0250	24.25	30
	Total	254,374		403.30	420
<b>Educationists &amp; Intellectuals</b>	Educationists	30		28	30
	Intellectuals	30		28	30
	Total	60		56	60

### 3.7.1 Sampling Schemes

Sampling scheme defines how participants are selected, and the sampling techniques are the specific methods used within a scheme (Onwuegbuzie & Collins, 2007). Sampling techniques fall into 2 major categories as: random (probability) and non-random (non-probability) and, random sampling techniques are traditionally associated with quantitative methods and non-random with qualitative methods respectively (Onwuegbuzie & Collins, 2007). Probability sampling has a higher focus on representativeness and each sampling unit in the frame stands an equal chance of selection. Non-probability sampling focus is not on statistical inferences or representation, but on a real-life phenomenon or a certain purpose (Saunders, et al., 2009). There are various sampling techniques in both these categories (Miles & Huberman, 1994) and, Onwuegbuzie & Leech (2007) identify a total of 24 sampling techniques-5 probability, and 19, non-probability. Unlike in a purely quantitative or qualitative study, MMR sampling must consider the objectives of the research before deciding on sampling. If the overall objective is generalisation, the sampling should

be probabilistic and if it is discovering a phenomenon a researcher can purposefully select a sample using non-probability techniques (Onwuegbuzie & Collins, 2007).

### 3.7.1.1 Qualitative Sampling Scheme

The non-probability sampling techniques are convenience, snowball, purposive and quota (Onwuegbuzie & Collins, 2007; Saunders, et al., 2009). Onwuegbuzie & Collins (2007) explain each of these sampling techniques and Malhotra & Birks (2005) provide a comparison of the 4 and a joinder of the two is given in the table below:

**Table 24: A comparison of qualitative sampling techniques**

Technique	Definition	Strength	Weakness
Convenience	Choosing sample freely	Least expensive, least time consuming, most convenient	Selection bias, sample not representative, not recommended for descriptive of causal research
Snowball	Participants asked to recruit individuals to join study	Can estimate rare characteristics	Time consuming
Purposive	Choosing participants to achieve a purpose	Low cost, convenient, not time consuming, ideal for exploratory research designs	Does not allow generalisation, subjective
Quota	Deciding the characteristics and quotas of participants	Sample can be controlled for certain characteristics	Selection bias, no assurance of representativeness

**Purposive sampling** was preferred in the current qualitative study, as it suited ‘achieving a purpose’ through exploration, more than the other techniques did. It was also helped by the fact that its major weakness, i.e., the lack of generalisability of results, was not a major issue in qualitative studies (Denzin & Lincoln, 2005). Also, the selection had a focus which pointed to one of the 5 possible approaches available for researchers who attempt purposive sampling with a specific focus (2002). Those 5 possible approaches/techniques are given in the table below:

**Table 25: Different purposive sampling techniques**

Focus on	Purposive Sampling technique
Unusual/special	Extreme case sampling

Key themes	Heterogeneous sampling
In-depth	Homogeneous sampling
Importance of case	Critical case sampling
Illustration	Typical case sampling

Heterogeneous sampling is useful when all the key themes of a certain phenomenon are to be uncovered, and on the extreme opposite, homogeneous sampling is desirable when a phenomenon is to be studied in-depth. Critical case sampling is ideal in a situation in which certain cases, if studied, are representative of the whole population. Typical case sampling is selecting representative cases to deliver an illustrative profile of the population (Saunders, et al., 2009; Patton, 2002). Extreme case sampling selects unusual/special people in the sample as it allows to broader/deeper/higher insights generalizable on the whole population. Since the current exploration needed insights of the broadest and the highest order, which could be generalisable on the whole population in the next phase, the best way of doing it was through extreme cases, individuals were picked on their past conduct as disseminators of broad ideas on the subject. So, the sampling technique for this phase was **'purposive extreme case sampling'**.

### 3.7.1.2 Quantitative Sampling Schemes

The major probability sampling techniques used in the extant literature are simple random, systematic, stratified and cluster (Onwuegbuzie & Collins, 2007; Saunders, et al., 2009), Onwuegbuzie & Collins (2007) define each of these sampling techniques, and Malhotra & Birks (2005) provide a comparison of the four; and, a joinder of the two is given in the table below:

**Table 26: A comparison of probability sampling techniques**

Technique	Definition	Strength	Weakness
Simple random sampling	Every individual in the sampling frame has an equal and independent chance of selection	Easily understood, results projectable	Difficult to construct sampling frame, expensive, lower precision, no assurance of representativeness
Systematic sampling	Choosing every $k^{\text{th}}$ participant where, $k = \text{population/sample size}$	easier to implement than SRS, sampling frame is essential	Can decrease representativeness
Stratified	Sampling frame is divided	Includes all	Difficult to select

sampling	and selecting a random sample from each stratum	important sub populations	stratification variables, not feasible to verify on many variables, expensive
Cluster sampling	Dividing sampling frame into clusters and selecting a ran. sample from each	Easy to implement, cost-effective	Imprecise, difficult to compute and interpret results

### 3.7.1.2.1 Sampling Scheme for the Educator Sample

The educator population having 4 strata and each strata having different geographical or institutional positioning, the educator sampling scheme had to be multi-stage, employing different techniques in a sequential fashion, to profit from the strengths and minimize the weaknesses of each technique (Saunders et al., 2009; Patton, 2002). The first step was to ensure adequate representation in each stratum. The steps followed in the case of each stratum was as follows:

1. The teachers were serving in schools geographically spread across the country. For manageability, 15 schools: 5 schools (2 National and 3 Non-National) each from an educational division belonging to 3 districts (Gampaha, Kurunegala, Badulla) were selected in a sequential cluster that could be illustrated as a [District->Educational Division->School] arrangement. A sampling frame of the teachers in each school was prepared, and as the sum of all sampling frames equalled a figure close to 1000, every 3<sup>rd</sup> sampling unit was selected (sampling interval=3) as a respondent, in order to complete the 310 sample, using the systematic sampling technique.
2. The 50 principals were selected by preparing a sample frame each for the principals in the same 3 educational divisions, employing a sampling interval of 3 units, using the systematic sampling technique. The number of respondents from each division was equal to 14.
3. Since the educational administrators were serving at 3 levels of organisational hierarchy-divisional offices, zonal offices and the Ministry-in a ratio that was roughly equal to 1:2:1, the sample of 30 was divided in a ratio of 7:16:7. The administrators in the divisional and zonal offices were selected from the same districts, preparing a sampling frame for each division or zone and employing a sampling interval of 3, using the systematic sampling

technique. The 7 administrators from the Ministry in Colombo were selected from a sampling frame of Ministry directors and using a sampling interval of 4.

4. The teacher educators were serving in teacher colleges located in different parts of the country. In order to fulfil the sample requirement of 30, 3 teacher colleges in above 3 districts were selected and a sampling frame was prepared for each college. Employing a sampling interval of 3, 10 respondents were selected from each college to complete the sample.

### **3.7.1.2.2 Sampling Scheme for the Educationist/Intellectual Sample**

Using probability techniques in the selection of an educationist-intellectual sample was not feasible, as there was no record or register of educationists or intellectuals in the country available to prepare a sampling frame. Another constraint was that, the respondents were to be impartial and free of political affiliations so as to represent the long-term interests of the country and its posterity. Further the sample needed to be representative of educationists and intellectuals in different specialisations as well. The best possible way to overcome these challenges was to adopt a multi-stage sampling, where respondents were stratified in half according to educationists and intellectuals and assign a quota for different specialisations, and then fill respondents to each quota with respondents free from political bias purposefully in a stratified-quota-purposeful sampling arrangement. Quota sampling is criticised for its lack of representativeness and selection bias, compared to probability techniques (Bryman, 2008). However, dividing the population into categories and assigning a quota for each category and selecting units from each till the quota is reached, helps improving representation (Monette, et al., 2014). In order to achieve the research objectives to the maximum under these conditions, steps were taken to reduce bias and improve generalisability of samples. The sample was stratified into 2 strata as educationists and intellectuals in a ratio of 30:30, and the educationist subsample was filled with two quotas 15 each from teachers and administrators. Respondents to the intellectual subsample were filled with 2 respondents each for 15 quotas to represent different specialisations.

Though quota samples are criticised for selection bias and lack of generalisability, quota samples have been found to obtain results close to those with conventional probability sampling techniques, if a number of quality assurance steps were guaranteed (Getz, 2000; Sudman, 1980). For one thing, quota sampling can be made

reliable if constraints can be imposed on the freedom of the researcher's influence on choosing the participants or the selection bias (Moser, 1952). The respondents past conduct and actions were taken to be the sole determinant of their impartiality, and an objective policy in judgement was expected to minimise the researcher's selection bias. But even with stringent measures, quota sampling might not deliver generalisable results that are close to probability techniques, because the assumptions of probability theory were not applied (Malhotra, 2010). But then, a similar critique may be applicable to the current applications of random sampling as well, and especially to those applied in the social sciences, because the response rates in the modern survey researches show a chronic declining trend, introducing a selection bias into the data being collected as some respondents do not agree to participate (Stoop, 2008) leaving us with no chance of knowing if the non-respondents thought otherwise (Moser, 1952). This makes us believe that using probability techniques per se does not render generalisability of 100%, and that in a way justifies Postoaca's (2006) claim that there is no fully unbiased sampling method.

### 3.7.1.2.3 A Summary of the Quantitative Sampling Schemes

The following table gives a summary of the quantitative sampling schemes used in respect of the 2 samples:

**Table 27: Quantitative sampling schemes**

<b>Population</b>	<b>Stratum/Category</b>	<b>Sampling Technique</b>
Educators	Teachers	Stratified-Clustered-Systematic
	Principals	Stratified-Clustered-Systematic
	Teacher educators	Stratified-Clustered-Systematic
	Educational administrators	Stratified-Clustered-Systematic
Educationists & intellectuals	Educationists	Stratified-Quota-Purposive
	Intellectuals	Stratified-Quota-Purposive

## 3.9. Chapter Summary

This chapter on research methodology was intended to begin operationalisation of the conceptual model in the context of the SGSESL, in order to lay the methodological groundwork to set the research process in motion. To that end, it opened with a reading of the conceptual model in the context of the SGSESL, and identified the research purpose and research questions, which set the direction for

the whole inquiry process. Providing external validation to the methodological approach to follow to find answers to the identified research questions, it followed up with an account of the philosophical underpinnings of the research. Taking assurances of validation further internal, it then went on to discuss the research design, sampling design, and the data collection design for the whole research, allowing the exploratory phase of the research, wherein the operationalisation of the conceptual model will complete, to begin.





## 4. Qualitative Data Analysis

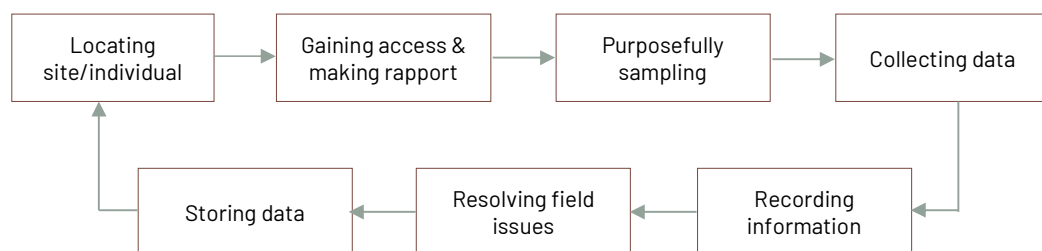
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### 4.1. Chapter Overview

This chapter presents the process and results of the exploratory phase of the research, which was needed to complete the operationalisation of the conceptual model. It opens with a description of the qualitative data collection process followed, and proceeds through a pre-analysis preparation and organisation of data, onto the real analysis by coding and categorising of data to make them presentable. Analysis provides the substance for the 2 value portfolios needed to populate the generic value creation model, for internal and external value creation, which will be the basis for the quantitative phase to follow. The chapter ends with questionnaire design.

### 4.2. Data Collection Process

Creswell (2007) proposes a process for data collection which takes the form of a cycle, as shown in the figure below:



**Figure 5: Qualitative data collection cycle**

Participants were selected as described under the section 'sampling schemes', and the current data collection process started by 'locating individuals.' Access was gained in strict adherence to the guidelines in the ethics proposal approved by the university ethics committee ensuring the rights of the participants (Corbin & Morse,

2003). An information sheet was provided to each participant with a description of the research (See Appendix AV) and a signed consent form was obtained from each participant confirming their participation and permission to record the interview (See Appendix AW). Generalisation being not an objective in qualitative research (Pinnegar & Daynes, 2006), extreme case purposeful sampling was used looking for broadest value insights through interviews. Interviews were face-to-face and the interview data was recorded into electronic audio files, and summary field notes were taken at the same time. Field issues such as difficulties in gaining access to organisations, observational difficulties, interview mechanics, access to documents (Cresswell, 2007) did not arise as permissions were sought individually, and observation or document search was not required. Precautions were in place during interview sessions to deal with the issues of unexpected participant behaviour and sensitive issues (Roulston, et al., 2003), though no such incident really happened, as no overtly sensitive issues were needed to be discussed. Interviews were conducted with good instructions and negotiated satisfactorily with good prior preparation. The transcription of audio files was a tedious and time-consuming task that had to be managed with patience. The ethical issues that might complicate qualitative data collection such as: informed consent procedures, deception or covert activities, confidentiality toward participants, benefits or research to participants over risks etc. (Lipson, 1994), were managed by providing all required details to the participants and adhering to ethical standards. Data storage and transcription were managed as per the stipulated procedure in the ethics document, in researcher's personal computer space and on a network location (Davidson, 1996). The qualitative data collection process lasted for 4 months. It started with pilot interviewing of 6 participants to test the feasibility of the interview schedule and several changes in the phrasing of the questions were made in the original interview schedule, in order to make it more comprehensible. Most of the 6 interviews were completed in several sessions aiming maximum effectiveness. Transcribing was also done while the interviewing was going on throughout the 36 interviews, in order to make the full cycle an incremental and iterative one, for saving time.

### **4.3. Data Analysis**

Qualitative data analysis generally passes through the steps: 1. preparing and organising the collected data for analysis; 2. Reducing the data into themes through

a process of coding and condensing of the codes into categories; and, 3. Representing the data in figures, tables, or through a discussion (Creswell, 2007). The additional analytical steps used in critical ethnography (Madison, 2005), ethnography, and case study (Wolcott, 1990) were not relevant in a phenomenological inquiry. The additional steps in the data analysis model proposed by Huberman & Miles (1994), for 'drawing and verifying conclusions from the other three steps', was also redundant as the current objective was not required to go beyond the identification of codes and categories as value measures and/or variables. Thus, the current analysis followed the 3 general steps agreeable to qualitative research.

#### **4.3.1 Preparing and Organising Data**

The first step in the process of data analysis was organising them into file folders, index cards, or computer files (Creswell, 2007). The current analysis followed the same procedure and stored the hard data in file folders and the soft data too were stored as electronic files in computers and cloud locations, in the form of electronic files and folders, as stipulated in the ethics document. Each audio file was transcribed into text units of words, sentences and stories and stored in the same electronic spaces for the use of analysis and a copy of each was imported as a document into the MAXqda space for analysis. The documents were organised into 6 folders to represent the 6 categories of participants and they were the source of subsequent analysis.

#### **4.3.2 Reducing Data into Codes and Categories**

The procedure of analysis was to use open coding, axial coding, and selective coding on the qualitative data collected to complete a tree of categories, sub-categories and codes, starting from the bottom. This was the as what Bryman (2008) suggested as thematic content analysis constructing an index of subthemes and themes and the tree of high-level and low-level themes by Ritchie, et al. (2003). The first step of coding was '**open coding**', where chunks of data were disaggregated into conceptual units and each new unit was given a new code name, and the recurring conceptual units (themes), even with a slightly different wording, was given the same name, while 'winnowing' unnecessary data, as not all information is used or needed (Wolcott, 1994). The question here was whether to use 'a priori' codes or 'emergent' codes. Crabtree & Miller (1992) and Marshall & Rossman (2006) are in favour the full range of

codes and categories, from a priori codes to emergent codes. Though some fields prefer a priori codes and categories (Crabtree & Miller, 1992), the objective of the current study being finding new insights, the current study adopted an open view in the first stage allowing new codes to emerge in the case of both educator values and the educationist/intellectual values. According to Creswell (2007) code names may be in-vivo names used by the participants, or else, they might be drawn from other sciences, or else, they might also be names of researcher's choice to describe the phenomenon appropriately. The current analysis adopted an open stance regarding this issue too, and used in vivo labels whenever they were present in data and invented new labels whenever there were no familiar labels to be found in order to make the codes and categories to reflect the underlying idea and used category names required by the proposed theory when needed.

The next step was '**axial coding**', in which the identifies codes were attached to subcategories. The policy of naming subcategories was also emergent and that proved to be helpful when one interviewee in the educationist/intellectual sample held that educational values could be categorised according to the 4 pillars of learning prescribed by UNESCO (1996) and another participant rejected that categorisation outrightly as outdated, and the majority preferred no a-priori categorisation at all. The last step in building the tree was '**selective coding**'. The code categories here in the case of educator data was a-priori since the subcategories were to be grouped under the variables of the conceptual model appropriately as their measurement scales. In the case of educationist/intellectual data the code categories were emergent and were selected to represent the values with meaningful category names.

An important issue in coding was whether to count codes or not in the analysis (Cresswell, 2007). Huberman & Miles (1994) suggest that presenting counts of data codes is a practice in analysis, whereas other researchers view it as a quantitative practice that might devalue the importance of the code to its frequency of occurrence (Cresswell, 2007). This fear is valid because the whole purpose of a phenomenological inquiry is unearthing new insights and therefore some researchers are against this practice (Asmussen & Creswell, 1995). However, though the current analysis reported the frequency of all codes it also needed to define a certain frequency cut-off as selecting a large number of codes for questionnaire

item generation was not practical. The next issue was related to the number of code categories. Though the general aim of categorising is to reach at 7 or 8 categories, it is not always possible in a large database to reach such a small number (Cresswell, 2007). The current analysis had to stick to an a priori number of 9 categories in the case of the educator sample, and consider the implementation readiness of the model rather than the number of variables in educationist-intellectual sample.

### 4.3.3 Findings of the Qualitative Analysis

The final analysis task is to present data in the form of text, tables or figures (Spradley, 1979), or matrix (Miles & Huberman, 1994) or a tree (Asmussen & Creswell, 1995). The current analysis uses a tabular form for its visual clarity. The starting questions of the interview schedule were included to validate the research problem and the conceptual model, and the presentation of data opens with the validation of these two aspects through interview data.

#### 4.3.3.1 Validity of the Research Problem

The interviewee responses to questions 1.6, 1.7, 2.6 provided adequate validation of the research problem. As illustrated in the table below, 'no clear education goals' and 'political interference' responses (or codes) were 41 and 28 respectively. Though the total number of interviews was 36, the lack of educational goals came up in 41 times and this is adequate validation for the lack of clear educational goals. In addition to those, 'isolated management practices' (23), 'no proper coordination between departments' (22), 'personal goals precede educational goals' (16), 'current management practices are not working' (6) were the other issues mentioned.

**Table 28: Validating the research problem through interview data**

<b>Code Category</b>	<b>Code Subcategory</b>	<b>Code Frequency</b>
<b>Validity of research problem</b>	No clear educational goals	41
	Political interference	28
	No clear education policy	14
	Personal goals precede organisational goals	16
	No proper coordination between departments	22
	Isolated management practices	23
	Current management practices are not working	6

The following table is a verbatim of some of the interview transcripts to show the gravity of the various dimensions of the research problem:

**Table 29: Validating the research problem through interview excerpts**

<b>Issue</b>	<b>Inter view ee</b>	<b>Excerpt</b>
Goals	T5	"I have my own interpretation of what the country's educational goals should be. And it is the same with other people. It is no wonder different people in the system are going in different directions."
Political interference	EA1	"Political interference in decision making is a feature in education. This happens in appointments, day-to-day decision making and even in admitting children to schools."
National policy	E4	"Absence of a clear national education policy to guide action is one of the main reasons for the delay in institutionalizing the educational reforms we proposed in 2007."
Personal goals precede educational goals	E5	"Current goals of education are not clear and they remain distant and elusive. There are only national goals and these national goals do not specify what the educational goals should be, and therefore, educational actors have diverse opinions as to the educational goals of the country are. Professionals put their personal needs ahead of the country needs today as a result of this. Therefore, the country needs a clear set of educational goals."
Coordination between departments	EA4	"There is no proper coordination or interaction among the NEC, NIE, Ministry and the Department of Examinations. The current relationships are conflict ridden. There is no clear demarcation of functions and responsibilities among these different parts of the organisation mainly because the final goals are not clear."
Isolated management	TE1	"The school syllabi are changed without the involvement or knowledge of the teacher educators who are supposed to train teachers who will be teaching the changed syllabi."
Management is failed	TE4	"There seem to be no clear vision or mission for the whole system and no one has a job definition for himself or herself to guide their action. No one knows clearly what he/she is required to do."

According to these interview excerpts: Different people have different interpretations of educational goals (T5); Political interference is a feature in the system (EA1); Education reforms are not moving forward for the lack of national policy (E4); personal goals precede national goals as the national goals are distant

and elusive (E5); There is no proper coordination between the highest departments in the system like the Ministry, NIE, NEC, and the Examinations Department (EA4); The school syllabi are changed without informing the teacher educators who train teachers to teach the syllabi (TE1); No one knows clearly what he/she is required to do in the system (TE4). These problems define a system in which even the most fundamental things are not in place. Lack of direction in terms of vision and goals has created uncertainty in the whole system allowing people to go in different directions, and departments to operate in isolation without coordination or collaboration.

#### **4.3.3.1.2 Validity of the Conceptual Model**

Initial 5 Interview questions for both samples (1.1-1.5 and 2.1-2.5) were aimed at validating the proposed theoretical principles. All the participants (36) agreed to the first proposed principle that public education is a service. Similarly, all the participants (36) confirmed that the owner of children is the country as against parents. This contention validated the principle of the stakeholder identification as active and passive. All the participants (36) identified teachers, principals, administrators and teacher educators as permanent or active stakeholders and few identified curriculum developers and policy makers too to be important. Since the curriculum developer and policy maker are roles played by the educationists themselves in the System, identification of them as passive stakeholders could also be treated as validated. All the participants (36) expressed their displeasure of the current exam evaluation system and some mentioned it in response to other questions too, making the total number of responses to 39. At the same time, all participants expressed their ability to measure educational values themselves quantitatively as done in the second stage of this research. Overall details of the responses are given below:

**Table 30: Validating the proposed principles through interview data**

<b>Code Category</b>	<b>Code Subcategory</b>	<b>Code Frequency</b>
<b>Validity of the proposed method</b>	Nature of Education is a service	36
	Owner of education and children	36
	Actors and roles	36
	Non-agreeability to current measurement method	39
	Measurability of proposed measurement method	36
	Capability enhancement system	34

Performance management system	28
Network system connecting all nodes	14
Central database system	14
R&D system	4

The other codes validated the different value creating components identified as essential for value creation in the conceptual model. These value creating components were: capability enhancement system (34), performance management system (28), central database system (14), network system connecting all nodes (14), R&D system (4). Some excerpts of these interviews are given below:

**Table 31: Validating the proposed principles through interview excerpts**

Issue	Interviewee	Excerpt
Nature	EA2	"Education is a service."
Owner	E3	"Country should be the owner of education and children."
Actors and roles	P4	"Teachers, principals, teacher educators, administrators and curriculum developers/policy makers."
Current evaluation method	TE6	"With this evaluation system and private tuition, we are producing senseless and heartless citizens who are very mechanistic in their approach to life. There are selfish and a burden on all around them."
Proposed evaluation model	I5	"The current system of selection through exams is extremely counter-productive. This should be done away with altogether. If we want to select students for positions, we must do it based on their passion for the job. It must be measured by someone who is knowledgeable and experienced. So, this method of specifying what is needed is acceptable to me."
Capability management	P6	"Teacher training is very important in achieving educational goals. But, the current system of module training does not serve any useful purpose. In much the same way certain values are expected of students, educational professionals should have certain identified set of capabilities to make students acquire the said values."
Performance management	EA2	"One of the biggest problems in the GSESL is the lack of a performance management system in order to encourage the productive work of the employees. The exhibitionist or publicity intended work done by people having personal goals in mind are getting highlighted and appreciated while the good work done by committed people are being ignored. It will be better if the



promotions and increments are managed through such a system.”

Network system	P2	ICT technology is something we are very poor at. A network system to connect the entire system is of high priority. It should facilitate communication between departments and online teaching and teacher training.
Database system	P3	A big burden on the principals and teachers is the repeated information requests by the different educational institutions in the system. To solve this problem, we need a very capable database system to hold required data. This will also help to find information required for management decision making.
R&D system	TE3	We need a learning and research culture within the system. The current curricular reforms are not research based. We do not take decisions based on research. This has led to blind following of other countries.

#### 4.3.3.1.3 Solutions for SGSESL Issues

In response to interview questions regarding values, the interviewees pointed to various issues in the system and potential solutions to those issues. Though these solution recommendations (534) were not strictly relevant to the research questions asked, they are reported here for their relevance in making recommendations for SGSESL, as shown in the high-level categories given below:

**Table 32: Solutions for SGSESL issues emerged in interviews**

Category	Code Frequency
Curriculum related recommendations	54
Vocational education related recommendations	37
Evaluation system related recommendations	30
Educational goals related recommendations	23
Value education related recommendations	23
Management process related recommendations	24
Educator training related recommendations	36
Resource related recommendations	42
Educational process related recommendations	87
Organisational measures related recommendations	178
<b>Total Number of Codes</b>	<b>534</b>

#### 4.3.3.1.4 Operationalisation of the Conceptual Model

The conceptual model developed by integrating the generic principles of value creation, extracted through a synthesis of the bodies of value related management literature, was to be operationalized by identifying the value measurement scales of the variables through an exploratory study (using interviews) into the problem domain. The qualitative data collected from 2 groups of stakeholders, educators, and educationists/intellectuals, when analysed, yielded 2 value models, internal and external, respectively, and the operationalization of the conceptual model was done in terms of those 2 components.

##### 4.3.3.1.4.1 Internal Value Model-Educator Values

The interview questions 1.7-1.10 were to extract items of the educator value portfolio or the internal value co-creation measures with the intention of populating the bottom 8 layers of the value co-creation model architecture with them, as educators were the Actors who co-create internal value. The variables/codes and their frequencies yielded by the analysis is given below:

**Table 33: Educator value portfolio-a high level view**

<b>Category</b>	<b>Code Frequency</b>
Vision Management	140
Performance Management	143
Value in Exchange Management	49
Capability Management	54
Culture Management	33
Human Resource Management	44
Service Process Management	102
Connectivity & Information Management	33
Operand Resource Management	45
Internal Value Co-creation	122
<b>Total Number of Codes</b>	<b>765</b>

The educator data yielded 765 codes under 10 categories. The complete code structure is given in Appendix AX. Value-in-exchange, though not inquired into, emerged in the analysis and is reported distinctly here, and would be put in the performance management layer. Since these code subcategories were to form the

items in the educator questionnaire, items with a frequency less than 5 had to be dropped for practical reasons. The operationalisation table was prepared by taking code subcategories with a frequency equal or greater than 5 as measurement scales, and the operationalisation table of the internal value model is given below:

**Table 34: Operationalisation Table-Internal Value Model**

<b>Variable</b>	<b>Construct</b>	<b>Measurement Scale (Constructed through qualitative data)</b>
Vision Management	Vision Management	Lack of proper vision
		Vision is limited to impart knowledge
		Lack of proper educational goals
		Vision is limited to operational management
		System is affected by political interference
		Politics not meritocracy counts in the system
		Copying programmes from other countries has failed
		Policy implementation is weak
		Education is subjugated to resource management
		Current curriculum is a shallow collection of facts
		Current curriculum is not connected with real life
		Current curriculum does not impart soft skills
		Values can be imparted through current curriculum
		Current curriculum promotes private tuition
Performance Management	Performance Management	Current education does not impart values
		Character building not part of current education
		Education produces senseless citizens
		Education does not produce social problem solvers
		Current education does not cultivate attitudes
		Education does not cultivate good habits
		Exam evaluation has created competition
		Current evaluation system has produced selfishness
		Current exam evaluation and private tuition are linked
		Exam evaluation preempts collaboration among people
		No clarity in job functions
		Educators lack freedom to work creatively
Educators are overloaded with work		
Value in Exchange	Value in Exchange	Educators do not get a respectable salary
		Educators do not get a performance-based salary
		Compensation is not en par with respected professions
		Educators do not have professional recognition
Capability Management	Capability Management	Continuous professional development is not managed
		Capability enhancement by further education is poor

		Educator education is not quality
		Educator education is not well planned
		Educators do not get value education training
Culture Management	Culture Management	Knowledge sharing is not part of work culture
		Work culture is not positive
		Openness is not in work culture
		Equality is not accepted in work culture
Human Resource Management	Human Resource Management	Human resource adequacy issues
		Human resource positioning is problematic
		Collaboration is blocked by professional categorisation
		Career progression issues
Service Process Management	Service Process Management	No grounding of students in culture
		Education alienates students from society
		Current education is about rote learning
		Academic mode of learning reduces males in education
		Current education is about passing exams
		Rules make operations difficult
Connectivity & Information Management	Connectivity & Information Management	No central database
		Information available is seriously limited
		No communication through a single network
		No online teaching and learning system
Operand Resource Management	Operand Resource Management	System lacks adequate physical resources
		A huge disparity in resource disparity exists
		Resource disparity promotes school hierarchy
		No adequate teaching aids in institutions
Internal Value Co-creation	Internal Value Co-creation	Guidance, direction, and leadership
		Quality of training received
		Resource base to support the process
		Proper curriculum
		Method of performance evaluation
		Conducive environment

#### 4.3.3.1.4.2 External Value Model-Educationalist/Intellectual Values

The interview questions 2.6-2.10 from the educationalists/intellectuals were to extract items of the external value co-creation model with the intention of populating the top layer of the value co-creation model architecture, as educationalists/intellectuals were the representatives of the value co-creators. The variables/codes and their frequencies yielded by the analysis is given in the table below:

**Table 35: Educationist-Intellectual value portfolio-a high level view**

<b>Category</b>	<b>Code Frequency</b>
Foundational skills	71
Transferable skills	37
Employment competences	46
Social competences	39
Cognitive capacities	33
Behavioural capacities	40
Attitudes	51
Character attributes	34
Personal qualities	72
Personal capacities	48
External value co-creation	87
<b>Total Number of Codes</b>	<b>558</b>

The educationist-intellectual data analysis yielded 457 codes under 10 categories. The complete code structure is given in Appendix AY. Since these code subcategories were to form the items in the educationist/intellectual questionnaire, items with a frequency less than 3 had to be dropped for practical reasons. The operationalisation table was prepared by taking code subcategories with a frequency equal or greater than 5 as measurement scales, and the operationalisation table of the external value model is given below:

**Table 36: Operationalisation Table-External Value Model**

<b>Variable</b>	<b>Construct</b>	<b>Measurement Scale (Constructed through qualitative data)</b>
Foundational skills	Foundational skills	Universal identity
		Love for the country
		Mother tongue fluency
		Numeracy
		Environmental consciousness
		Aesthetic sensibilities
		Cultural consciousness
		Physical health
		Physical fitness
		Mental health
		Physical endurance

		Physical flexibility
		Rhythmic abilities
Transferable skills	Transferable skills	Common sense
		Ability to adapt to situations
		Curiosity about the unknown
		Thirst to learn
		Ability to learn from the past experiences
		English proficiency
		Imaginative capacities
		Pragmatic approach to work
		Basic technology skills
Employment competences	Employment competences	Problem solving skills
		Respect for every profession
		Efficiency
		Capacity to collaborate
		Effectiveness
		Pursuing own passion
		Entry level employability in selected field
		Capacity to plan
		Capacity to attain goals
Social skills	Social skills	Team builder
		Team player
		Useful to society
		Useful to family
		Ability to resolve conflicts peacefully
		Multilingual
		Public Relation skills
		Likeable personality
Cognitive capacities	Cognitive capacities	Extrovert
		Holistic thinking
		Structural thinking
		Social thinking
		Process thinking
		Long-term thinking
		Analytical thinking
Deep Analytical thinking		
Behavioral	Behavioral	Committed

capacities	capacities	Disciplined
		Well mannered
		Ethical
		Honor social justice
		Principled
		Responsible
		Cultured
		Incorruptible
Attitudes	Attitudes	Appreciate sustainable development
		Appreciate diversity
		Respect for fellow beings
		Respect for adults
		Capacity to respect women
		Capacity to bear opposing views
		Inclusivity
		Treat others irrespective of status
		Equality
Meritocratic		
Character attributes	Character attributes	Humility
		Selflessness
		Genuineness
		Moral integrity
		Honesty
Personal qualities	Personal qualities	Truthfulness
		Courage
		Patience
		Friendly
		Helpful
		Sharing
		Not hyper competitive
		Simplicity
		Love
		Kindness
		Punctuality
		Active
		Diligence
Humanism		

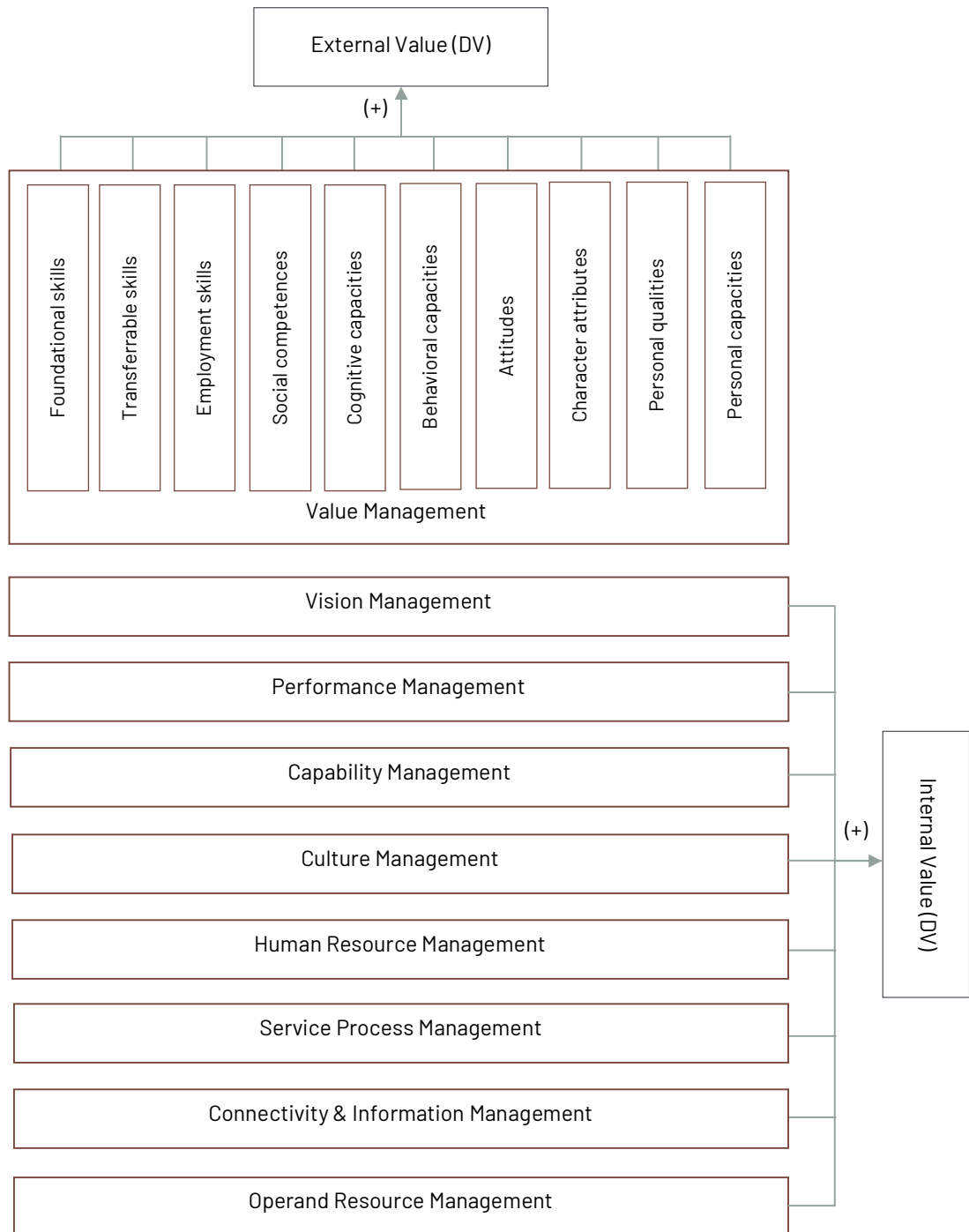
		Gratefulness
Personal capacities	Personal capacities	Purposeful in life
		Enterprising
		Capacity to see the cause & affect relation
		Long term planning
		Risk taking
		No fear of failure
		Perseverance
		Capacity to absorb pressure
		Innovativeness
External value creation	External value creation	Harmony with environment, society, culture
		Physical and mental fitness
		Balanced thinking capacities
		Learner qualities
		Pragmatic approach to work and life
		English and Technology proficiency
		Passion pursued employability
		Team player
		Collaborator
		Human respect
		Meritocratic
		Behaviors of a developed human being
		Personal qualities of a developed human
		Personal capacities of a developed human
		Character attributes of a developed human

#### 4.4. Conceptual Model for the Descriptive Research

The process and substance of the 2 value portfolios emanated from the literature review and the qualitative data analysis provided material to fulfil the 5 essential requirements of a conceptual model as prescribed by Sekaran (2006): 1. variables identified and discussed; 2. variable relationships established; 3. nature of relationships indicated; 4. relationships developed and clarified through literature; 5. a schematic diagram showing the relationships. The conceptual model has 2 dependent variables as internal value and external value. The DV 'internal value' has 9 IVs: 'operand resource management', 'connectivity and information management', 'service process management', 'human resource management', 'culture management',



'capability management', 'performance management', 'value in exchange', and 'vision management'. The DV 'external value' has 10 IVs as: 'foundational skills', 'transferable skills', 'employment skills', 'social competences', 'cognitive capacities', 'behavioural capacities', 'attitudes', 'character attributes', 'personal qualities', and 'personal capacities.' And, all independent and dependent variable relationships were proposed to be positive (+).



**Figure 6: Conceptual model for the descriptive research**

## **4.5. Developing the Quantitative Model**

The conceptual model developed through the exploratory study was to be tested through a quantitative model in a quantitative study. The task of converting the conceptual model into an accurate quantitative model is complicated by the need of ensuring inferences developed with relatively high degree of subjectivity using small samples during the exploratory study into the requirements of relevance, significance, and external validity (Chalhoub-Deville, et al., 2006) using large samples in the quantitative study, in order to overcome lack of generalisability of the final outcome (Gall, et al., 1996). This research attempted to overcome this challenge by employing 3 interconnected steps to ensure generalisability (Popesku, 2015):

1. translating the qualitative model into a quantitative one,
2. developing multi-item scales and indexes to represent qualitative inferences accurately, and,
3. performing quantitative tests on samples of adequate size

The conversion started with the conceptual/structural model, which was defined by the research hypotheses which explain the relationships of the latent constructs with one another. The conversion required to test the model was a 'measurement model' consisting of items to serve as proxies in measuring the latent constructs in the 'structural model'. The link between the structural model and the measurement model allows to build path models that finally allow to test the full theoretical model (Hair, et al., 2014). The process of developing the quantitative model was completed using literature guidelines which require to fulfil 3 steps in the process (Beardon, et al., 2011; Diamantopoulos & Winklhofer, 2001; DeVellis, 2011):

1. Defining the latent constructs or scales
2. Generating items or indexes for each latent construct
3. Assessing the multi-item constructs for content and face validity.

The following subsections discuss these steps followed in the conversion.

### **4.6.1 Defining the Latent Constructs**

The latent constructs related to the internal value creation model and the external value creation model correspond the variables of the conceptual model, which were given in the operationalisation tables, and the following tables provide definitions to the two sets of latent constructs.

**Table 37: Latent constructs of internal value creation**

<b>Construct</b>	<b>Label</b>	<b>Definition</b>
Vision Management	VIS	This construct represents the top-level management measures needed to ensure the link between external value and internal functions.
Performance Management	PER	This construct represents performance management measures for the entire value network in order to optimise internal value co-creation.
Value in Exchange	VEX	This construct represents measures related to value in exchange that accrues to the internal value co-creators in order to optimise internal value co-creation.
Capability Management	CAP	This construct represents measures needed to ensure capability management of all actors in value network in order to optimise internal value co-creation.
Culture Management	CUL	This construct represents measures related to cultural traits required in the internal environment in order to optimise internal value co-creation.
Human Resource Management	HRM	This construct represents measures related to human resource management practices needed in order to optimise internal value co-creation.
Service Process Management	PRO	This construct represents the measures related to process management functions and facilities needed to optimise internal value co-creation
Connectivity & Information Management	CIM	This construct represents the measures related to connectivity among different nodes in the network and to the availability and sharing of information among them.
Operand Resource Management	ORM	This construct represents the measures related to the availability, sufficiency and parity in physical resource requirements in order to optimise internal value co-creation.
Internal Value Co-creation	VALIN	This construct represents the measures of internal value co-creation.

**Table 38: Latent constructs of external value creation**

<b>Construct</b>	<b>Label</b>	<b>Definition</b>
Foundational skills	FOSK	This construct represents the measures related to the basic skills of life that everyone should possess.
Transferable skills	TRSK	This construct represents the measures related to skills that are needed to do well irrespective of the field or

		situations.
Employment competences	EMCO	This construct represents the measures related to competences everyone should have in order to be successfully employed.
Social competences	SOSK	This construct represents the measures related to competences everyone should have to be a productive person in society.
Cognitive capacities	COCA	This construct represents the measures of cognitive capacities needed to be developed to blossom the full potential of an individual in order to maximise one's contribution to oneself and the world.
Behavioural capacities	BECA	This construct represents the measures related to behavioural capacities seen in one's behaviour in society creating social well-being and harmony.
Attitudes	ATTI	This construct represents the measures related to the strong-held individual beliefs regarding the outside world, which lead to ensure the collective well-being of the whole world.
Character attributes	CHAT	This construct represents the measures related to the constant and deeply embedded patterns of individual behaviour, which lead to ensure human relationships pleasant.
Personal qualities	PEQU	This construct represents the measures related to the individual qualities that become visible in human interaction, which lead to ensure such interactions productive.
Personal capacities	PECA	This construct represents the measures related to the individual capacities that lead to make one's work and life desirable by the outside world
External value co-creation	VALEX	This construct represents the overall skills, competencies, qualities, attributes, characteristics and capacities of individuals that enable value co-creation for the country by them and citizens.

#### 4.6.2 Generating Items for Latent Constructs

In item generation, each item 'can be thought of as a test, in its own right, of the strength of the latent variable' and as such, 'should primarily reflect the construct of interest', and multiple items, if each item is 'still sensitive to the true score of the

latent variable', 'will constitute a more reliable test than individual items' (DeVellis, 2011). The need therefore was to ensure a close link between each item and the latent variable. The strategy used to ensure this link in the current research was to base the item selection on the frequency of occurrence of the codes in subcategories, as it provided the best measure of the importance of the subcategory to the construct in the participants' view point, which was a fundamental requirement in phenomenology. Processing interview data into a code system also made the questionnaire method much easier to apply (Ranasinghe & Fonseka, 2011). Thus, the code subcategories went into make the items whereas the code categories made the latent constructs in the case of both samples.

From the potential forms of questionnaire items such as: questions of fact; questions measuring opinions/attitudes; seeking information; and, uncovering self-perceptions (Kumar, 2014; Sekaran, 2006; Ranasinghe & Fonseka, 2011), the current questionnaires were aimed at two goals: gathering demographic information and fact finding. Information questions to learn what respondents know about the system or about themselves (self-perception) were not required by the nature of the study. The basic rules regarding the construction of the questionnaires of: expressing purpose, simple language, shortness, guidelines, not taxing, clarity, avoiding double-barrelled or biased or emotional questions, and anonymity (Ranasinghe & Fonseka, 2011) and of: relevance, symmetry (similar number of questions under each variable), clarity, simplicity, positive attitude and avoiding questions which were presuming or suggestive (Sarantakos, 1993) were followed to the maximum, except the requirement of symmetry at all times which was unavoidable due to the asymmetric number of responses in the interview stage. As the research purpose was well structured, there was no need to use open-ended questions and as such all the questions were structured using a 7-point Likert scale to elicit responses from 'strongly disagreed' to 'strongly agreed'.

#### **4.6.3 Assessing the Latent Constructs for Content and Face Validity**

**Content validity** is a measure of how far the test items represent the respective domains they are expected to measure (Kline, 2011) and **face validity** is the degree to which the items related to the constructs as judged by the experts (Hardesty & Bearden, 2004). In simple terms, the former is a measure of 'coverage' and the latter of 'relatedness' and the former may require more items to cover the domain and the

latter needs each item to be closely linked to the construct. Due to the relatively high dependence of the current research on exploratory data, **4 experts** (2 educational and 2 research) were involved to assess and provide inputs on data collection and analysis from the time of designing interviews till mid data analysis. On their advice, interview questions and questionnaire items were modified iterating through several cycles during the pilot interviews and questionnaire testing to improve content and face validity. Most notably, 1 question each added to the reflective constructs VALIN and VALEX in order to measure their construct validity using those as dependent variables, as latent constructs VALIN and VALEX were consisted of somewhat heterogenous items compared to the formative constructs. They were the 7<sup>th</sup> and 16<sup>th</sup> items of the latent constructs VALIN and VALEX respectively and were phrased as given in the table below:

**Table 39: Items added in questionnaires to measure construct validity**

Latent Construct	Item No,	Item
VALIN	7	You are well empowered to create value with the supply of everything required.
VALEX	16	Overall value creating readiness.

The process of item modification continued till the experts were satisfied and the number of items generated under each construct is given in the tables below, and the **questionnaires**, the result of item definitions are given in **Appendices BA and BB**.

**Table 40: Questionnaire items, Internal Value Model**

Construct	Label	Number of Items
Vision Management	VIS	14
Performance Management	PER	13
Value in Exchange	VEX	4
Capability Management	CAP	5
Culture Management	CUL	4
Human Resource Management	HRM	4
Service Process Management	PRO	6
Connectivity & Information Management	CIM	4
Operand Resource Management	ORM	4
Internal Value Co-creation	VALIN	7
<b>Total</b>		<b>65</b>

**Table 41: Questionnaire items, External Value Model**

<b>Construct</b>	<b>Label</b>	<b>Number of Items</b>
Foundational skills	FOSK	13
Transferable skills	TRSK	9
Employment competences	EMCO	9
Social competences	SOSK	9
Cognitive capacities	COCA	7
Behavioural capacities	BECA	9
Attitudes	ATTI	10
Character attributes	CHAT	6
Personal qualities	PEQU	14
Personal capacities	PECA	9
External value co-creation	VALEX	16
<b>Total</b>		<b>111</b>

#### **4.6. Chapter Summary**

This chapter presented the process followed in the exploratory phase of the research along with the findings of qualitative data analysis. The code subcategories, and categories identified through the interviews went into form the two value portfolios intended, and they in turn populated the value creation model architecture, and made possible the operationalisation of the conceptual model, which was also the structural model for the descriptive phase of the research. The structural model in turn lent itself to convert it to a measurement model, which was consisted of a set of latent constructs, and measurement scales and resultant questionnaire items under each of those latent constructs, to make a complete quantitative model ready to be tested in the descriptive stage of the research, which would be presented in the next chapter.





## 5. Quantitative Data Analysis

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### 5.1. Chapter Overview

This chapter discusses the descriptive phase of the research. It opens with an account of how the completeness and normality of the data were assured and goes on to the details of assuring validity of measurement models or goodness of fit of both value models. Data related to the internal value model was subjected to EFA to complete the measurement model and assure goodness of fit and the data related to the external value model were verified through scale reliability of each construct. The next section is descriptive statistics, an account of the demographic profile of the sample data. The next sections discuss the details of building the structural models and assuring validities. The internal value model was subject to CFA and the external value model was developed into an MRM. The chapter closes discussing the findings of qualitative analysis and hypothesis testing.

### 5.2. Introduction

The preliminary task in multivariate data analysis is 'how to assess and overcome pitfalls resulting from the research design and data collection practices' and that can be accomplished in 3 steps (Hair, et al., 2014): 1. Evaluation and correction of missing data; 2. Identification and exclusion of outliers to ensure normality of the data set; 3. Testing for the assumptions underlying common multivariate techniques.

### 5.3. Evaluation and Correction of Missing Data

Missing data primarily result from: errors in data collection or omission of answers by respondents, or, errors in data entry (Hair, et al., 2014), The quantitative data collection having lasted for 8 months through a self-administered questionnaire,

data quality could be affected by response errors, as the researcher had no complete control over the responses (Highman, 1955), but its impact on data quality was reduced to a maximum by way of on-site group administration in the case of the educator questionnaire, by explaining the importance of the research to the respondent's professional careers, agreeing upon 50 minutes to complete it, and providing the clarifications needed while the process was going on. There were 16 partially incomplete questionnaires in the data set 1 which could not be spotted instantly due to the non-manageability of checking a large number but, its impact on the data quality was completely nullified by discarding them altogether and filling the number with 16 from the excessive 20 questionnaires, pre-planned precisely for that purpose. The educationist-intellectual data collection was different, as it was one-on-one lengthy sessions, where the researcher had control over the quality and completeness of the process, the odd missing response was spotted and got completed then and there, and as such, there were no incomplete responses for screening. The next step of ensuring data quality is to ensure quality in the data entry process (Hair, et al., 2014). Data entry errors were spotted by running frequency tests in SPSS. Dataset 1 had 3 missing entries, and 6 incorrect entries. The missing ones were traced back to the hard copy and corrected. The 7 incorrect entries were due to a mistake in entering 'work place category' and were corrected. The 2<sup>nd</sup> sample did not give a single data entry error, as it was done with the experience of the former. Both did not have a single missing entry going into further analysis.

#### **5.4. Managing Univariate Outliers and Ensuring Normality**

Univariate normality of data was verified by calculating the Mahalanobis Distances of each item and 9 outliers in the dataset 1 ( $MD > 27.877$ ,  $p < .001$ ) (Tabachnick & Fidell, 2013), and 0 outliers in the dataset 2 had to be removed. In large datasets, the skewness and Kurtosis indexes should be less than 3 and 10 respectively (Kline, 2011), and each variable in the 2 datasets was verified to fulfil this requirement, using the Kolmogorov-Smirnov Statistic. Each questionnaire item fulfilled these requirements as well, as shown in Appendices BB and BC.

#### **5.5. Ensuring Goodness of Fit for Multivariate Analysis**

The multivariate technique used in analysing quantitative data being different in the two value models, the method of ensuring goodness of fit was also different.

### **5.5.1 Goodness of Fit: Internal Value Model**

A dataset should pass through 3 levels of statistical tests to qualify for EFA (Worthington & Whittaker, 2006; Tabachnick & Fidell, 2013) and they are: criteria for factorability of the correlation matrix, criteria for item retention, and criteria for factor retention.

#### **5.5.1.1 Factorability of the Correlation Matrix**

The first test under this was 'the Bartlett's test of sphericity' to ensure the probability of correlations among the factors in the observed data set (Bartlett, 1950). Dataset 1 factored into a solution with significant correlations ( $\chi^2 = 15447.451$ ,  $df=1431$ ,  $p=.000$ ). The second test was 'the Kaiser-Meyer-Olkin measure of sampling adequacy' (Field, 2013), the dataset 1 yielded a superb KMO ( $>0.9$ ) of 0.938 in the test (Kaiser, 1970; Kaiser, 1974).

#### **5.5.1.2 Tests for Item Retention**

These were tests of reliability and adequacy of the 58 indicator items which were subjected to FA. The initial test was the *Factor loading on items*, and should be above 0.5 to be practically significant (Hair, et al., 2014). The current test adopted a cut-off of 0.5. Due to this stringent cut-off 2 items (PER\_10, VIS\_7) failed to load and were left out of further analysis. The next test was to test the solution for *Cross loadings* (Tabachnick & Fidell, 2013). The current factor solution was arrived at after a large number of iterations with the removal of 2 items (VEX\_4, VIS\_8) as they cross loaded on several other observed combinations. Thus, the factor solution needed the removal of 4 items altogether leaving only 54 items for further analysis. The next test was *Cronbach's alpha* (DeVellis, 2012) and alpha values greater than 0.7 are expected for strong internal scale consistency (Nunnally & Bernstein, 1994). Each factor of the data set 1 yielded a value above 0.7. Another test measures *inter-item correlation*. The current study used a cut-off of 0.5 looking for a strong structure. The next test was for *communalities*, and the minimum communality score should be 0.4 (Worthington & Whittaker, 2006) and the dataset 1 passed this criterion easily, as all scores were above 0.6. Another test ensured adequate *Corrected Item-Total Correlations* by measuring the correlation of each item to the Total if it is deleted (Norusis, 2005) should be above 0.5 (Bearden, et al., 1989; Zaichowsky, 1985) and each item in dataset 1 was above 0.5.

### 5.5.1.3 Tests for Factor Retention

These tests are to determine the number of factors to be extracted, and scholarly opinion on this is not settled (Tabachnick & Fidell, 2013). Tabachnick & Fidell (2013) argues that the decision on where to stop factoring-at eigen values 0, less than 0, or greater than 0- depends on the objectives of the research. Since the current objective was to further expand the conceptual model by dividing the summated scales into more correlated groups, current factoring was continued till the factors explained a minimum of 70% of the total variance and it went well beyond the above requirement of eigenvalue 1 till 0.907, delivering a good solution at 13 factors at a total cumulative variance of 72.999.

### 5.5.1.4 Summary of EFA Test Criteria and Results

The following table is a summary of the test criteria and results of the EFA.

**Table 42: EFA test criteria and results**

Test/Criterion	Result	Comment
Correlation between factors-Bartlett's test of sphericity	$\chi^2 = 15447.451$ , df=1431, p=.000	Significant
KMO for sampling adequacy	0.938	Superb
Total variance explained by solution	72.999	high
Kaiser Criterion based on eigen value	0.907	Less than 1
Factor loading/variance on item	>0.5	high
Reliability of factors	>0.7	adequate
Inter-item correlation within the factors	>0.5	adequate
Amount of variance explained by each variable, communality	>0.5	adequate
Corrected item-total correlation	>0.5	adequate

### 5.5.1.5 Factored Solution

The current EFA was conducted using IBM SPSS 25, a widely accepted statistical software package. Of the two factor extraction method choices, the Principal Component Analysis (PCA), and Common Factor Analysis (CFA), PCA was selected as it is preferred in data reduction (obtaining a minimum number of factors accounting for a maximum proportion of variance), as against CFA which is more appropriate for deriving factors with shared variance (Tabachnick & Fidell, 2013).

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	Comm.
PER_6	0.761													0.772
PER_5	0.745													0.809
PER_1	0.637													0.681
PER_3	0.597													0.706
PER_4	0.578													0.690
PER_2	0.553													0.665
PER_7		0.917												0.814
PER_8		0.860												0.812
PER_9		0.813												0.720
CUL_4			-0.897											0.851
CUL_3			-0.857											0.817
CUL_2			-0.850											0.821
CUL_1			-0.835											0.757
VIS_2				0.914										0.854
VIS_4				0.882										0.816
VIS_3				0.860										0.840
VIS_1				0.831										0.772
VEX_1					-0.882									0.797
VEX_3					-0.839									0.773
VEX_2					-0.757									0.741
ORM_3						-0.702								0.771
ORM_4						-0.638								0.774
ORM_5						-0.587								0.695
ORM_1						-0.563								0.707
PRO_3							-0.769							0.724
PRO_2							-0.741							0.741
PRO_5							-0.676							0.587
PRO_4							-0.646							0.596
PRO_1							-0.623							0.673
PRO_6							-0.518							0.615
CAP_3								-0.741						0.794
CAP_2								-0.677						0.728
CAP_1								-0.674						0.692
CAP_5								-0.670						0.730
CAP_4								-0.563						0.691
VIS_6									0.825					0.749
VIS_5									0.788					0.757
VIS_9									0.643					0.658
HRM_3										-0.787				0.738
HRM_1										-0.762				0.640
HRM_2										-0.735				0.714
HRM_4										-0.628				0.667
VIS_11											-0.715			0.745
VIS_14											-0.679			0.729
VIS_10											-0.658			0.612
VIS_12											-0.656			0.688
VIS_13											-0.572			0.685
CIM_1												0.743		0.764
CIM_4												0.742		0.740
CIM_3												0.646		0.750
CIM_2												0.643		0.671
PER_12													0.702	0.814
PER_11													0.625	0.755
PER_13													0.612	0.734
Eigen	19.463	3.226	2.812	1.979	1.842	1.664	1.582	1.520	1.349	1.199	1.097	1.004	0.898	
Cum. Var.	36.042	42.016	47.224	50.889	54.300	57.381	60.310	63.125	65.622	67.843	69.873	71.732	73.395	
$\alpha$	0.915	0.840	0.916	0.923	0.842	0.876	0.873	0.879	0.781	0.831	0.871	0.872	0.857	

**Figure 7: Factor solution obtained through EFA**

Of the two rotation methods, *orthogonal* and *oblique*, the latter was used as it is more appropriate for situations where there can be correlations between factors as envisaged in the current case (Netemeyer, et al., 2003; Lawley & Maxwell, 1971). For the perceived unavailability of factor correlation in data gathered from humans, Field (2013) argues that orthogonal rotation is completely inappropriate for data involving humans. Based on this theory, direct oblimin, was used here. The factor solution is shown in the figure above. The EFA further subdivided the constructs in the internal value model. These sub-divisions exhibited unique identity in terms of the questionnaire items grouped by it, and therefore, naming them appropriately was not difficult. The scale 'Vision' yielded 3 factors and were named as **Mission**, **Leadership** and **Programme**. The scale 'Performance' also yielded 3 factors and were named as **Performance-Internal**, **Performance-Measurement**, and **Performance-External**. The table below illustrates the new scale architecture.

**Table 43: the Internal Value Model expanded by EFA**

Layer	Factor Name	Label	Variable Labels
Vision Management	Mission	VIS_MS	VIS_1, VIS_2, VIS_3, VIS_4
	Leadership	VIS_LD	VIS_5, VIS_6, VIS_9
	Programme	VIS_PR	VIS_10, VIS_11, VIS_12, VIS_13, VIS_14
Performance Management	External Performance	PER_EX	PER_1, PER_2, PER_3, PER_4, PER_5, PER_6
	Meas. Performance	PER_MS	PER_7, PER_8, PER_9
	Internal Performance	PER_IN	PER_11, PER_12, PER_13
Value In Exchange	Value In _Exchange	VEX	VEX_1, VEX_2, VEX_3
Capability Management	Capability Enhancement	CAP	CAP_1, CAP_2, CAP_3, CAP_4, CAP_5
Human Resource Management	HRM	HRM	HRM_1, HRM_2, HRM_3, HRM_4
Culture Management	Culture	CUL	CUL_1, CUL_2, CUL_3, CUL_4
Service Process Management	Processes	PRO	PRO_1, PRO_2, PRO_3, PRO_4, PRO_5, PRO_6
Connectivity & Information Mgt.	ICT Resources	CIM	CIM_1, CIM_2, CIM_3, CIM_4
Operand Resource management	Operand Resources	ORM	ORM_1, ORM_3, ORM_4, ORM_5

## 5.5.2 Goodness of Fit: External Value Model

The measurement scales in the external value model, measuring attributes of educated students are expected to have inherent correlations not only within the same variable, but also beyond the variable with measurement scales in other variables. Hence, factor analysis, with its stringent variable selection criteria, was not an option here, as doing so would exclude the important variables and reduce the overall practical value of the final model. So, to assure the reliability of constructs and items, they were subjected to scale reliability tests and collinearity tests, the results of which are presented below.

### 5.5.2.1 Scale Reliability

The policy adopted to ensure acceptable alpha was to delete items with poor individual alpha if the total scale alpha was less than 0.7. The tests to ensure absence of multicollinearity were TOL and VIF and their values should be above 0.1 and below 10 respectively (Klinebaum, et al., 1988; Pallant, 2016). The DV used for testing dependent variable VALEX was VALEX16 which was pre-planned in the questionnaire stage. The test results are presented below.

#### 5.5.2.1.1 Dependent Variable, VALEX

The reliability analysis of VALEX is given below. Though VALEX06 yielded a low  $R^2$  score, it was retained as the overall scale alpha was above minimum 0.7 at 0.933. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 44: Reliability of the dependent variable, VALEX**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
VALEX01	0.594	0.933	0.406	2.462	0.933
VALEX02	0.642	0.928	0.358	2.795	
VALEX03	0.815	0.927	0.185	5.419	
VALEX04	0.647	0.926	0.353	2.836	
VALEX05	0.517	0.932	0.483	2.069	
VALEX06	0.289	0.944	0.711	1.406	
VALEX07	0.702	0.930	0.298	3.353	
VALEX08	0.767	0.924	0.233	4.284	
VALEX09	0.653	0.929	0.347	2.885	
VALEX10	0.686	0.927	0.314	3.189	

VALEX11	0.750	0.927	0.250	4.001
VALEX12	0.731	0.927	0.269	3.715
VALEX13	0.866	0.924	0.134	7.455
VALEX14	0.801	0.926	0.199	5.037
VALEX15	0.772	0.925	0.228	4.382

### 5.5.2.1.2 Independent Variable, FOSK

Though the items FOSK04, FOSK05, and FOSK12 yielded relatively low  $R^2$  scores, they were retained as the overall scale alpha was above minimum 0.7 at 0.812. The TOL and VIF of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 45: Scale reliability of independent variable, FOSK**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
FOSK01	0.446	0.795	0.554	1.806	0.812
FOSK02	0.463	0.797	0.537	1.863	
FOSK03	0.442	0.810	0.558	1.791	
FOSK04	0.217	0.813	0.783	1.277	
FOSK05	0.289	0.805	0.711	1.406	
FOSK06	0.395	0.794	0.605	1.653	
FOSK07	0.537	0.792	0.463	2.160	
FOSK08	0.413	0.808	0.587	1.704	
FOSK09	0.497	0.795	0.503	1.989	
FOSK10	0.546	0.788	0.454	2.204	
FOSK11	0.493	0.793	0.507	1.973	
FOSK12	0.294	0.812	0.706	1.417	
FOSK13	0.486	0.792	0.514	1.947	

### 5.5.2.1.3 Independent Variable, TRSK

Though TRSK09 yielded a low  $R^2$  score, it was retained as the overall scale alpha was above minimum 0.7 at 0.786. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 46: Scale reliability of independent variable, TRSK**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
TRSK01	0.545	0.750	0.455	2.196	0.786
TRSK02	0.465	0.763	0.535	1.870	
TRSK03	0.325	0.769	0.675	1.481	



TRSK04	0.377	0.758	0.623	1.604
TRSK05	0.369	0.754	0.631	1.584
TRSK06	0.374	0.769	0.626	1.598
TRSK07	0.587	0.757	0.413	2.422
TRSK08	0.514	0.752	0.486	2.059
TRSK09	0.267	0.820	0.733	1.364

#### 5.5.2.1.4 Independent Variable, EMC0

No item yielded very low  $R^2$  scores. The overall scale alpha was above minimum 0.7 at 0.846. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 47: Scale reliability of independent variable, EMC0**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
EMC001	0.551	0.829	0.449	2.229	0.846
EMC002	0.388	0.835	0.612	1.634	
EMC003	0.666	0.816	0.334	2.990	
EMC004	0.514	0.825	0.486	2.059	
EMC005	0.452	0.823	0.548	1.826	
EMC006	0.379	0.853	0.621	1.612	
EMC007	0.372	0.840	0.628	1.593	
EMC008	0.426	0.823	0.574	1.741	
EMC009	0.535	0.821	0.465	2.153	

#### 5.5.2.1.5 Independent Variable, SOSK

Though SOSK05 and SOSK06 yielded low  $R^2$  scores, they were retained as the overall scale alpha was above minimum 0.7 at 0.844. The TOL and VIF of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 48: Scale reliability of independent variable, SOSK**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
SOSK01	0.521	0.831	0.479	2.087	0.844
SOSK02	0.558	0.828	0.442	2.260	
SOSK03	0.566	0.819	0.434	2.306	
SOSK04	0.321	0.843	0.679	1.473	
SOSK05	0.293	0.836	0.707	1.415	
SOSK06	0.190	0.851	0.810	1.235	
SOSK07	0.645	0.811	0.355	2.815	

SOSK08	0.750	0.815	0.250	4.004
SOSK09	0.703	0.810	0.297	3.362

### 5.5.2.1.6 Independent Variable, COCA

Though COCA06 yielded a low  $R^2$  score, it was retained as the overall scale alpha was above minimum 0.7 at 0.727. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 49: Scale reliability of independent variable, COCA**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
COCA01	0.269	0.719	0.731	1.368	0.727
COCA02	0.357	0.695	0.643	1.555	
COCA03	0.474	0.680	0.526	1.902	
COCA04	0.477	0.644	0.523	1.911	
COCA05	0.302	0.670	0.698	1.433	
COCA06	0.173	0.723	0.827	1.209	
COCA07	0.269	0.721	0.731	1.368	

### 5.5.2.1.7 Independent Variable, BECA

Though BECA08 and BECA09 yielded low  $R^2$  scores, they were retained as the overall scale alpha was above minimum 0.7 at 0.826. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 50: Scale reliability of independent variable, BECA**

Item	$R^2$	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
BECA01	0.409	0.803	0.591	1.692	0.826
BECA02	0.464	0.804	0.536	1.867	
BECA03	0.391	0.804	0.609	1.642	
BECA04	0.446	0.796	0.554	1.805	
BECA05	0.472	0.796	0.528	1.895	
BECA06	0.464	0.800	0.536	1.864	
BECA07	0.342	0.821	0.658	1.519	
BECA08	0.285	0.826	0.715	1.399	
BECA09	0.271	0.824	0.729	1.372	

### 5.5.2.1.8 Independent Variable, ATTI

The reliability analysis of ATTI is given below. Though ATTI05 yielded a low  $R^2$  score, it was retained as the overall scale alpha was above minimum 0.7 at 0.842. The TOL and VIF scores of each item was above 0.1 and less than 10 respectively, indicating no serious collinearity problems.

**Table 51: Scale reliability of independent variable, ATTI**

Item	R <sup>2</sup>	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
ATTI01	0.376	0.837	0.624	1.603	0.842
ATTI02	0.572	0.825	0.428	2.337	
ATTI03	0.340	0.830	0.660	1.515	
ATTI04	0.439	0.823	0.561	1.782	
ATTI05	0.221	0.840	0.779	1.284	
ATTI06	0.616	0.816	0.384	2.602	
ATTI07	0.556	0.829	0.444	2.251	
ATTI08	0.568	0.821	0.432	2.314	
ATTI09	0.458	0.825	0.542	1.846	
ATTI10	0.459	0.825	0.541	1.849	

### 5.5.2.1.9 Independent Variable, CHAT

No item yielded very low  $R^2$  scores. The overall scale alpha was above minimum 0.7 at 0.877. The TOL and VIF scores were above 0.1 and < 10 respectively, indicating no serious collinearity problems.

**Table 52: Scale reliability of independent variable, CHAT**

Item	R <sup>2</sup>	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
CHAT01	0.479	0.869	0.521	1.919	0.877
CHAT02	0.512	0.859	0.488	2.049	
CHAT03	0.565	0.853	0.435	2.296	
CHAT04	0.549	0.854	0.451	2.219	
CHAT05	0.692	0.850	0.308	3.243	
CHAT06	0.708	0.851	0.292	3.421	

### 5.5.2.1.10 Independent Variable, PEQU

No item yielded very low  $R^2$  scores. The overall scale alpha was above minimum 0.7 at 0.880. The TOL and VIF were > 0.1 and < 10 respectively, indicating no serious collinearity problems.

**Table 53: Scale reliability of independent variable, PEQU**

Item	R <sup>2</sup>	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
PEQU01	0.739	0.864	0.261	3.835	0.880
PEQU02	0.467	0.873	0.533	1.876	
PEQU03	0.395	0.881	0.605	1.654	
PEQU04	0.309	0.883	0.691	1.447	
PEQU05	0.515	0.870	0.485	2.063	
PEQU06	0.669	0.870	0.331	3.026	
PEQU07	0.489	0.874	0.511	1.957	
PEQU08	0.546	0.873	0.454	2.202	
PEQU09	0.420	0.875	0.580	1.725	
PEQU10	0.544	0.868	0.456	2.192	
PEQU11	0.587	0.867	0.413	2.419	
PEQU12	0.581	0.865	0.419	2.384	
PEQU13	0.573	0.872	0.427	2.342	
PEQU14	0.369	0.875	0.631	1.585	

#### 5.5.2.1.10.1 Independent Variable, PECA

No item yielded very low R<sup>2</sup> scores. The overall scale alpha was above minimum 0.7 at 0.897. The TOL and VIF were > 0.1 and < 10 respectively, indicating no serious collinearity problems.

**Table 54: Scale reliability of independent variable, PECA**

Item	R <sup>2</sup>	$\alpha$ if Item Deleted	TOL	VIF	Scale $\alpha$
PECA01	0.633	0.885	0.367	2.725	0.897
PECA02	0.552	0.894	0.448	2.233	
PECA03	0.622	0.889	0.378	2.642	
PECA04	0.716	0.881	0.284	3.524	
PECA05	0.512	0.889	0.488	2.048	
PECA06	0.512	0.893	0.488	2.047	
PECA07	0.593	0.878	0.407	2.456	
PECA08	0.625	0.880	0.375	2.664	
PECA09	0.585	0.885	0.415	2.408	

#### 5.5.2.1.11 Summary of Scale Reliability Results

All variables were reliable and within the multicollinearity limits. A summary of the scale reliability results is given in the table below.

**Table 55: Summary of scale reliability results**

Scale	Label	Cronbach's Alpha	TOL	VIF
External Value	VALEX	0.933	>0.1	<10
Foundational Skills	FOSK	0.812	>0.1	<10
Transferrable Skills	TRSK	0.786	>0.1	<10
Employment Competences	EMCO	0.846	>0.1	<10
Social Skills	SOSK	0.844	>0.1	<10
Cognitive Capacities	COCA	0.727	>0.1	<10
behavioral Capacities	BECA	0.826	>0.1	<10
Attitudes	ATTI	0.842	>0.1	<10
Character Attributes	CHAT	0.877	>0.1	<10
Personal Qualities	PEQU	0.880	>0.1	<10
Personal Capacities	PECA	0.897	>0.1	<10

## 5.6. Descriptive Statistics

### 5.6.1 Descriptive Statistics: Dataset 1

The educator profile consisted of variables: sex, age group, civil status, category of service, category of work place, grade, current position, specialization, highest qualification, total experience and travel distance.

Sex		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	296	72.0	72.0	72.0
	Male	115	28.0	28.0	100.0
	Total	411	100.0	100.0	

Age_Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25	3	0.7	0.7	0.7
	26-30	25	6.1	6.1	6.8
	31-35	62	15.1	15.1	21.9
	36-40	83	20.2	20.2	42.1
	41-45	76	18.5	18.5	60.6
	46-50	65	15.8	15.8	76.4
	51-55	57	13.9	13.9	90.3
	56-60	40	9.7	9.7	100.0
	Total	411	100.0	100.0	

Mean=43.16, SD=8.733

Civil_Status		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	352	85.6	85.6	85.6

Unmarried	59	14.4	14.4	100.0
Total	411	100.0	100.0	

Service_Category	Frequency	Percent	Valid Percent	Cumulative Percent
Teacher	310	73.8	73.8	73.8
Principal	50	11.9	11.9	85.7
Education Administrator	30	7.1	7.1	92.9
Teacher Educator	30	7.1	7.1	100.0
Total	420	100.0	100.0	

Grade	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	107	25.5	25.5	25.5
2	188	44.8	44.8	70.2
3	125	29.8	29.8	100.0
Total	420	100.0	100.0	

Current_Position	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Teacher	297	72.3	72.3	72.3
Vice Principal	19	4.6	4.6	76.9
Principal	35	8.5	8.5	85.4
Teacher Instructor	6	1.5	1.5	86.9
Assistant Director	17	4.1	4.1	91.0
Director	7	1.7	1.7	92.7
Lecturer	30	7.3	7.3	100.0
Total	411	100.0	100.0	

Specialization	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Administration	60	14.6	14.6	14.6
Primary	19	4.6	4.6	19.2
Science	20	4.9	4.9	24.1
Mathematics	17	4.1	4.1	28.2
Geography	16	3.9	3.9	32.1
Sinhala Lang. & Lit.	18	4.4	4.4	36.5
Dancing	12	2.9	2.9	39.4
History	15	3.6	3.6	43.1
English	27	6.6	6.6	49.6
Civics	22	5.4	5.4	55.0
Buddhism	14	3.4	3.4	58.4

Commerce	7	1.7	1.7	60.1
Technology	9	2.2	2.2	62.3
Drama	11	2.7	2.7	65.0
Music	12	2.9	2.9	67.9
Health & Phy. Edu.	19	4.6	4.6	72.5
Chemistry	6	1.5	1.5	74.0
Political Science	8	1.9	1.9	75.9
ICT	10	2.4	2.4	78.3
Economics	6	1.5	1.5	79.8
Home Science	7	1.7	1.7	81.5
Arts	10	2.4	2.4	83.9
Biology	6	1.5	1.5	85.4
Comb. Mathematics	4	1.0	1.0	86.4
Physics	5	1.2	1.2	87.6
Buddhist Culture	5	1.2	1.2	88.8
Accountancy	3	0.7	0.7	89.5
Media Studies	5	1.2	1.2	90.8
Business Studies	5	1.2	1.2	92.0
Agriculture	5	1.2	1.2	93.2
Sociology	7	1.7	1.7	94.9
Tamil	4	1.0	1.0	95.9
Sinhala Language	7	1.7	1.7	97.6
Library Science	2	0.5	0.5	98.1
English Literature	2	0.5	0.5	98.5
Edu. Psychology	3	0.7	0.7	99.3
Peace & Val Education	1	0.2	0.2	99.5
Teacher Education	1	0.2	0.2	99.8
Aesthetic Education	1	0.2	0.2	100.0
Total	411	100.0	100.0	

Highest Qualifications		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Trained	59	14.0	14.0	14.0
	Diploma	95	22.6	22.6	36.7
	Degree	150	35.7	35.7	72.4
	Postgraduate Degree	116	27.6	27.6	100.0
	Total	420	100.0	100.0	

Experience Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	40	9.7	9.7	9.7
	6-10	92	22.4	22.4	32.1
	11-15	80	19.5	19.5	51.6
	16-20	57	13.9	13.9	65.5

21-25	48	11.7	11.7	77.1
26-30	54	13.1	13.1	90.3
31-35	33	8.0	8.0	98.3
36-40	7	1.7	1.7	100.0
Total	411	100.0	100.0	

Mean=16.81, SD=9.379

Distance_Category	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0-25	362	88.1	88.1	88.1
26-50	28	6.8	6.8	94.9
51-75	10	2.4	2.4	97.3
76-100	5	1.2	1.2	98.5
Over100	6	1.5	1.5	100.0
Total	411	100.0	100.0	

Mean=14.7, SD=25.606

**Figure 8: Demographic profile of Dataset 1**

The first notable demographic characteristic is that the sample is more female biased in a ratio of 72% to 28%. The teacher gender imbalance is more acute and is 78.6% to 21.4% (173 to 98), as can be seen from the figure below. This is quite consistent with the population figures, as the female percentage in the new teacher recruits every year is about 80%, and this trend has been interpreted as a 'feminization of the teaching profession in Sri Lanka' (Sedere, 2011). The feminization has been increased steadily and gradually (1971-53.4%, 1985-61.2%, 1992-67.3%, 2000-69%, 2005-69.3%, 2009-71.3%) with time (Commonwealth Secretarial and UNESCO, 2011). In 2017, the figure was 73.3% (Ministry of Education, 2017) and in 2018, this was 73.9% (Ministry of Education, 2018). The current figure may be quite close to the sample figure here, and if 80% of applicants in teacher recruitment is 80%, this will increase further in future. Another feature is the relative age maturity of educators, visible in the average age of 43.16 and S.D. of 8.733. This is apparent in their service grades too. Most educators are in senior grades 1 or 2, and that indicates their experience in their profession (figure below). From a teacher category of 301, only 39 (12.2%) are in the lowest grade (3). This is consistent along the variable 'total experience' as well, as 58.2% educators have more than 10 years of experience (figure above). Qualifications revealed that the educators are reasonably qualified (figure above), where 13.9% were trained and 22.9% having 3-year diplomas, 35.5% degrees, 27.7% postgraduate qualifications. There is no way to verify the population



figures as the census reports are based on qualifications at the time of recruitment and not updated.

The variable 'service category' shows the sample figures selected for the study minus the outliers removed: teachers, 301; principals, 52; teacher educators, 30 and educational administrators, the variable 'current position' gives the sample figures of the positions they hold currently: Of a sample total of 310 teachers, 6 teachers serve as teacher instructors. Of a total of 50 principals 17 in the principal service hold vice principal posts whereas 33 hold principal posts. Of 30 educational administrators, 7 hold director posts, 19 assistant director posts, 2 principal posts and another 2 vice principal posts. As found out in the qualitative stage, officers from both the principal service and the educational administrator service compete for the principal and vice principal posts in popular schools. The variable 'category of work place' shows the distribution of the educators across schools and offices and the sample is representative of the population. Teachers and Principals work in national and non-national schools, whereas the educational administrators, in the divisional and zonal offices and the ministry. The teacher educators in the national colleges of education (pre-service) and the teacher training colleges (in service). The variable 'specialisation' gives the subject specialisation of the educators. Principals and the educational administrators with administrative work were given the specialisation as 'administrative'. The sample was designed for representation across all specialisations. The variable 'distance to work place' was measured to study the responses in relation to the proximity of residence. The mean distance is 14.7 km with a S.D. of 25.606 km. This means that the educators are within a comfortable travelling distance to their work places.

<b>Current Position * Sex</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>	
Current_Position	Teacher		234	63	297
	Vice Principal		15	4	19
	Principal		10	25	35
	Teacher Instructor		4	2	6
	Assistant Director		10	7	17
	Director		2	5	7
	Lecturer		21	9	30
<b>Total</b>			<b>296</b>	<b>115</b>	<b>411</b>

Service_Category * Grade		Grade			Total
		1	2	3	
Service_Category	Teacher	96	168	37	301
	Principal	2	12	38	52
	Educational Administrator	3	4	21	28
	Teacher Educator	3	1	26	30
Total		104	185	122	411

Current Position * Service Category		Teacher	Principal	Educational	Teacher	Total
				Administrator	Educator	
Current_Position	Teacher	295	2	0	0	297
	Vice Principal	0	17	2	0	19
	Principal	0	33	2	0	35
	Teacher Instructor	6	0	0	0	6
	Assistant Director	0	0	17	0	17
	Director	0	0	7	0	7
	Lecturer	0	0	0	30	30
Total		301	52	28	30	411

**Figure 9: Cross tabulations of Dataset 1 variables**

### 5.6.2 Descriptive Statistics: External Value Model

The general demographic variables of the educationist-intellectual sample were: sex, age, and civil status. The male female ratio of the sample is 70% to 30% respectively; The average age is 58.33 years. Most subjects (55 out of 60) were married; The ratio between intellectuals and educationists is 30:30; Educationists subdivide into teaching and administration in a ration of 15:15 and Intellectuals comprise of 2 subjects drawn from 15 different areas of intellectual life. The following figure is a general profile of the sample.

Sex		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	F	18	30.0	30.0	30.0
	M	42	70.0	70.0	100.0
	Total	60	100.0	100.0	

Age_Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40-49	9	15.0	15.0	15.0

50-59	32	53.3	53.3	68.3
60-69	9	15.0	15.0	83.3
70-79	9	15.0	15.0	98.3
80-89	1	1.7	1.7	100.0
Total	60	100.0	100.0	

Mean=58.33

Civil_Status		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	M	55	91.7	91.7	91.7
	U	5	8.3	8.3	100.0
Total		60	100.0	100.0	

Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	E	30	50.0	50.0	50.0
	I	30	50.0	50.0	100.0
Total		60	100.0	100.0	

Specialization * Category		Category		Total
		E	I	
Specialization	Administration	15	0	15
	Agriculture	0	2	2
	Arts	0	2	2
	Ayurveda	0	2	2
	Business	0	2	2
	Civil Service	0	2	2
	Construction	0	2	2
	Economics	0	2	2
	Engineering	0	2	2
	Entrepreneurship	0	2	2
	Journalism	0	2	2
	Law	0	2	2
	Literature	0	2	2
	Management	0	2	2
	Medicine	0	2	2
	Political Science	0	2	2
	Teaching	15	0	15
Total		30	30	60

Figure 10: Demographic profile of dataset 2

## **5.7. Data Analysis**

The process of data analysis consisted of 2 parts: CFA on the internal value model and MRA on the external value model.

### **5.7.1 Confirmatory Factor Analysis: Internal Value Model**

CFA is a way of testing how well a measurement theory, or a set of measured (observed) variables, represent a smaller set of latent (unobserved) constructs (Hair, et al., 2014). Having identified a set of such latent constructs/factors represented by measured variables, through EFA, CFA was used here as a confirmatory test of the goodness of fit of that measurement model. The focus here was on how measured variables logically and systematically represent constructs in the theoretical model.

#### **5.7.1.1 Measurement Model Validity/Goodness of Fit**

Numerous indices of fit have been advanced by researchers to be used in CFA, but the ones which are in common use are limited (Hu & Bentler, 1999; Kahn, 2006) and the goodness of fit of the measurement model are assured with the common ones.

##### **5.7.1.1.1 Model $\chi^2$ Statistic**

The initial test yielded a  $\chi^2$  (CMIN in Amos) of 3148.428, Degrees of Freedom (DF) of 1619 and a significance of  $p=.000$  indicating a bad fit. This was not unexpected given the large sample with 411 items, because very small differences between the covariance matrices turn out to be significant, as the minimum of the function during calculation is multiplied by a factor of  $(N-1)$  (Ullman, 2013), 410 in this case.

##### **5.7.1.1.2 Relative $\chi^2$ Statistic**

Relative  $\chi^2$  equals the  $\chi^2$  value divided by the degrees of freedom. This statistic is less sensitive to sample size and the cutoff for acceptance varies from less than 2 (Ullman, 2013) to less than 5 (Schumacker & Lomax, 2004). The current analysis yielded an estimation of 1.945 as its relative  $\chi^2$  value, which is  $<2$ , and is within the acceptable range indicating a good fit. With this result which took the sample size out of the equation, the model was considered to have passed the  $\chi^2$  test. The common statistic, Global Fit Index, GFI, developed by Jöreskog & Sörbom (1989) available in LISREL as a parallel to the  $\chi^2$  statistic, is not part of AMOS, and as such, is in no way possible to reported here.

#### **5.7.1.1.3 Incremental Fit Indices**

The values of the incremental fit indices NFI, IFI, TLI/NNFI, CFI in the current analysis were 0.832, 0.911, 0.901 and 0.910 respectively. Though NFI of the current analysis was above the 0.9 cutoff and closer to 1 (Hu & Bentler, 1999), taken together the incremental fit indices indicated a fairly-good fit.

#### **5.7.1.1.4 Root-Mean Square Error of Approximation (RMSEA)**

RMSSEA is a most recently developed and a most widely used test in SEM/CFA applications (Quintana & Maxwell, 1999). The initial RMSEA value was .048, and the PCLOSE was .906. The LO90 and HI90 were .048 and .050 (<.08) suggested that the current model is a fairly good fit (Byrne, 1998; Browne & Cudeck, 1993).

#### **5.7.1.1.5 Parsimony Fit Indices**

The initial test yielded a PRATIO value of 0.915 above the cutoff of 0.9. PCFI is another index under this category by improving CFI (James, et al., 1982). The current test yielded a PCFI score of 0.832, verifying the same result as by PRATIO closely.

#### **5.7.1.1.6 Hoelter Index**

Hoelter' Critical Index, is an important criterion to summarize the results of the fit indices of the current analysis. Giving a score of 224, indicating that the largest sample that would have rendered a perfect model fit, the current Hoelter Index shows that all above goodness of fit results has been obtained on a larger sample (411) than was ideal.

#### **5.7.1.1.7 Model Modification to Improve Fit**

The initial model fit results were further improved by minor adjustments using one of the 3 basic methods available for researchers to modify models to improve fit: Chi-Square Difference (CSD) tests, Lagrange Multiplier (LM) tests, and Wald tests (Ullman, 2013). The CSD tests work by comparing several nested models and calculating the  $\chi^2$  value by subtracting its occurrence in different models. This needs the estimation of more than one model and is time consuming. The Wald tests initiates modification by asking the question: the removal of what item would improve fit. Its major disadvantage is that the removal of items for the sake of fit could cost the validity of the construct and its explaining power (Hair, et al., 2014),

and therefore was not attempted as reducing items could affect the validity of constructs. The fit of the current model could be improved through LM tests, i.e., by adding parameters to the model and pre-estimating them to improve fit. This was done avoiding poor practices in improving model fit: reducing the number of items per construct beyond three; analyzing constructs in isolation; by reducing the sample size (Hair, et al., 2014). The modification indices showed that the current model could be improved by introducing 5 covariances between error terms within the same constructs as shown in the table below:

**Table 56: Modification indices used to improve model fit**

Construct	Items	Error Terms	Modification Index
Capability Management	CAP_1-CAP_2	E45-E46	111.430
External performance	PER_5-PER_6	E77-78	72.359
Mission	VIS_1-VIS_2	E16-17	68.026
HRM	HRM_1-HRM_2	E55-56	65.499
Mission	VIS_1-VIS_4	E14-E17	63.574

#### 5.7.1.1.8 A Comparison of the Initial and Final Fit Indices

The addition of the above covariances between the error terms, using the technique of modification indices yielded a model with a close model fit than the initial tests yielded, and a comparison of the initial and final fit indices is given in the table below to illustrate the improvement in the final model. The comparison shows that the model has improved in almost all indicators, with respect to relative  $\chi^2$  (CMIN/DF) in particular, as the figure has lessened from a figure close to the cut-off (2) to a more acceptable value of 1.6. The NFI has gone up from 0.83 to 0.85; IFI from 0.91 to 0.93; TLI from 0.90 to 0.93; RMSEA from 0.5 to 0.4; and, PCFI from 0.83 to 0.85, all definite improvements. It is also clear from the results that the sample size selected was much larger than the ideal (Hoelter=257), and that probably has played a part in making the model a close not perfect fit.

**Table 57: A comparison of the initial and final fit indices**

Test	Indicator	Initial	Final
$\chi^2$	CMIN, DF, sig	3148.428, 1619, .000	2731.981, 1614, .000
	CMIN/DF	1.945	1.693
Incremental	NFI	0.832	0.852

	IFI	0.911	0.934
	TLI	0.901	0.927
	CFI	0.910	0.933
	RMSEA	.048	0.041
	LO90	.045	0.038
	HI90	.050	0.044
	PCLOSE	0.906	1.000
Parsimony	PRATIO	0.915	0.912
	PCFI	0.832	0.851
	Hoelter	224	257

### 5.7.1.1.9 Summary of the Fit Indices of the Final Model

A summary of the final model fit indices, with a comment in the last column indicating the degree of fit is given in the table below. The summary shows that the measurement model has a close fit to the structural model in terms of almost all indicators.

**Table 58: A summary of the model fit test results**

Test	Indicator	Cutoff	Result	Comment
$\chi^2$	CMIN, DF, sig	Sig>0.5	2731.981,1614, .000	Not a close fit (big sample)
	CMIN/DF	<0.2	1.693	Close fit
Incremental	NFI	>0.9	0.852	Nearly close fit
	IFI	>0.9	0.934	Close fit
	TLI	>0.9	0.927	Close fit
	CFI	>0.9	0.933	Close fit
	RMSEA	<.05	0.041	Close fit
	LO90	<.05	0.038	Close fit
	HI90	<.08	0.044	Close fit
	PCLOSE	>.05	1.000	Close fit
Parsimony	PRATIO	>0.9	0.912	Close fit
	PCFI	>0.9	0.851	Nearly close fit
	Hoelter	411	257	Sample too big

### 5.7.1.1.10 Final Measurement Model

The following figure is a pictorial representation of the measurement model:

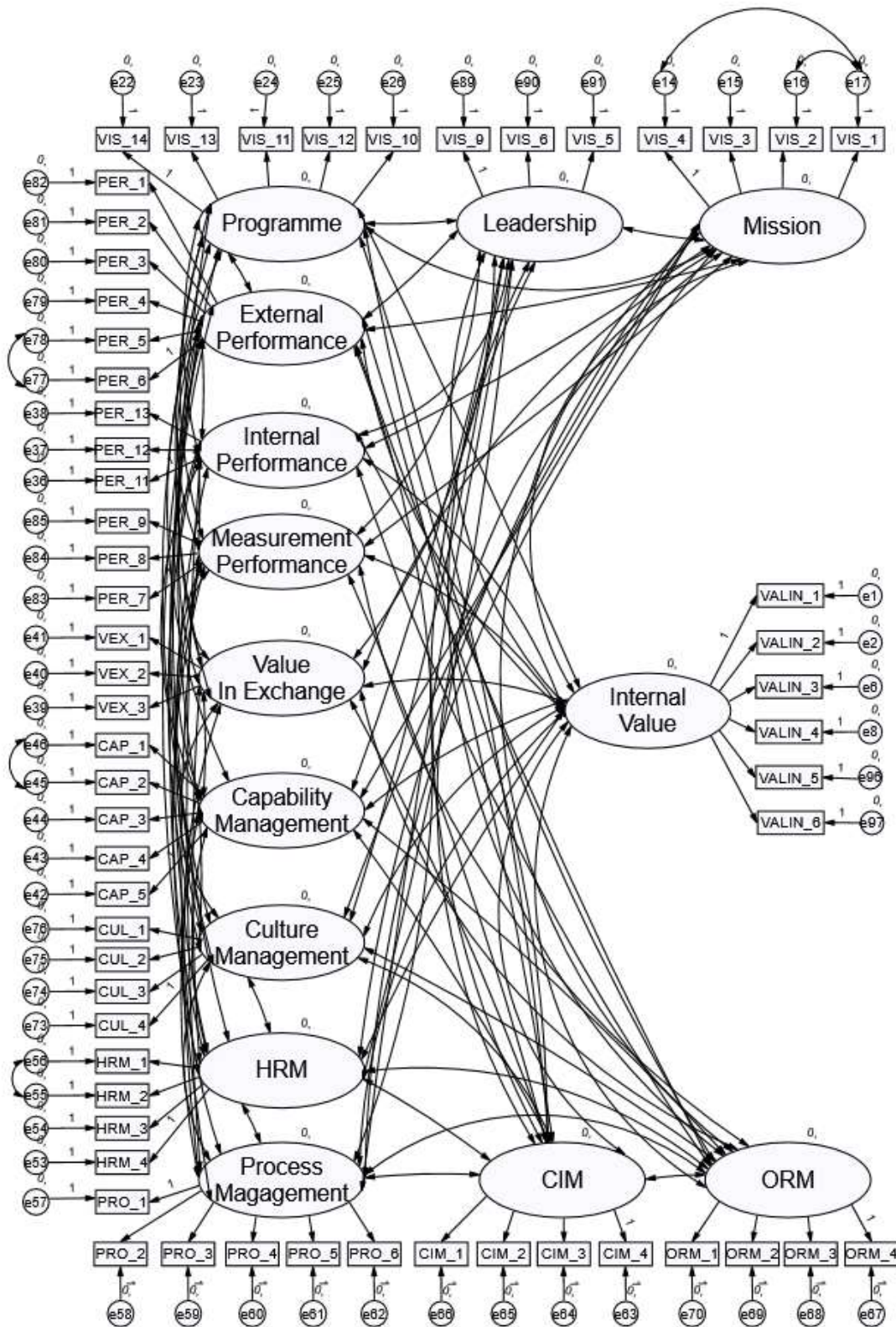


Figure 11: Final measurement model



### 5.7.1.2 Structural Model Validity

The structural model validity of the internal value model was ascertained in several steps and the first step was ensuring the construct validity (Hair, et al., 2014).

#### 5.7.1.2.1 Construct Validity of Indicator Constructs

Ensuring construct validity needs multiple tests: indicator reliability, composite reliability, convergent validity, discriminant validity and multicollinearity.

##### 5.7.1.2.1.1 Indicator/ Composite reliability and Convergent Validity

The reliability of each indicator construct was ascertained by making sure that the factor loadings ( $\lambda$ ) were strong ( $>0.6$ ), statistically significant ( $p < .05$ ) (Kline, 2011), and were greater than the corresponding error terms ( $\delta$ ) (Lloria & Moreno-Luzon, 2014). The composite reliability of each construct was tested by having a CR above 0.7 (Raykov, 1998). And convergent validity of each construct was assured by testing whether the average variance extracted (AVE)  $> 0.5$  (Fornell & Larcker, 1981). Dataset 1 fulfilled all these requirements ( $\lambda > 0.6$ ,  $CR > 0.7$ , and  $AVE > 0.5$ ), as shown in the table below. The columns are the construct name, factor loading ( $\lambda$ ), variance of the item, item error, composite reliability, average value extracted and Cronbach's  $\alpha$  respectively.

**Table 59: Item-wise description of the construct validity test results**

Construct	Label	$\lambda$	Var	$\delta$	CR	AVE	$\alpha$
VIS_MS	VIS_4	0.927	0.859	0.141	0.925	0.755	0.923
	VIS_1	0.808	0.653	0.347			
	VIS_3	0.907	0.823	0.177			
	VIS_2	0.828	0.686	0.314			
VIS_LD	VIS_6	0.738	0.545	0.455	0.787	0.552	0.781
	VIS_5	0.780	0.608	0.392			
	VIS_9	0.710	0.504	0.496			
VIS_PR	VIS_12	0.783	0.613	0.387	0.872	0.580	0.871
	VIS_14	0.807	0.651	0.349			
	VIS_10	0.628	0.394	0.606			
	VIS_11	0.799	0.638	0.362			
	VIS_13	0.775	0.601	0.399			
PER_EX	PER_6	0.781	0.610	0.390	0.911	0.630	0.915
	PER_5	0.825	0.681	0.319			
	PER_1	0.772	0.596	0.404			

	PER_4	0.796	0.634	0.366			
	PER_3	0.810	0.656	0.344			
	PER_2	0.777	0.604	0.396			
PER_MS	PER_7	0.786	0.618	0.382	0.844	0.647	0.840
	PER_9	0.704	0.496	0.504			
	PER_8	0.909	0.826	0.174			
PER_IN	PER_11	0.824	0.679	0.321	0.858	0.669	0.857
	PER_12	0.842	0.709	0.291			
	PER_13	0.787	0.619	0.381			
VEX	VEX_2	0.785	0.616	0.384	0.845	0.644	0.842
	VEX_1	0.815	0.664	0.336			
	VEX_3	0.808	0.653	0.347			
CAP	CAP_4	0.780	0.608	0.392	0.874	0.585	0.879
	CAP_3	0.882	0.778	0.222			
	CAP_2	0.663	0.440	0.560			
	CAP_5	0.844	0.712	0.288			
	CAP_1	0.622	0.387	0.613			
CUL	CUL_4	0.900	0.810	0.190	0.917	0.736	0.916
	CUL_1	0.789	0.623	0.377			
	CUL_3	0.870	0.757	0.243			
	CUL_2	0.868	0.753	0.247			
HRM	HRM_4	0.840	0.706	0.294	0.821	0.541	0.831
	HRM_3	0.839	0.704	0.296			
	HRM_2	0.654	0.428	0.572			
	HRM_1	0.572	0.327	0.673			
PRO	PRO_5	0.669	0.448	0.552	0.829	0.540	0.873
	PRO_2	0.826	0.682	0.318			
	PRO_1	0.782	0.612	0.388			
	PRO_3	0.725	0.526	0.474			
	PRO_4	0.659	0.434	0.566			
	PRO_6	0.732	0.536	0.464			
CIM	ICT_1	0.774	0.599	0.401	0.873	0.632	0.872
	ICT_3	0.841	0.707	0.293			
	ICT_2	0.752	0.566	0.434			
	ICT_4	0.811	0.658	0.342			
ORM	RES_4	0.842	0.709	0.291	0.878	0.643	0.876
	RES_3	0.814	0.663	0.337			
	RES_1	0.777	0.604	0.396			
	RES_5	0.774	0.599	0.401			

### 5.7.1.2.1.2 Discriminant Validity

The test of discriminant validity assured that each construct displayed a correlation with itself larger than its correlation with other constructs (Fornell & Larcker, 1981; Anderson & Gerbing, 1988), as shown in the correlation matrix below.

FACTOR	CR	AVE	$\alpha$	VIS_MS	VIS_LD	VIS_PR	PER_EX	PER_MS	PER_IN	VEX	CAP	CUL	HRM	PRO	CIM	ORM
VIS_MS	0.925	0.755	0.923	<b>0.869</b>												
VIS_LD	0.787	0.552	0.781	0.464	<b>0.743</b>											
VIS_PR	0.872	0.580	0.871	0.615	0.633	<b>0.761</b>										
PER_EX	0.911	0.630	0.915	0.487	0.620	0.740	<b>0.794</b>									
PER_MS	0.844	0.647	0.840	0.054	0.168	0.251	0.294	<b>0.804</b>								
PER_IN	0.858	0.669	0.857	0.443	0.622	0.647	0.790	0.184	<b>0.818</b>							
VEX	0.845	0.644	0.842	0.373	0.458	0.416	0.510	0.288	0.527	<b>0.803</b>						
CAP	0.874	0.585	0.879	0.501	0.545	0.609	0.648	0.183	0.646	0.481	<b>0.765</b>					
CUL	0.917	0.736	0.916	0.322	0.398	0.470	0.412	0.058	0.474	0.292	0.469	<b>0.858</b>				
HRM	0.821	0.541	0.831	0.392	0.451	0.554	0.577	0.250	0.611	0.507	0.589	0.536	<b>0.736</b>			
PRO	0.829	0.540	0.873	0.405	0.553	0.572	0.622	0.241	0.622	0.475	0.600	0.546	0.647	<b>0.735</b>		
CIM	0.873	0.632	0.872	0.295	0.475	0.525	0.587	0.329	0.573	0.432	0.508	0.511	0.632	0.633	<b>0.795</b>	
ORM	0.878	0.643	0.876	0.354	0.507	0.491	0.620	0.392	0.602	0.521	0.501	0.385	0.595	0.628	0.768	<b>0.802</b>

Figure 12: Correlation matrix of the predictor constructs

### 5.7.1.2.1.3 Multicollinearity

When a structural model is expected to exhibit causal inferences, multicollinearity among predictor constructs and the formative construct can make the causal inference less certain (Hair, et al., 2014) and as such testing for absence of multicollinearity was a requirement before testing the structural model. The two major tests of multicollinearity are TOL and VIF and their values should be above 0.1 and below 10 respectively (Klinebaum, et al., 1988). TOL indicates how much of the variability of a given independent variable is not explained by the other independent variables, and VIF is the inverse of the tolerance value (Pallant, 2016). The current model was tested for multicollinearity using computed IV and DV constructs based on the means of the variables in each construct and the results indicated (see table below) that the TOL and VIF values were greater than 0.1 and less than 10 respectively and the model is free from collinearity problems.

Table 60: Multicollinearity test results

Construct	TOL	VIF	Eigen Value
VIS_MS	0.607	1.646	12.388
VIS_LD	0.597	1.675	0.321
VIS_PR	0.425	2.352	0.211
PER_EX	0.370	2.704	0.192

PER_MS	0.833	1.200	0.159
PER_IN	0.409	2.442	0.123
VEX	0.670	1.492	0.107
CAP	0.474	2.108	0.094
CUL	0.619	1.614	0.081
HRM	0.498	2.009	0.078
PRO	0.488	2.051	0.072
CIM	0.447	2.235	0.067
ORM	0.419	1.646	0.057

#### 5.7.1.2.1.4 Summary of Construct Validity Test Results

The current model was tested for all the 5 construct validity requirements: indicator reliability, composite reliability, convergent validity, discriminant validity and multicollinearity and the results show that the model fulfills all requirements for CFA.

**Table 61: Summary of the construct validity test results**

Test Category	Test	Result	Comment
Indicator validity	Loading ( $\lambda$ )	>0.6	pass
	Significance (p)	<0.5	pass
	Error terms ( $\delta$ )	< $\lambda$	Pass
Composite Reliability	CR	>0.7	pass
Convergent Validity	AVE	>0.5	pass
Discriminant Validity	Sqrt (AVE)	>correlations with other constructs	pass
Collinearity	TOL	>0.1	pass
	VIF	<10	pass
	Eigen values	Not close to 0	pass

#### 5.7.1.2.2 Construct Validity of the Formative Construct

The formative construct 'VALIN' was constructed combining relatively heterogeneous items representing diverse value ingredients coming together in the final act of value creation which is episodic in nature (Verhoef, et al., 2009; Roggween, et al., 2012; Kleinaltenkamp, et al., 2012). Given this heterogeneity in formative measures, ensuring construct validity of the formative construct was paramount for the structural validity of the whole model. In order to facilitate this, a summary item in the questionnaire which could capture the entire process of internal value creation (VALIN\_7) was pre-planned. The tests of construct validity of the formative construct were executed using this as the dependent variable and the

items under VALIN as independent variables. The tests were to ensure external validity and absence of multicollinearity in VALIN.

#### 5.7.1.2.2.1 External Validity

External validity of the formative construct was ensured by testing each formative measure for significant correlations with each other. The test used to ensure that those measures form the construct was Cronbach's alpha and the construct yielded an alpha value of 0.843 showing strong composite reliability. The correlation coefficient, correlation significance and alpha value, item total correlation of each item is given in subsequent columns respectively.

**Table 62: External validity of the formative construct**

	Correlation Coefficient	Significance	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha
VALIN_1	0.644	0.004	0.806	0.722	0.849
VALIN_2	0.542	0.001	0.831	0.594	
VALIN_3	0.624	0.000	0.814	0.685	
VALIN_4	0.694	0.000	0.810	0.701	
VALIN_5	0.606	0.000	0.821	0.645	
VALIN_6	0.416	0.032	0.857	0.467	

#### 5.7.1.2.2.2 Collinearity Tests

The collinearity tests were meant to ensure that the items did not have excessive amounts of overlapping variance. For the heterogeneous formative measures, the test criteria were  $TOL > .01$  and  $VIF < 10$  to be free from collinearity problems (Diamantopoulos, et al., 2008). The tests yielded results that indicating VALIN to be free from collinearity issues, as shown in the last 2 columns of the table below:

**Table 63: Collinearity test results of the formative items**

Item	Mean	Std. Deviation	TOL	VIF
VALIN_1	2.63	1.601	0.430	2.327
VALIN_2	2.50	1.615	0.642	1.558
VALIN_3	2.30	1.478	0.508	1.967
VALIN_4	2.54	1.554	0.439	2.280
VALIN_5	2.46	1.532	0.573	1.746
VALIN_6	2.73	1.723	0.771	1.298

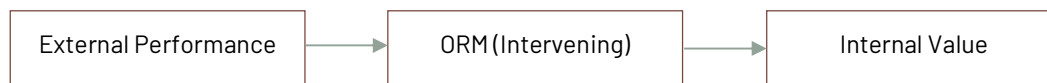
### 5.7.1.3 Model Testing

The model specification, modification, re-specification, and identification all having been completed and model fit established, an essential next step was to test the proposed model (See the figure below) against competing models in order to recognise the best structural model that fits the data (Boomsma, 2000; Steiger, 2001). The best way to do this is to compare the proposed model with one or more theoretically plausible competing models representing competing hypotheses (Weston & Gore, 2006 ). So, the proposed model is compared here with 2 other alternative models with alternative hypotheses.

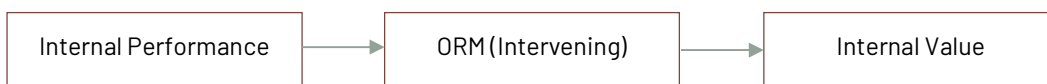
#### 5.7.1.3.1 Alternative Models

One current hypothesis is based on the relative strength of the correlations of lower-level exogenous constructs with the endogenous construct vis a vis the correlations of the upper-level exogenous constructs with the endogenous construct in the value architecture. Nevertheless, the proposed model based wholly on covariances with only one endogenous construct, was not designed to test any intervening effect of the lower-level constructs in the correlational relationships between the upper-level exogenous constructs and the endogenous construct. As such, two alternative models were envisaged selecting the bottommost construct 'ORM' to intervene in the relationships between the two upper-level constructs, 'External Performance' and 'Internal Performance'. While other constructs are allowed to covary the two alternative models were evaluated. The two relationship paths (without other relationships) can be given as in the figure below:

Alternative Model 1:



Alternative Model 2:



**Figure 13: Alternative models**

### 5.7.1.3.2 Results of Alternative Model Testing

The results of the alternative model testing are given in the table below and the results of the testing of the 3 models showed that the proposed structural model fitted the data more than either of the alternatives.

**Table 64: Results of alternative model testing**

Test	Proposed	Alternative 1	Alternative 2
CMIN, DF, sig	2731.981, 1614, .000	2893.826, 1625, .000	2883.674, 1624, .000
CMIN/DF	1.693	1.781	1.776
NFI	0.852	0.844	0.844
IFI	0.934	0.925	0.925
TLI	0.927	0.917	0.918
CFI	0.933	0.924	0.925
RMSEA	0.041	0.044	0.043
LO90	0.038	0.041	0.041
HI90	0.044	0.046	0.046
PCLOSE	1.000	1.000	1.000
PRATIO	0.912	0.918	0.918
PCFI	0.851	0.849	0.849
Hoelter	257	244	245

The CMIN figures of the alternative 1 and alternative 2 were 2893.826 and 2883.674 respectively. The CMIN of the proposed model was 2731.981, and was less than 162 and 152 units to alternative model 1 and alternative model 2 respectively, indicating the proposed model a better fit. The relative  $\chi^2$  (CMIN/DF) of the proposed model is 1.693 whereas the corresponding figures of alternative model 1 and alternative model 2 were 1.781 and 1.776 respectively, indicating the proposed model a better fit. The RMSEA figure of the proposed model (0.041) also indicated that it was a better fit than either alternative model 1 (0.044) or alternative model 2 (0.043). The scores of other indicators NFI, IFI, TLI, CFI, and PCFI of the proposed model were closer to a perfect fit than either of the alternative models tested. Thus, these comparative results validated the proposed structural model as a closer fit than the alternatives, and qualifying it to be used for hypotheses testing.

### 5.7.1.4 Final Structural Model

Having passed the tests of structural model validity, the next step is to specify the model. The following figure is a pictorial representation of the final structural model.

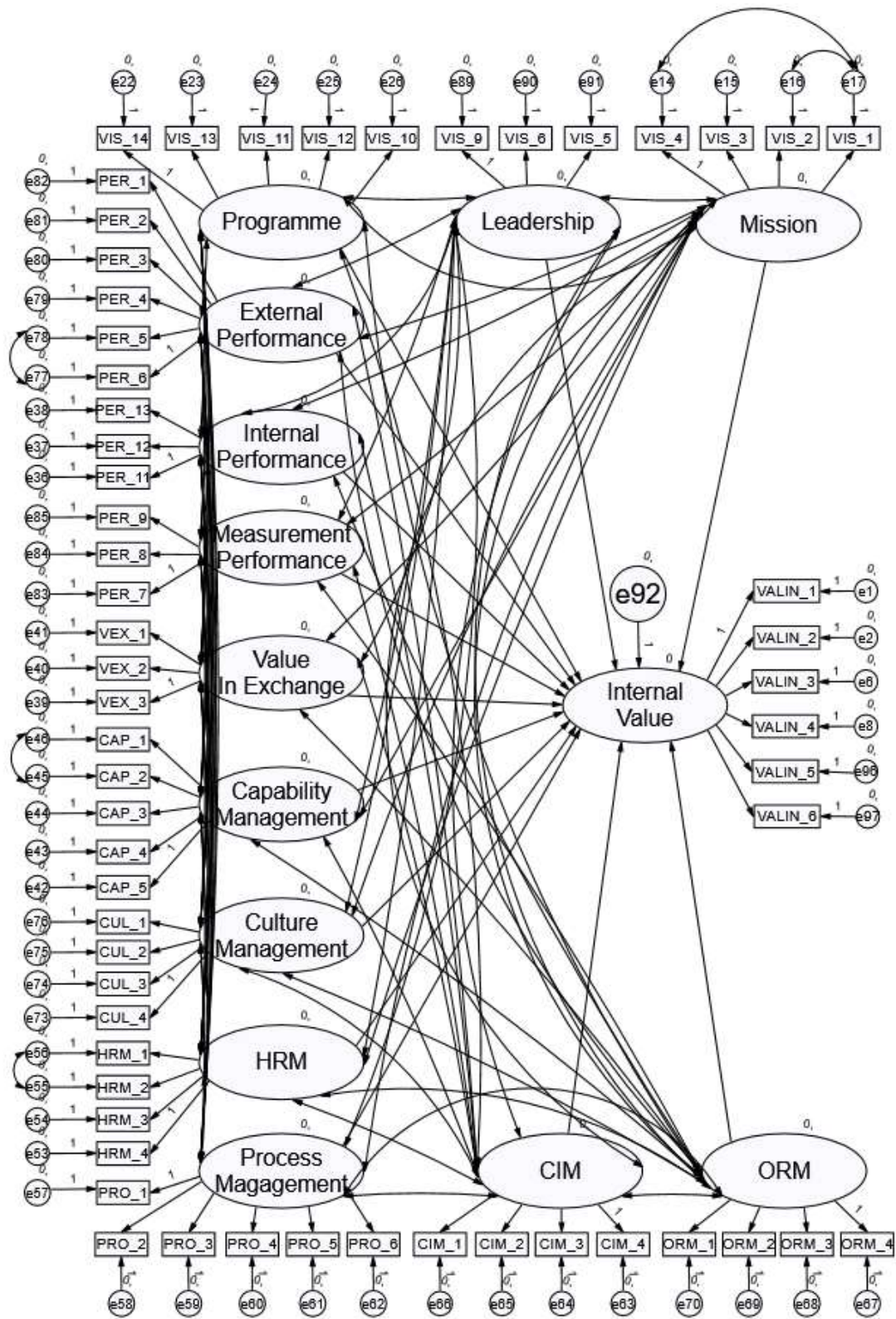


Figure 14: Proposed structural model



## 5.7.2 Multiple Regression Analysis: External Value Model

Building an MRA model for hypothesis testing can be done in a 6-stage process, namely (Hair, et al., 2014):

1. specifying the objectives,
2. matching research design parameters,
3. assuring compatibility with MRA assumptions,
4. estimating the model and assessing overall model fit,
5. interpreting the regression variate; and,
6. Validating the results

The following sections describe this 6-stage process in the external value model.

### 5.7.2.1 Objectives of the Analysis

The aim of this stage was to ensure that the objective of the current analysis matched the objectives for which MRA is generally used, and this had to be fulfilled in terms of 3 aspects (Hair, et al., 2010):

1. The appropriateness of the research problem
2. Specification of a statistical relationship, and
3. Selection of the dependent and independent variables

According to Hair, et al. (2010) the applications of MRA fall into the 2 broad overlapping categories: *prediction* and *explanation*. Prediction captures the idea of maximising the predictive power of the independent variables as represented in the variate or ascertaining the predictive power of each independent variable. Explanation is about assessing the degree and nature of relationship between each independent variable and the dependent variable. The objective of the current analysis matches with both: It wanted to assess the relative importance of each independent variable in the final outcome and prediction was also needed for practical validity of the results. The second objective requirement was that the relationship between variables should be statistical, and not functional, and the current variable relationships were all statistical, as they depended on various complex human factors at interplay. The third objective requirement concerned the selection of the right variables, and here three factors should inform the choice of decision: strong theory, measurement error and specification error (Hair, et al., 2010): The need of strong theory or careful judgement of the researcher in the

selection of variables is to ensure indiscriminate variable selection. As the current external value creation is innovative in its application, careful judgement was paid to select the two types of variables to represent practical concepts. Avoidance of the measurement error, the degree to which each variable represents the concept measured by it, was achieved as recommended by Hair, et al. (2010), by using summated scales where variables were summated in measuring a concept.

### **5.7.2.2 Research Design Requirements**

The compatibility of a research design with the requirements of MRA is determined by 3 factors: sample size, unique elements of the dependence relationship, and the nature of the independent variables (Hair, et al., 2010). The sample size selected affects the statistical power of regression and the generalisability of results. If the sample size and the number of independent variables fall below a ratio of 5:1, the model not only will lose its statistical power, but also will end up in a state of 'overfit', producing results which are less generalisable. The recommended way to avoid overfitting is to ensure the model degrees of freedom (df) to be within specified limits (Hair, et al., 2010). The sample size and the number of independent variables being 60 and 10 respectively, the current df was large enough (49) to avoid the pitfall. The next two requirements were concerning the inclusion of non-metric variables into the regression model was not relevant in the current analysis, as it was not done.

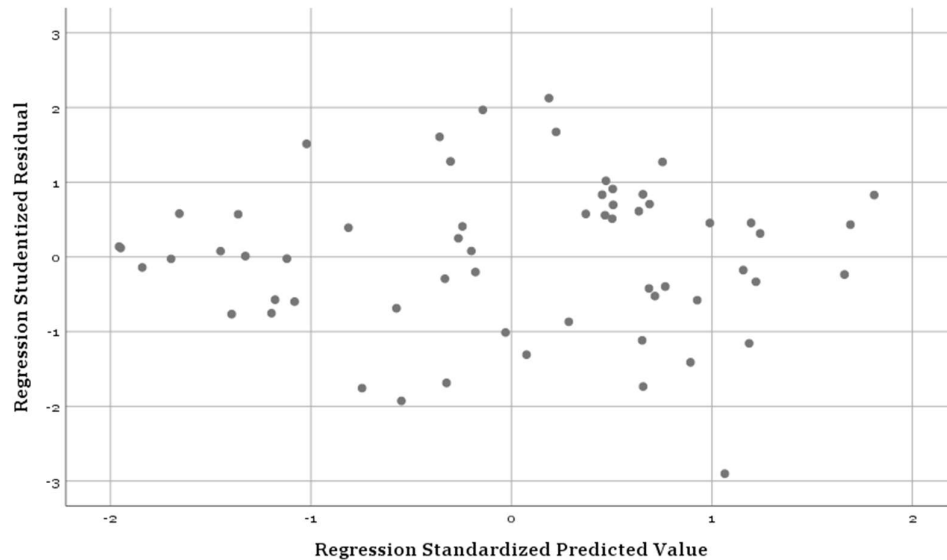
### **5.7.2.3 Compatibility of Data with Statistical Assumptions of MRA**

The dataset analysed should conform to the statistical assumptions on the relationships between the variables, and the statistical procedure used (least squares) in regression, and the conformity was tested in 4 areas (Hair, et al., 2010):

1. Linearity of the phenomenon measured,
2. Constant variance of the error terms,
3. Independence of the error terms, and,
4. Normality of the error term distribution

As these assumptions underlie the variate at all levels, they must be tested both at the level of overall variate and individual variables. The behavior of residuals showing the distribution of prediction error is the general indicator of overall conformity of meeting assumptions (Hair, et al., 2010). The following figure, which is a scatter plot of the studentized residual v. the standardized predicted value, shows that residuals

fall randomly with relatively equal dispersion about zero, and there is no tendency to be greater or less than zero, describing an identifiable pattern. And this is a confirmation of the general conformity of the model with assumptions.



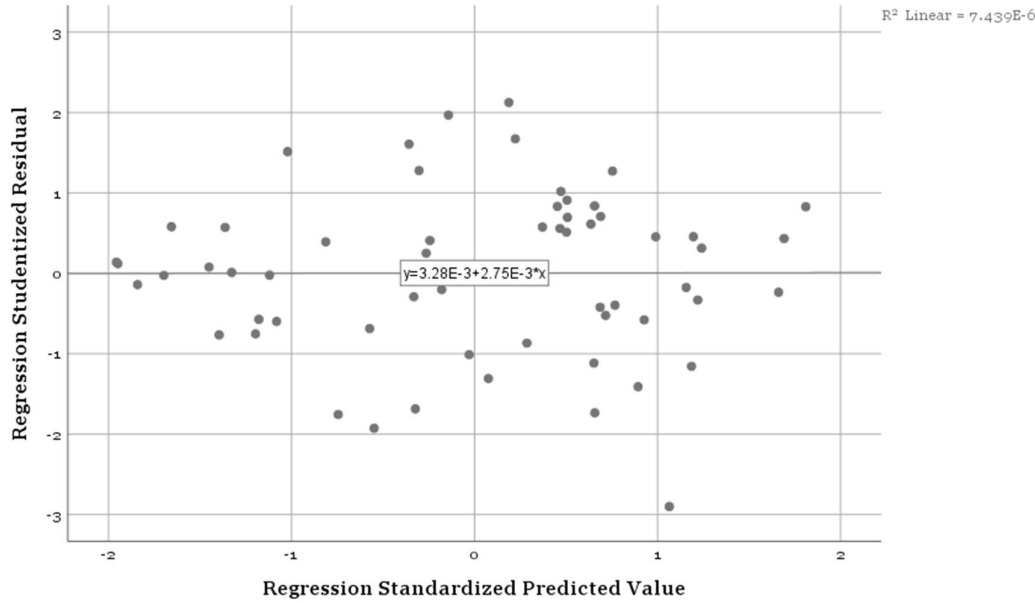
**Figure 15: Combined effects of independent variables on the residual**

### **5.7.2.3.1 Linearity of the Phenomenon**

The model conformance with the assumption of linearity, whether the relationship between the independent variables and the dependent variable are linear across the range of values for the independent variables, can be examined through a residual plot (Tabachnick & Fidell, 2013) as in the figure shown above. If the model were nonlinear the plot has to be curved across the x-axis and in contrast the figure shows a rectangular shaped plot indicating linearity. As such, the need of examining individual relationships through partial residual plots did not arise, as the overall linearity was not questionable (Hair, et al., 2010).

### **5.7.2.3.2 Constant Variance of the Error Terms: Homoscedasticity**

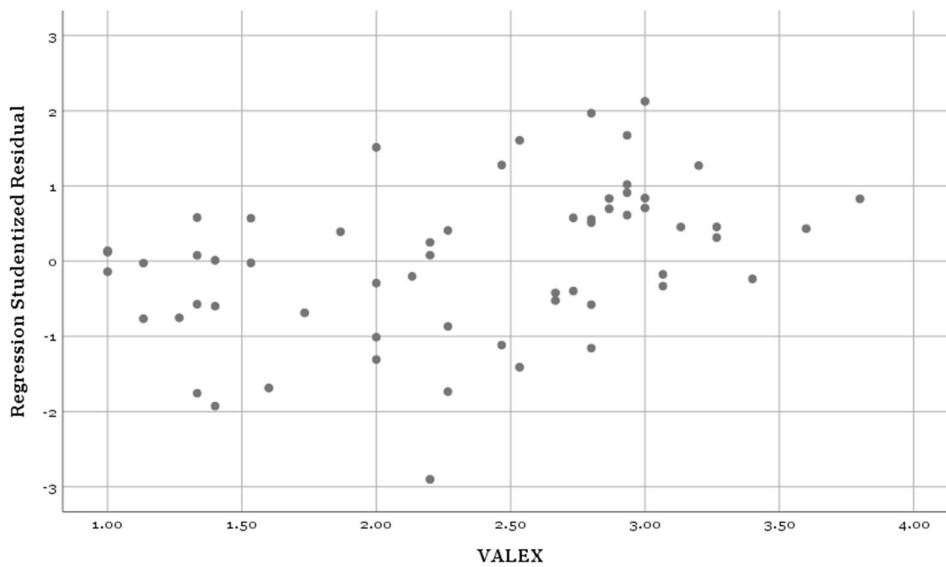
The assumption of homoscedasticity is the assumption that the dispersions of errors (residuals) are approximately equal for all predicted DV scores (Hair, et al., 2010; Tabachnick & Fidell, 2013) and if the dispersions become wide at large predicted values the assumption is violated. The same plot above superimposed with their trend line, which is shown below, indicates that the dispersions describe a trend line that is almost parallel to the x-axis. This signifies the model conformity with the assumption of homoscedasticity.



**Figure 16: Constant variance of the error terms**

### 5.7.2.3.3 Independence of the Error Terms

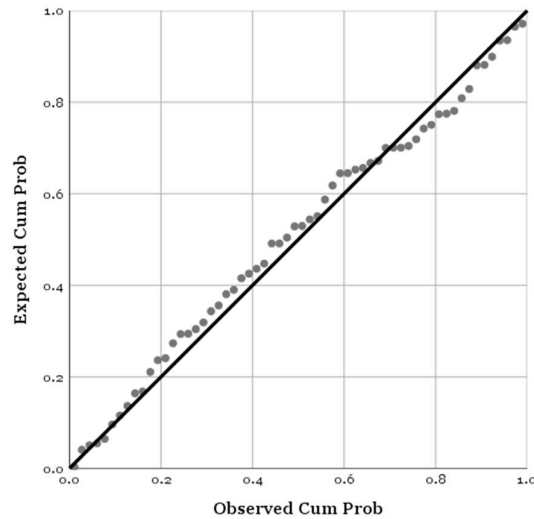
Another assumption is that each predicted value is not dependent on any other prediction, i.e., it is not sequenced by any other variable, and this can be tested by plotting the residuals against any sequencing variable (Hair, et al., 2010). The plot of studentized residuals v. the dependent variable, VALEX, is given below. The Durbin-Watson statistic=2.0 is the absence of autocorrelation of errors (Tabachnick & Fidell, 2013), and the current model yielded a score of 1.909 indicating near independence of error terms.



**Figure 17: Independence of the error terms**

#### 5.7.2.3.4 Normality of the Error Term Distribution

The assumption on the normality of the variables can be tested using a normal probability plot (Hair, et al., 2010), as shown in the figure below:



**Figure 18: Normality of the error term distribution**

The figure is a probability plot of the expected cumulative probability v. the observed cumulative probability, and the output indicates a near normal model.

#### 5.7.2.4 Estimating the Regression Model and Assessing Model Fit

This stage of model building required the researcher to accomplish 3 test processes (Hair, et al., 2010), namely:

1. Select a method to specify the regression model
2. Assess the statistical significance of the overall model
3. Verifying that any observation does not exert undue influence on outcome.

The process of estimating the model fit is explained below including the results of these tests where appropriate.

##### 5.7.2.4.1 Selecting an Estimation Technique

The estimation technique serves the purpose of finding the best regression model and there are 3 basic approaches to specification as: confirmatory, sequential search and combinatorial (Hair, et al., 2010). The approach selected for the current estimation was the sequential search, and from the three sub approaches under the sequential search methods (step-wise, forward addition and backward elimination), backward elimination method was selected here for the want of a maximum number

of variables in the model. Yet, all sequential schemes suffer from identified disadvantages: the final model is highly impacted by the multicollinearity among independent variables; the lack of control for the researcher; the need of employing more conservative thresholds in adding or deleting variables (Hair, et al., 2010). Special attention was paid to avoid these pitfalls in the process. And the additional tests of multicollinearity would be discussed after the process description.

#### 5.7.2.4.2 Backward Elimination

The following subsections discuss the steps followed in the process of backward elimination of estimation in order to find a model with the best fit.

##### 5.7.2.4.2.1 Initial Scenario: Pearson Correlations

The matrix of correlations among variables on which the process of estimation started is given in the figure below:

		VALEX	FOSK	TRSK	EMCO	SOSK	COCA	BECA	ATTI	CHAT	PEQU	PECA
<b>Dependent Variable</b>												
VALEX	External Value	1.000										
<b>Independent Variables</b>												
FOSK	Foundational Skills	0.542	1.000									
TRSK	Transferable Sills	0.682	0.600	1.000								
EMCO	Employment Competencies	0.568	0.583	0.711	1.000							
SOSK	Social Skills	0.793	0.557	0.673	0.675	1.000						
COCA	Cognitive Capacities	0.472	0.642	0.573	0.536	0.484	1.000					
BECA	Behavioral Capacities	0.486	0.531	0.603	0.576	0.484	0.444	1.000				
ATTI	Attitudes	0.754	0.552	0.566	0.653	0.707	0.444	0.576	1.000			
CHAT	Character Attributes	0.784	0.516	0.542	0.516	0.612	0.332	0.578	0.695	1.000		
PEQU	Personal Qualities	0.820	0.575	0.684	0.678	0.734	0.406	0.614	0.699	0.792	1.000	
PECA	Personal Capacities	0.759	0.515	0.580	0.670	0.714	0.526	0.610	0.709	0.689	0.738	1.000

Figure 19: Matrix of correlations among variables

##### 5.7.2.4.2.2 Process of Backward Elimination

The process of backward elimination started with all variables in the model (model 1) and was based on the probability of F values  $\geq .100$  to be eliminated, and FOSK had the highest value (0.693) and was eliminated yielding model 2. COCA had the next highest value (0.431) and was excluded yielding model 3. The estimation halted at model 3 as all remaining variables had probability of F values  $< .100$ . The process of estimation resulted in 3 models altogether. The following figure shows the excluded variables and the next figure the ANOVA table with the 3 resulting models.

Excluded Variables <sup>a</sup>							
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1 FOSK	-.033 <sup>b</sup>	-0.397	0.693	-0.057	0.427	2.340	0.220
2 FOSK	.000 <sup>c</sup>	-0.002	0.998	0.000	0.534	1.871	0.227
TRSK	.056 <sup>c</sup>	0.794	0.431	0.112	0.575	1.738	0.222
a. Dependent Variable: VALEX							
b. Predictors in the Model: (Constant), PECA, BECA, COCA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU							
c. Predictors in the Model: (Constant), PECA, BECA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU							

**Figure 20: Excluded variables**

As the ANOVA output indicate in the figure below, all models were significant, and yielded almost similar sum of squares indicating similar predictive powers and residuals. Yet, model 3 has the largest F value making it the choice of preference.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.355	10	2.835	29.382	.000 <sup>b</sup>
	Residual	4.729	49	0.097		
	Total	33.083	59			
2	Regression	28.339	9	3.149	33.189	.000 <sup>c</sup>
	Residual	4.744	50	0.095		
	Total	33.083	59			
3	Regression	28.280	8	3.535	37.530	.000 <sup>d</sup>
	Residual	4.804	51	0.094		
	Total	33.083	59			
a. Dependent Variable: VALEX						
b. Predictors: (Constant), PECA, FOSK, BECA, COCA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU						
c. Predictors: (Constant), PECA, BECA, COCA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU						
d. Predictors: (Constant), PECA, BECA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU						

**Figure 21: ANOVA output**

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.926 <sup>a</sup>	0.857	0.828	0.31065	0.857	29.382	10	49	0.000
2	.926 <sup>b</sup>	0.857	0.831	0.30802	0.000	0.157	1	49	0.693
3	.925 <sup>c</sup>	0.855	0.832	0.30690	-0.002	0.631	1	50	0.431
a. Predictors: (Constant), PECA, FOSK, BECA, COCA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU									
b. Predictors: (Constant), PECA, BECA, COCA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU									
c. Predictors: (Constant), PECA, BECA, TRSK, CHAT, ATTI, EMCO, SOSK, PEQU									
d. Dependent Variable: VALEX									

**Figure 22: Model summary**

Also, as the model summary output above shows, model 3 had a slightly higher 'Adjusted R square' (0.832) and a lower 'Standard error' (0.30690) confirming it to be the best model fit. It is also generally accepted that, whatever the technique used, the researcher's substantive knowledge of the research context is the most important criterion in judging the variables to be included, because the lack of exercising it might result in a model with high predictive accuracy and little practical relevance (Hair, et al., 2010). It was desirable in the current MRA that all 10 variables were in the final model for reasons of practical relevance, and the estimation resulted in a model that was quite close to the desired with 8 variables (all significant,  $p < .04$ ) with the exclusion of 2 variables.

Coefficients <sup>a</sup>													
Model		Unstandardized Coefficients		Standardized Coefficient	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-0.235	0.216		-1.088	0.282	-0.668	0.199					
	FOSK	-0.040	0.102	-0.033	-0.397	0.693	-0.245	0.164	0.542	-0.057	-0.021	0.427	2.340
	TRSK	0.256	0.096	0.249	2.662	0.010	0.063	0.450	0.682	0.355	0.144	0.334	2.998
	EMCO	-0.240	0.087	-0.257	-2.772	0.008	-0.414	-0.066	0.568	-0.368	-0.150	0.340	2.945
	SOSK	0.200	0.082	0.238	2.456	0.018	0.036	0.365	0.793	0.331	0.133	0.310	3.222
	COCA	0.092	0.104	0.070	0.882	0.382	-0.117	0.300	0.472	0.125	0.048	0.460	2.173
	BECA	-0.233	0.094	-0.195	-2.479	0.017	-0.421	-0.044	0.486	-0.334	-0.134	0.472	2.120
	ATTI	0.263	0.116	0.212	2.273	0.027	0.030	0.496	0.754	0.309	0.123	0.336	2.976
	CHAT	0.221	0.089	0.245	2.478	0.017	0.042	0.401	0.784	0.334	0.134	0.299	3.342
	PEQU	0.328	0.138	0.273	2.367	0.022	0.050	0.606	0.820	0.320	0.128	0.220	4.554
PECA	0.196	0.101	0.196	1.952	0.057	-0.006	0.399	0.759	0.269	0.105	0.290	3.452	
2	(Constant)	-0.245	0.212		-1.155	0.254	-0.672	0.181					
	TRSK	0.255	0.095	0.247	2.670	0.010	0.063	0.446	0.682	0.353	0.143	0.334	2.993
	EMCO	-0.243	0.085	-0.260	-2.847	0.006	-0.415	-0.072	0.568	-0.373	-0.152	0.343	2.918
	SOSK	0.198	0.081	0.235	2.455	0.018	0.036	0.360	0.793	0.328	0.131	0.312	3.206
	COCA	0.073	0.092	0.056	0.794	0.431	-0.112	0.258	0.472	0.112	0.043	0.575	1.738
	BECA	-0.237	0.092	-0.199	-2.567	0.013	-0.423	-0.052	0.486	-0.341	-0.137	0.479	2.089
	ATTI	0.260	0.115	0.209	2.268	0.028	0.030	0.490	0.754	0.305	0.121	0.338	2.959
	CHAT	0.217	0.088	0.240	2.469	0.017	0.040	0.393	0.784	0.330	0.132	0.304	3.293
	PEQU	0.322	0.137	0.268	2.359	0.022	0.048	0.597	0.820	0.316	0.126	0.222	4.507
	PECA	0.203	0.098	0.203	2.065	0.044	0.006	0.401	0.759	0.280	0.111	0.298	3.354
3	(Constant)	-0.174	0.192		-0.908	0.368	-0.560	0.211					
	TRSK	0.277	0.091	0.269	3.054	0.004	0.095	0.459	0.682	0.393	0.163	0.366	2.729
	EMCO	-0.236	0.085	-0.253	-2.790	0.007	-0.406	-0.066	0.568	-0.364	-0.149	0.346	2.887
	SOSK	0.201	0.080	0.239	2.503	0.016	0.040	0.362	0.793	0.331	0.134	0.313	3.200
	BECA	-0.232	0.092	-0.194	-2.526	0.015	-0.416	-0.048	0.486	-0.333	-0.135	0.481	2.078
	ATTI	0.264	0.114	0.212	2.313	0.025	0.035	0.493	0.754	0.308	0.123	0.339	2.954
	CHAT	0.212	0.087	0.234	2.425	0.019	0.036	0.387	0.784	0.322	0.129	0.305	3.275
	PEQU	0.306	0.134	0.254	2.272	0.027	0.036	0.576	0.820	0.303	0.121	0.227	4.400
	PECA	0.222	0.095	0.221	2.331	0.024	0.031	0.413	0.759	0.310	0.124	0.316	3.162

a. Dependent Variable: VALEX

Figure 23: Regression coefficients



### **5.7.2.4.3 Assessing the Statistical Significance of the Overall Model**

Assessing statistical significance of the model required 2 basic tests: total variation explained by regression, and the regression coefficient of each IV (Hair, et al., 2010).

**Overall model fit:** The final regression model with 8 independent variables (TRSK, EMCO, SOSK, BECA, ATTI, CHAT, PEQU, PECA) explains 85.5 ( $R^2 = 0.855$ ) of the variance of external value creation (VALEX). The adjusted  $R^2$  from model 3 to model 3 was still increasing from 0.831 to 0.832 indicates no overfitting of the model, and that the results should be generalisable from the view of the ratio of the sample size to variables in the equation (15:1 for the final model). The ANOVA table shows that the F value 37.530 is significant. The standard error of the estimate was 0.30690.

**Significance of Estimated Coefficients:** Each of the 8 regression coefficients was statistically significant and their probabilities were less than .05 (Column 7 of the figure 'Regression coefficients').

### **5.7.2.4.4 Model Verification for Undue Influence**

After developing the model, it was verified to ensure that it was not unduly influenced by the presence of: multicollinearity, heteroscedasticity, non-independence of residuals, and normality in data.

#### **5.7.2.4.4.1 Effects of Multicollinearity**

As mentioned earlier correlations among IVs was unavoidable in this research due to the intrinsic connection of educational values with one another. And this was clearly evident in the tolerance values of the IVs in the model. All IVs had TOL values less than 0.5 (13<sup>th</sup> column, figure: coefficients). This means that over a half of each one's variance is due to other variables. This is verifiable through the partial correlation values of the IVs as well (10<sup>th</sup> column, figure: coefficients). The 8 variables in the same order have partial correlation values 0.682, 0.568, 0.793, 0.486, 0.754, 0.784, 0.820 and 0.759. And there was no way the presence of multicollinearity was avoidable in IVs in the current application.

#### **5.7.2.4.4.2 Linearity of the Variate**

One of the assumptions in MRA was linearity and it was tested through a plot of residuals for the overall variate and a partial regression plot for each IV in the variate.

The first figure below, a plot of studentised residual v. standardised predicted value, shows that the residuals (error terms) are independent of the predicted value. The figures below that, which give a plot of the DV against each IV in the model, illustrate that the DV is linearly related to each of the IVs. The slope of each graph reflects the value of the regression coefficient of each IV.

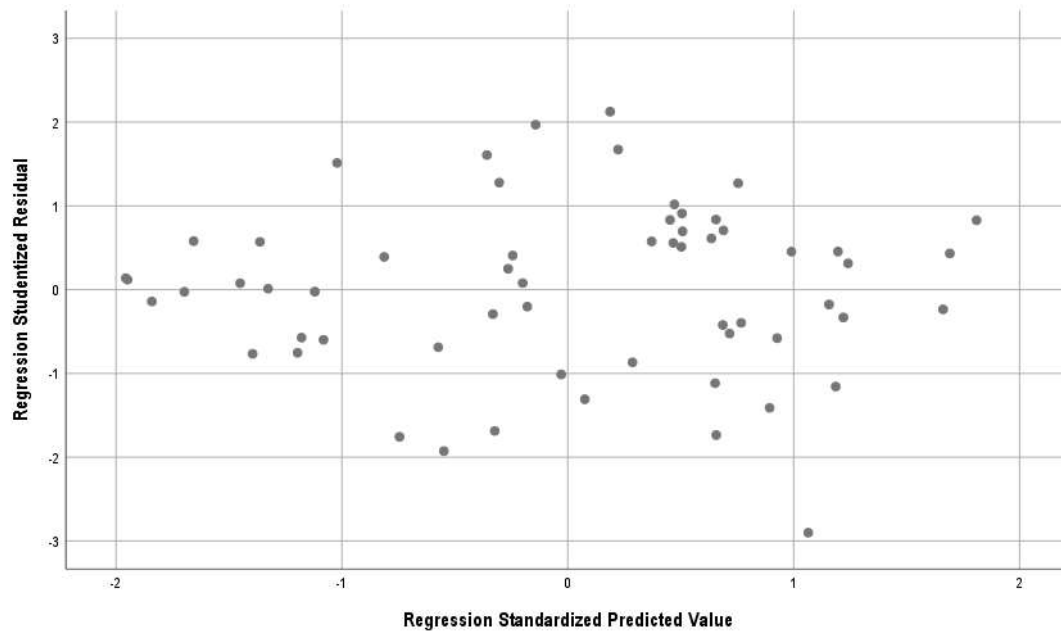


Figure 24: Model residuals v. predicted value

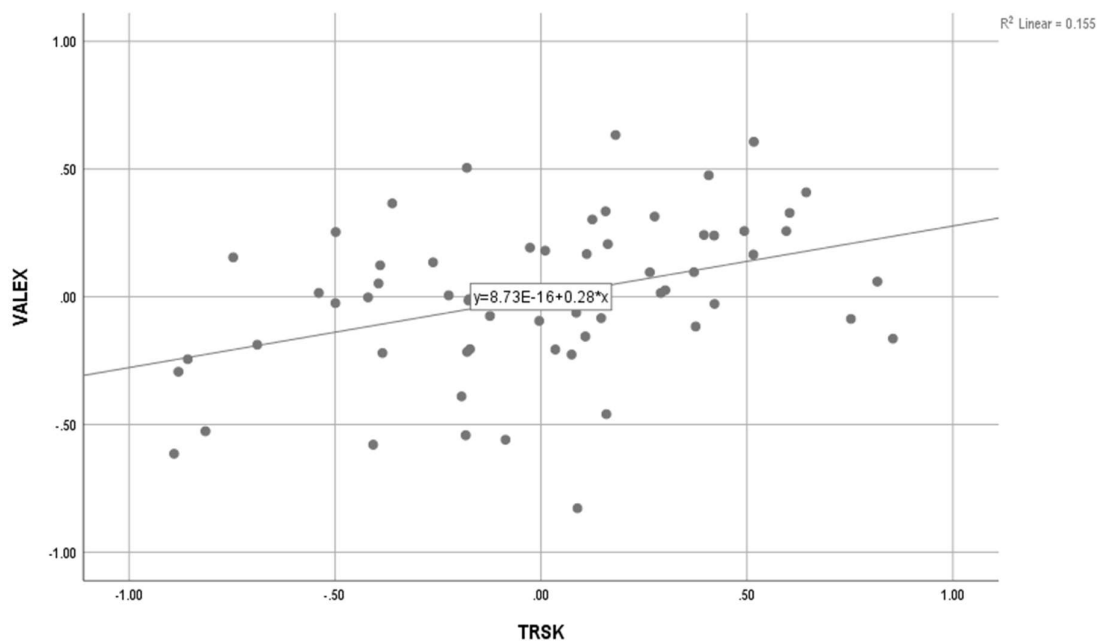


Figure 25: linearity between DV and TRSK

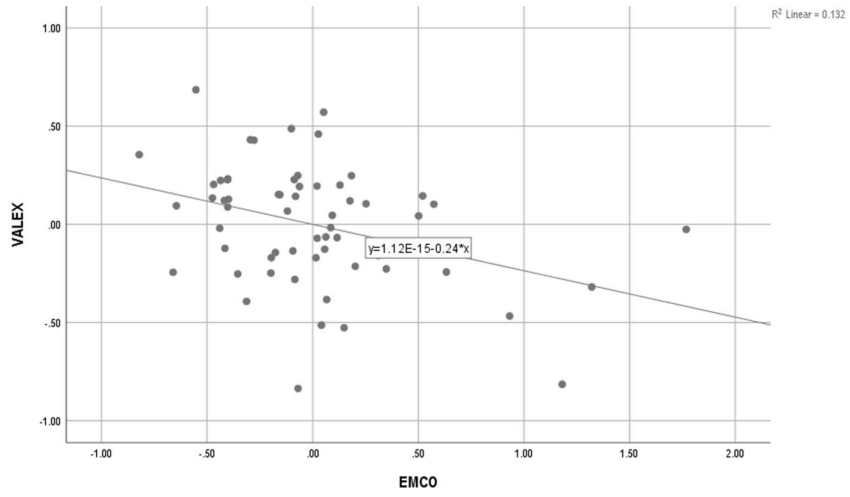


Figure 26: Linearity between DV and the EMCO

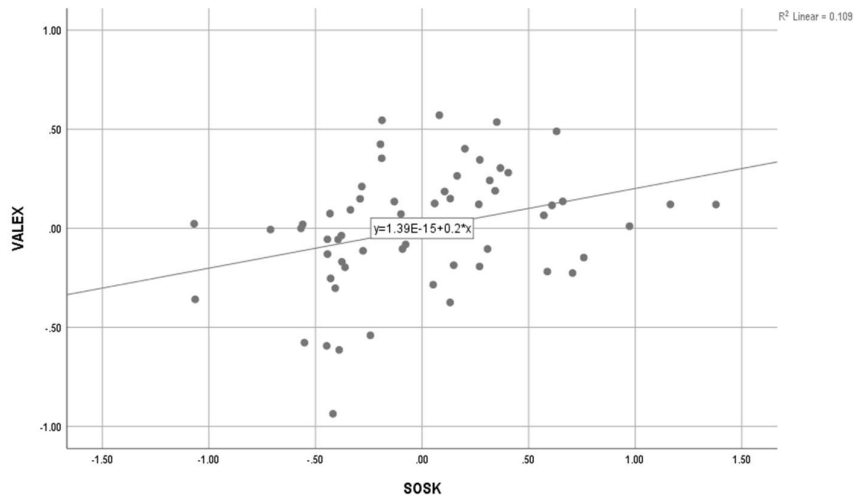


Figure 27: Linearity between DV and SOSK

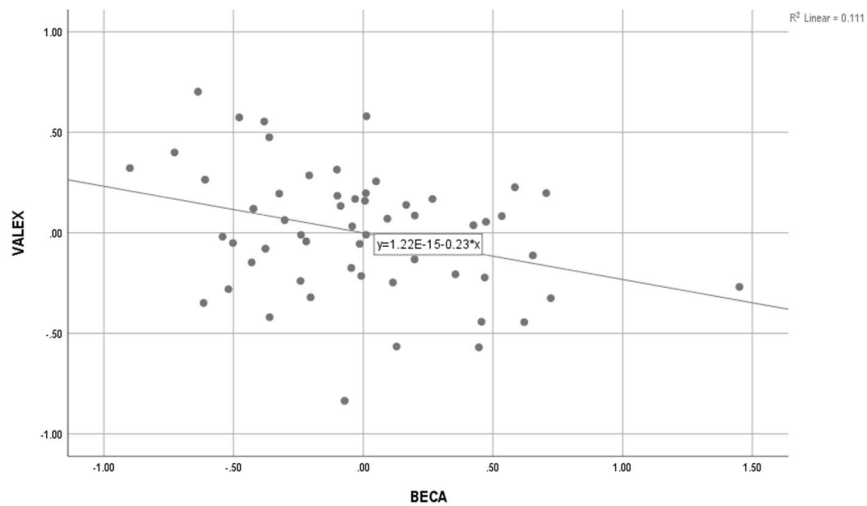
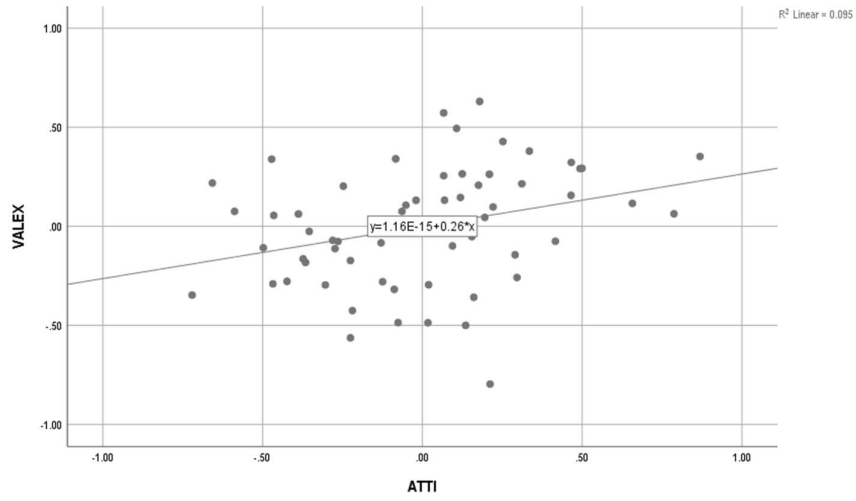
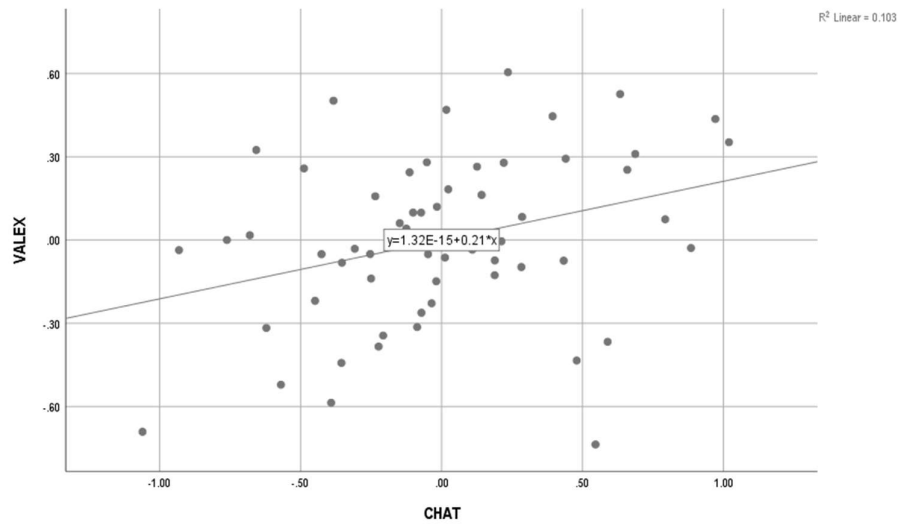


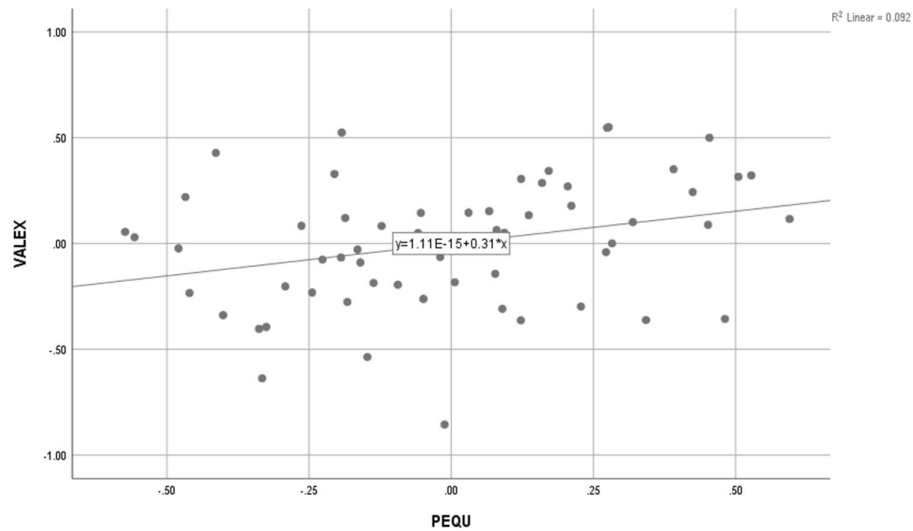
Figure 28: Linearity between DV and CHAT



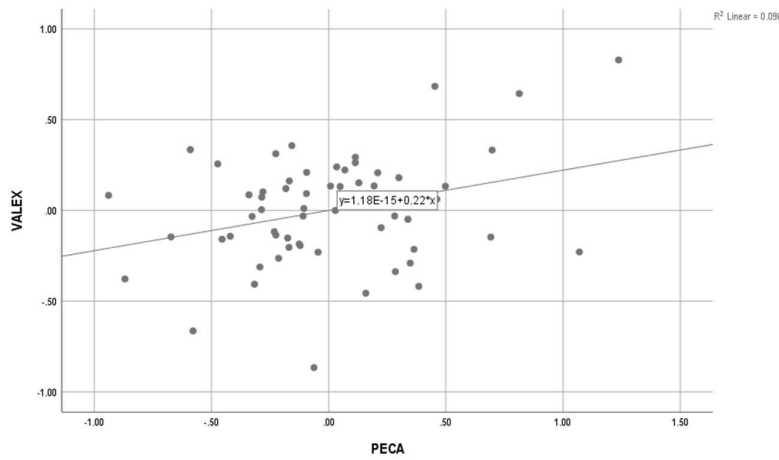
**Figure 29: Linearity between DV and ATTI**



**Figure 30: Linearity between DV and CHAT**



**Figure 31: Linearity between DV and PEQU**



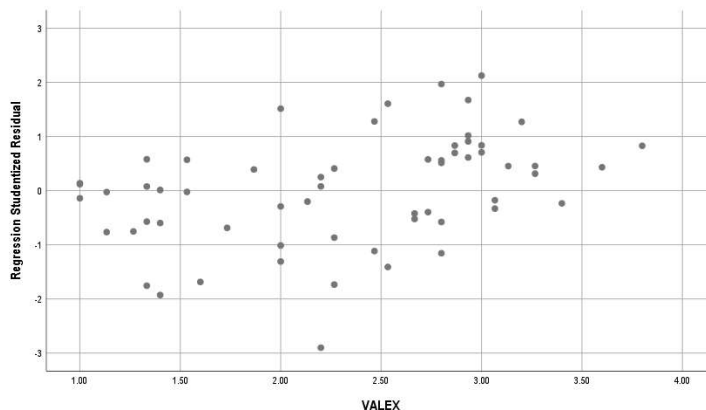
**Figure 32: Linearity between DV and PECA**

#### 5.7.2.4.4.3 Effects of Heteroscedasticity

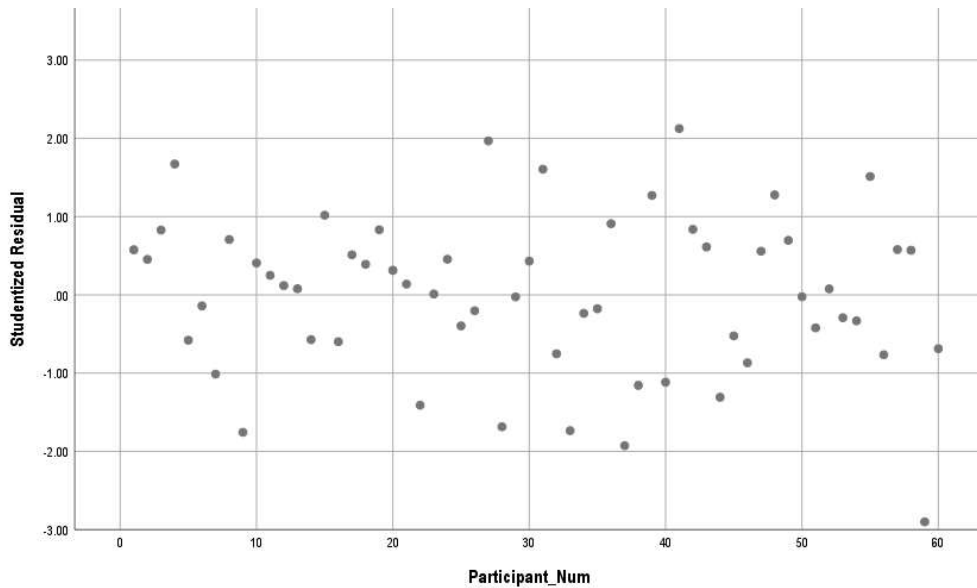
The figure 24 above, studentized residuals v. standardized predicted value also shows that the residuals are independent of the independent variables, indicating that the homoscedasticity assumption in MRA is not violated.

#### 5.7.2.4.4.4 Independence of the Residuals

The assumption of the residuals is related to the hangovers from an observation to another which could appear as a pattern in a residual plot against a sequencing variable. The independence of residuals was tested by plotting the residuals variable (Hair, et al., 2010). The independence of residuals was tested in a plot of residuals against the IV, VALEX, and the plot is shown below. The figure did not indicate any appreciable pattern in time series data. However, further investigation was conducted to ensure independence of residuals by plotting the studentized residual value against the Participant\_Num and the results (Figure 35) did not indicate a pattern either.



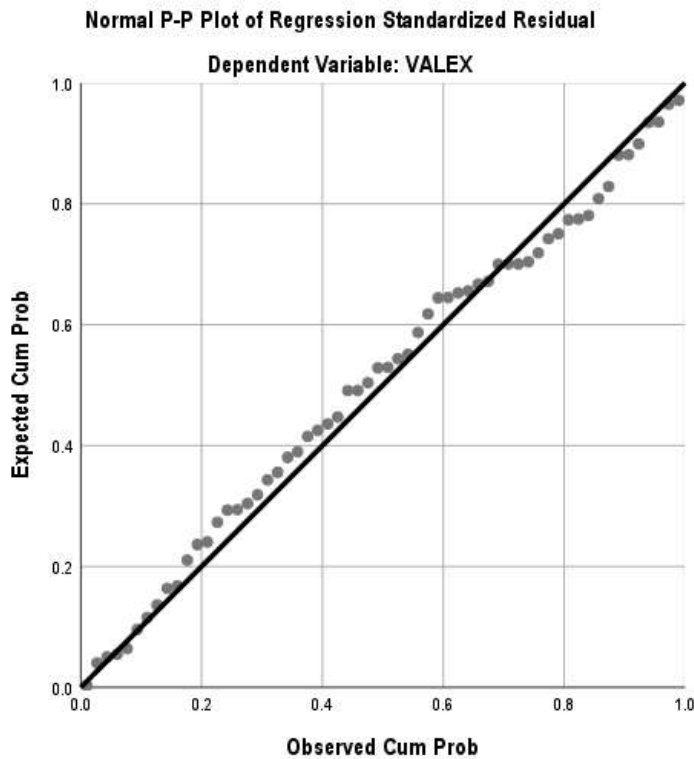
**Figure 33: Independence of residuals, residuals v. DV**



**Figure 34: Independence of residuals, residuals v. Participant\_Num**

#### 5.7.2.4.4.5 Normality

The final assumption is related to the normality of the variate and this could be evaluated by plotting the expected cumulative probability v. observed cumulative probability (Hair, et al., 2010) and the test results is given below. As the figure shows the variate followed a near normal variation.



**Figure 35: Normal probability plot, standardized residuals**

### 5.7.2.5 Interpreting the Regression Variate

Having completed the steps of model specification, estimation, and verification completed the next step was to interpret the model based on the 8 independent variables in the model. The coefficients and the significance values for each of the IV was read from the columns 3 and 7 of the figure 23 (Regression coefficients) above and the values are given below:

Variable	CONS	TRSK	EMCO	SOSK	BECA	ATTI	CHAT	PEQU	PECA
Coefficient	-0.174	0.277	-0.236	0.201	-0.232	0.264	0.212	0.306	0.222
Significance	0.368	0.004	0.007	0.016	0.015	0.025	0.019	0.027	0.024

Thus, the regression equation can be written as:

$$\text{VALEX} = -0.174 + 0.277 \text{ TRSK} - 0.236 \text{ EMCO} + 0.201 \text{ SOSK} - 0.232 \text{ BECA} + 0.264 \text{ ATTI} + 0.212 \text{ CHAT} + 0.316 \text{ PEQU} + 0.222 \text{ PECA}$$

What is notable in the equation are the two negative coefficients EMCO and BECA, suggesting that they have negative they have a negative impact on the external value. This result is verifiable in the Sri Lankan context as the current value creation in respect of these specific areas is generally viewed as being done in the wrong way compared to the other areas where value creation is almost absent. Thus, predicted value satisfaction of a hypothetical country stakeholder whose value rating in each of the 8 measures is 4, Then,

$$\text{Predicted external value} = -0.174 + 0.277 (4) - 0.236 (4) + 0.201 (4) - 0.232 (4) + 0.264 (4) + 0.212 (4) + 0.316 (4) + 0.222 (4) = 3.360$$

This value (3.360) for an average response of 4 is justifiable, as the questionnaire responses were invariably on the negative side.

#### 5.7.2.5.1 Assessing the Relative Importance of Independent Variables

The regression coefficients not only enable the prediction of the DV, but also provide a basis for assessing the relative importance of the IVs in the overall prediction of the DV (Hair, et al., 2010; Tabachnick & Fidell, 2013). The relative assessment is more logical when all the regression coefficients are expressed in a standardised scale (Hair, et al., 2010), and the standardised regression coefficients in the column 5 of the figure 23 are presented again below:

Variable	TRSK	PEQU	EMCO	SOSK	CHAT	PECA	ATTI	BECA
<b>Standardized Coefficient</b>	0.269	0.254	-0.253	0.239	0.234	0.221	0.212	-0.194

It is clear that the magnitude of the TRSK is the highest, and of the BECA is the lowest, enabling us to conclude that while all IVs are important, the relative magnitudes of all variables are not very much different.

### 5.7.2.5.2 Measuring the Degree and Impact of Multicollinearity

As was seen above, though the levels of multicollinearity present in the model they were not seriously distort the regression variate as to take corrective action it is generally required in research to know the degree and impact of multicollinearity. There are 2 basic ways of testing the impact of multicollinearity: 1. Calculating the TOL and VIF values; 2. Using the condition indices and decomposing the regression coefficient variance (Hair, et al., 2010). This research employed the first method.

#### 5.7.2.5.2.1 Diagnosing Multicollinearity

The TOL and VIF values in columns 13 and 14 of figure 23 are presented again below:

Variable	TRSK	EMCO	SOSK	BECA	ATTI	CHAT	PEQU	PECA
<b>TOL</b>	0.366	0.346	0.313	0.481	0.339	0.305	0.227	0.316
<b>VIF</b>	2.729	2.887	3.200	2.078	2.954	3.275	4.400	3.162

This data show that TOL values of variables range from 0.227 (PEQU) to 0.481 (BECA). Inversely, the same variables show the highest and the lowest values of VIF, indicating some degree of multicollinearity which is not serious to the extent of rejecting the model altogether. Tolerance is the amount of variability in a variable 'that is not defined by the other independent variables' and hence a value of 1 would be the ideal (Hair, et al., 2010), and in the case of all current variables the bulk of the variability (1-TOL) is explained by the other independent variables due to the strong correlation of each IV with the others. This was in spite of the fact that TOL values of all variables exceed the cut-off 0.1 (Tabachnick & Fidell, 2013).

#### 5.7.2.5.2.2 Impact of Multicollinearity

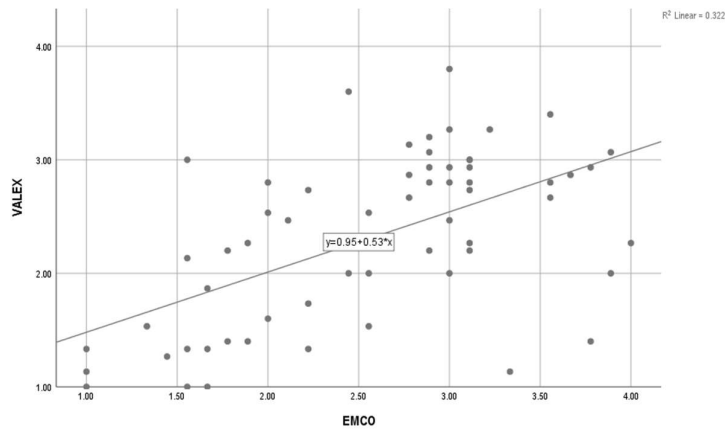
It is clear from the 6<sup>th</sup> column of figure 23 above that, the first elimination from the variate was FOSK, as it had the lowest t-value (-0.397) among all other IVs. The second elimination COCA was also due to its t-value (0.794), which was the lowest



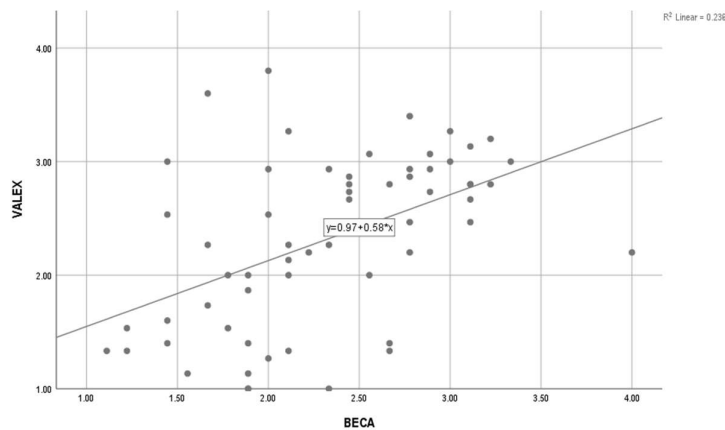
among all remaining IVs. FOSK became the first elimination instead of COCA, although the former had a higher correlation with the DP (0.542) than had the latter (0.472). This was because the former had a larger standard error than the former giving the former a lower t-value making it the first choice of elimination. But when we examine each IV's calculated average correlation with other IVs (using the data in correlation matrix above) yielded the following correlation values, which clarified the impact of the correlations clearly.

IV	COCA	FOSK	PECA	BECA	SOSK	EMCO	TRSK	ATTI	PEQU	CHAT
Cor. with IV	0.532	0.630	0.639	0.653	0.663	0.690	0.692	0.766	0.832	0.851

The output shows that the IVs eliminated in forming the model 3 (COCA=0.532, FOSK=0.630) have been the ones with the lowest correlations with the rest of the IVs. It was also clear that the correlations among the IVs were responsible in making the direction of 2 IVs in the model (EMCO=-0.253, BECA=-0.194) negative.



**Figure 36: VALEX v. EMCO indicating positive bi-variate relationship**



**Figure 37: VALEX v. BECA indicating positive bi-variate relationship**

The reason for the negative coefficients was not an inherent quality of the 2 variables, but the impact of other IVs. This was verifiable through bi-variate scatter plots of the DV against the 2 IVs as shown in figures 37 and 38. Hence, it can be concluded that, the presence of inherent multicollinearity in the variate, while not rendering it untenable altogether, has had a considerable impact on it by indirectly determining the IVs and the direction of the coefficients of the IVs in the variate.

### 5.7.2.6 Validating the Results

The final step of model building is validation of the final model where the primary concern generally is ensuring the results are generalisable to the population. The best approach in this is to build a model to another sample of the data from the same population (Hair, et al., 2010). This approach was not feasible here due to numerous constraints. A less accurate method of achieving the same goal is to divide the sample into 2 and build a model each for the 2 samples, and compare results of the 2 (Hair, et al., 2010). This was also not practical as the current sample was not homogeneous as to enable such splitting. The remaining method was to compare the evaluation of results of the proposed model with evaluation results of some alternative models (Hair, et al., 2010). To achieve this the same variables were estimated in forward and step-wise specification methods and the comparison results of the 3 estimation processes.

**Table 65: Comparative estimation of alternative models**

<b>Estimation Process</b>	<b>Backward</b>	<b>Forward</b>	<b>Step-wise</b>
df-regression	8	3	3
df-residual	51	56	56
Number of models yielded	3	3	3
No. of IVs in the best model	8	3	3
Adjusted R square-best model	0.832	0.781	0.781
Sum of squares-regression-best model	28.28	26.889	26.194
Sum of squares-residual-best model	4.804	6.889	6.889
IVs in the best model	PEQU	PEQU	PEQU
	SOSK	SOSK	SOSK
	CHAT	CHAT	CHAT
	TRSK		
	EMCO		
	BECA		
	ATTI		
	PECA		

All parameters in the table above clearly indicate that the proposed model estimated using the backward elimination procedure delivered a far superior model fit than the results produced by other methods which are almost identical. Hence, the results of the proposed model were conclusive enough to decide that it was the best obtainable optimisation of the collected data set.

## 5.8. Hypothesis Testing

Of the 3 hypotheses which needed testing in order to answer the research questions, the hypotheses 1 and 3 were to be tested on the confirmatory model developed through SEM, and the hypothesis 2 was to be tested on the MRM.

### 5.7.3 Testing of Hypothesis 1

Hypothesis 1 states that, 'the fulfilment of educator value expectations has a positive impact on the co-created final internal value.' This hypothesis is an aggregated statement when broken would read as each individual exogenous value construct has a positive impact on the endogenous construct. The testing was done in 2 steps: firstly, the statistical relationships between each variable and its corresponding exogenous construct was tested; and secondly, the statistical relationship between each exogenous construct and the endogenous construct was tested.

**Step 1:** The following table is the SEM output showing relationships of all exogenous variables to their corresponding exogenous constructs:

**Table 66: Estimates of exogenous variables indicating their significance**

Construct	Var	R square	Estimate	Standardized Estimate	S.E.	CR	p-value
VIS_MS	VIS_1	0.653	0.869	0.808	0.048	18.180	***
	VIS_2	0.686	0.903	0.828	0.038	23.840	***
	VIS_3	0.823	0.964	0.907	0.034	28.582	***
	VIS_4	0.859	1.000	0.927	N/A	N/A	N/A
VIS_LD	VIS_5	0.608	0.952	0.780	0.076	12.450	***
	VIS_6	0.544	1.015	0.738	0.082	12.343	***
	VIS_9	0.504	1.000	0.710	N/A	N/A	N/A
VIS_PR	VIS_10	0.395	0.767	0.629	0.059	13.113	***
	VIS_11	0.639	1.017	0.799	0.057	17.718	***
	VIS_12	0.613	0.956	0.783	0.055	17.357	***
	VIS_13	0.600	0.958	0.775	0.056	17.100	***
	VIS_14	0.651	1.000	0.807	N/A	N/A	N/A

PER_EX	PER_1	0.596	0.964	0.772	0.058	16.648	***
	PER_2	0.604	0.953	0.777	0.057	16.722	***
	PER_3	0.656	0.974	0.810	0.055	17.553	***
	PER_4	0.634	0.961	0.796	0.055	17.349	***
	PER_5	0.681	1.017	0.825	0.039	26.058	***
	PER_6	0.610	1.000	0.781	N/A	N/A	N/A
PER_IN	PER_11	0.680	1.000	0.825	N/A	N/A	N/A
	PER_12	0.710	1.051	0.843	0.054	19.309	***
	PER_13	0.620	0.919	0.787	0.053	17.239	***
PER_MS	PER_7	0.617	1.000	0.786	N/A	N/A	N/A
	PER_8	0.825	1.057	0.908	0.064	16.453	***
	PER_9	0.496	0.890	0.704	0.061	14.540	***
VEX	VEX_1	0.664	1.077	0.815	0.064	16.941	***
	VEX_2	0.617	1.100	0.785	0.071	15.531	***
	VEX_3	0.653	1.000	0.808	N/A	N/A	N/A
CAP	CAP_1	0.387	0.751	0.622	0.056	13.399	***
	CAP_2	0.440	0.826	0.663	0.057	14.595	***
	CAP_3	0.776	1.036	0.881	0.047	21.973	***
	CAP_4	0.608	0.860	0.780	0.048	18.074	***
	CAP_5	0.713	1.000	0.844	N/A	N/A	N/A
CUL	CUL_1	0.622	0.888	0.789	0.043	20.637	***
	CUL_2	0.753	0.990	0.868	0.040	24.611	***
	CUL_3	0.757	0.966	0.870	0.038	25.229	***
	CUL_4	0.810	1.000	0.900	N/A	N/A	N/A
HRM	HRM_1	0.328	0.728	0.573	0.064	11.332	***
	HRM_2	0.430	0.703	0.656	0.054	13.093	***
	HRM_3	0.702	0.958	0.838	0.051	18.949	***
	HRM_4	0.705	1.000	0.839	N/A	N/A	N/A
PRO	PRO_1	0.612	1.000	0.782	N/A	N/A	N/A
	PRO_2	0.682	1.096	0.826	0.061	17.937	***
	PRO_3	0.526	1.035	0.725	0.069	14.917	***
	PRO_4	0.434	0.866	0.659	0.065	13.344	***
	PRO_5	0.447	0.961	0.669	0.069	13.902	***
	PRO_6	0.536	0.910	0.732	0.060	15.150	***
CIM	CIM_1	0.598	0.930	0.774	0.054	17.217	***
	CIM_2	0.566	0.819	0.752	0.050	16.316	***
	CIM_3	0.708	0.931	0.841	0.049	19.146	***
	CIM_4	0.658	1.000	0.811	N/A	N/A	N/A
ORM	ORM_1	0.607	0.975	0.779	0.059	16.396	***
	ORM_2	0.663	1.063	0.814	0.063	17.007	***

	ORM_3	0.709	0.981	0.842	0.056	17.644	***
	ORM_4	0.596	1.000	0.772	N/A	N/A	N/A
VALIN	VALIN_1	0.639	1.000	0.799	N/A	N/A	N/A
	VALIN_2	0.419	0.816	0.647	0.059	13.765	***
	VALIN_3	0.596	0.891	0.772	0.052	17.183	***
	VALIN_4	0.586	0.929	0.765	0.054	17.316	***
	VALIN_5	0.499	0.845	0.706	0.055	15.340	***
	VALIN_6	0.283	0.715	0.532	0.066	10.910	***

The table shows the  $R^2$ , estimate, standardized estimate, standard error, critical ratio and p-value of each exogenous variable in each of the columns respectively. N/A in the last column indicates an instance for which SEM did not yield a value, since AMOS calculates unstandardized estimates taking one relationship in a construct as 1. These exogenous variables together explained 89.6% of the total variance of Internal Value ( $R^2=0.896$ ) on a SEM with a goodness of fit defined by CMIN=2731.981, df=1614, CMIN/df=1.693, NFI=0.852, IFI=0.934, CFI=0.933. According to the  $R^2$  values each variable has a positive relationship with its exogenous construct and according to the p-values each of them is significant.

**Step 2:** The next step in testing the hypothesis was to examine the impact of each exogenous construct on the endogenous construct, VALIN. The SEM output of the estimation table is given below:

**Table 67: Tested relationships between exogenous and endogenous constructs**

Exogenous Construct	Endogenous Construct	Value Mgt. Layer	Estimate	Standardized Estimate	Standard Error	C.R.	P-value
Mission	Internal_Value	VIS	0.034	0.043	0.030	1.133	0.257
Leadership	Internal_Value	VIS	0.074	0.073	0.049	1.503	0.133
Programme	Internal_Value	VIS	0.116	0.123	0.056	2.076	0.038
External_Performance	Internal_Value	PER	0.104	0.105	0.067	1.549	0.121
Internal_Performance	Internal_Value	PER	0.023	0.023	0.063	0.364	0.716
Measurement_Performance	Internal_Value	PER	-0.016	-0.016	0.034	-0.472	0.637
Value_In_Exchange	Internal_Value	PER	0.014	0.013	0.043	0.332	0.740
Capability_Management	Internal_Value	CAP	0.141	0.161	0.040	3.513	***
Culture_Management	Internal_Value	CUL	0.003	0.004	0.030	0.093	0.926
HRM	Internal_Value	HRM	0.024	0.025	0.048	0.505	0.614
Process_Magagement	Internal_Value	PRO	0.098	0.094	0.051	1.913	0.056
Connectivity_Info_Managent	Internal_Value	CIM	0.182	0.191	0.056	3.222	0.001
Operand_Res_Management	Internal_Value	ORM	0.366	0.334	0.069	5.341	***

The column headings of the above table explain: the exogenous construct; endogenous construct; the value management layer to which the exogenous construct belongs in the value creation model architecture; the unstandardized estimate; the standardized estimate; standard error; critical ratio; and, the p-value. According to the table output, the p-values of only 4 constructs are less than .05, and they are Operand Resource Management (.000), Connectivity & Information Management (.001), Capability Management (.000), and Programme (.038). The 8 constructs: Mission, Leadership, External Performance, Internal Performance, Value in Exchange, Culture Management, Human Resource Management and Process Management had positive relationships with the endogenous construct but the relationships were not statistically significant. The construct, Measurement Performance had a negative relationship with the endogenous construct which was also not statistically significant.

**Table 68: Summary of the results of testing hypothesis 1**

Exogenous Construct	Endogenous Construct	Est.	P-value	Relation	Significance
Mission	Internal_Value	0.034	0.257	Positive	Not significant
Leadership	Internal_Value	0.074	0.133	Positive	Not significant
Programme	Internal_Value	0.116	0.038	Positive	Significant
External_Performance	Internal_Value	0.104	0.121	Positive	Not significant
Internal_Performance	Internal_Value	0.023	0.716	Positive	Not significant
Measurement_Performance	Internal_Value	-0.016	0.637	Negative	Significant
Value_In_Exchange	Internal_Value	0.014	0.740	Positive	Not significant
Capability_Management	Internal_Value	0.141	***	Positive	Significant
Culture_Management	Internal_Value	0.003	0.926	Positive	Not significant
HRM	Internal_Value	0.024	0.614	Positive	Not significant
Process_Magagement	Internal_Value	0.098	0.056	Positive	Not significant
Connectivity_Info_Managent	Internal_Value	0.182	0.001	Positive	Significant
Operand_Res_Management	Internal_Value	0.366	***	Positive	Significant

According to these results: The value expectations related to 'Operand Resource Management', 'Connectivity and Information Management', 'Capability Management', and, 'Programme' has a significant positive impact on the final Internal Value Creation. The value expectations related to 'Process Management', 'HRM', 'Culture Management', 'Value-In-Exchange', 'Internal Performance', 'External Performance', 'Leadership', and 'Mission' have a positive but non-significant impact on the final

Internal Value. The value expectations related to 'Measurement Performance' has a negative and significant impact on the final Internal Value Creation.

### 5.7.4 Testing of Hypothesis 2

Hypothesis 2 states that, 'the fulfilment of educationist-intellectual value expectations has a positive impact on the co-created final external value.' According to the model summary results (Figure 23) giving an  $R^2$  value of 0.855, the DV explained 85.5% of the variance in IVs together, and according to the ANOVA table (figure 22), the model ( $R^2$ ) was statistically significant and,

$$F(8,51)=37.530, p=.000<.001, R^2=0.855$$

The p-value  $<.001$  indicated that overall regression model explains a positive relationship. However, when it came to the individual IV-DV relationships two IVs (EMCO and BECA) displayed negative impacts on the DV while 6 IVs were having positive impact on the DV as shown in the table below:

**Table 69: p-values of regression coefficients**

IV	B	t-value	p-value	Comment
TRSK	0.277	3.054	0.004	Significant
EMCO	-0.236	-2.790	0.007	Significant
SOSK	0.201	2.503	0.016	Significant
BECA	-0.232	-2.526	0.015	Significant
ATTI	0.264	2.313	0.025	Significant
CHAT	0.212	2.425	0.019	Significant
PEQU	0.306	2.272	0.027	Significant
PECA	0.222	2.331	0.024	Significant

All relationships, both positive and negative were statistically significant as all p-values were less than 0.05. Moreover, the regression coefficients of IVs showed that their relationships with the DV were also significant with p-values of all IVs  $<0.05$ . The conclusion was that 6 IVs had significant positive impact, while 2 IVs had significant negative impact on the final external value creation. A summary of the results of testing hypothesis 2 is given in the table below:

**Table 70: Summary of the results of testing hypothesis 2**

IV	B	t-value	p-value	Relationship	Significance
TRSK	0.277	3.054	0.004	Positive	significant
EMCO	-0.236	-2.790	0.007	Negative	significant
SOSK	0.201	2.503	0.016	Positive	significant

BECA	-0.232	-2.526	0.015	Negative	significant
ATTI	0.264	2.313	0.025	Positive	significant
CHAT	0.212	2.425	0.019	Positive	significant
PEQU	0.306	2.272	0.027	Positive	significant
PECA	0.222	2.331	0.024	Positive	significant

### 5.7.5 Testing of Hypothesis 3

Hypothesis 3 states that ‘the individual educator value expectations have a positive correlation with one another.’ The SEM output of the covariance estimates among the exogenous constructs are given in the table below. The columns 1 and 2 together specify the pairs of exogenous constructs. The covariance estimate, standard error, critical ratio, p-value and the correlation estimate are given in the other columns.

**Table 71: SEM output of covariance and correlation estimates**

Construct 1	Construct 2	Covariance Estimate	S.E.	CR	p-value	Correlation
VIS_PR	VIS_MS	1.364	0.146	9.340	***	0.615
PER_IN	VIS_MS	0.944	0.130	7.257	***	0.444
VIS_MS	VIS_LD	0.952	0.140	6.812	***	0.464
PER_IN	VIS_PR	1.131	0.126	8.992	***	0.647
VEX	VIS_PR	0.672	0.104	6.484	***	0.416
CAP	VIS_PR	1.199	0.135	8.864	***	0.609
VIS_PR	HRM	0.995	0.121	8.188	***	0.554
VIS_PR	PRO	0.947	0.115	8.266	***	0.572
CUL	VIS_PR	1.028	0.136	7.581	***	0.470
PER_EX	VIS_PR	1.286	0.133	9.674	***	0.740
VIS_PR	PER_MS	0.421	0.099	4.235	***	0.252
VIS_PR	VIS_LD	1.067	0.134	7.970	***	0.633
PER_IN	VEX	0.818	0.106	7.725	***	0.527
PER_IN	CAP	1.221	0.134	9.121	***	0.647
PER_IN	HRM	1.055	0.121	8.707	***	0.612
PER_IN	PRO	0.988	0.114	8.681	***	0.622
PER_IN	CUL	0.996	0.131	7.601	***	0.474
PER_IN	PER_EX	1.334	0.131	10.157	***	0.799
PER_IN	PER_MS	0.296	0.09	3.155	0.00	0.184
PER_IN	VIS_LD	1.005	0.127	7.885	***	0.622
VEX	CAP	0.840	0.114	7.393	***	0.482
VEX	HRM	0.808	0.107	7.525	***	0.507
VEX	PRO	0.697	0.098	7.130	***	0.475



VEX	CUL	0.567	0.114	4.980	***	0.292
VEX	PER_EX	0.786	0.103	7.610	***	0.510
VEX	PER_MS	0.427	0.09	4.736	***	0.288
CAP	HRM	1.142	0.133	8.586	***	0.589
CAP	PRO	1.072	0.124	8.621	***	0.600
CAP	ORM	0.850	0.113	7.513	***	0.500
CAP	CUL	1.108	0.146	7.606	***	0.469
CAP	PER_EX	1.216	0.133	9.118	***	0.648
CAP	PER_MS	0.331	0.104	3.188	0.001	0.183
HRM	PRO	1.056	0.119	8.901	***	0.648
CIM	HRM	1.128	0.127	8.888	***	0.632
HRM	ORM	0.924	0.110	8.388	***	0.596
CUL	HRM	1.156	0.140	8.272	***	0.537
PER_EX	HRM	0.989	0.118	8.402	***	0.577
PER_MS	HRM	0.412	0.098	4.193	***	0.250
CIM	PRO	1.041	0.118	8.841	***	0.633
PRO	ORM	0.898	0.104	8.632	***	0.628
CUL	PRO	1.084	0.130	8.355	***	0.546
PER_EX	PRO	0.982	0.114	8.624	***	0.622
PER_MS	PRO	0.367	0.09	4.081	***	0.241
CIM	ORM	1.201	0.123	9.772	***	0.768
CIM	CUL	1.111	0.138	8.027	***	0.511
CUL	ORM	0.729	0.115	6.339	***	0.386
CUL	PER_EX	0.859	0.126	6.800	***	0.412
<b>CUL</b>	<b>PER_MS</b>	<b>0.117</b>	<b>0.110</b>	<b>1.055</b>	<b>0.291</b>	<b>0.058</b>
PER_EX	PER_MS	0.469	0.095	4.943	***	0.294
PER_EX	VIS_LD	0.997	0.126	7.913	***	0.620
PRO	VIS_LD	0.846	0.115	7.371	***	0.553
HRM	VIS_LD	0.750	0.121	6.207	***	0.452
CIM	CAP	0.994	0.128	7.769	***	0.509
CUL	VIS_MS	0.858	0.148	5.799	***	0.322
CUL	VIS_LD	0.806	0.134	6.001	***	0.398
CIM	VEX	0.694	0.104	6.698	***	0.432
CIM	PER_MS	0.546	0.101	5.406	***	0.329
VEX	ORM	0.728	0.096	7.601	***	0.521
CAP	VIS_LD	0.992	0.134	7.418	***	0.545
CIM	PER_IN	0.996	0.119	8.345	***	0.573
VEX	VIS_LD	0.685	0.107	6.390	***	0.458
VEX	VIS_MS	0.734	0.118	6.244	***	0.373
CIM	PER_EX	1.014	0.120	8.474	***	0.587

PER_MS	ORM	0.566	0.091	6.212	***	0.392
<b>PER_MS</b>	<b>VIS_MS</b>	<b>0.110</b>	<b>0.110</b>	<b>0.997</b>	<b>0.319</b>	<b>0.054</b>
PER_MS	VIS_LD	0.261	0.09	2.764	0.00	0.169
PER_IN	ORM	0.911	0.108	8.440	***	0.602
CIM	VIS_LD	0.795	0.118	6.759	***	0.475
CIM	VIS_PR	0.951	0.121	7.871	***	0.525
PER_EX	ORM	0.931	0.108	8.606	***	0.620
PER_EX	VIS_MS	1.031	0.131	7.884	***	0.487
CAP	VIS_MS	1.200	0.146	8.202	***	0.501
VIS_PR	ORM	0.773	0.105	7.346	***	0.491
VIS_LD	ORM	0.738	0.106	6.993	***	0.507
VIS_MS	ORM	0.679	0.113	6.012	***	0.354
VIS_MS	PRO	0.816	0.120	6.778	***	0.405
CIM	VIS_MS	0.650	0.125	5.182	***	0.295
VIS_MS	HRM	0.858	0.130	6.593	***	0.393

According to the table, all covariance estimates were positive indicating positive correlation among the exogenous constructs, and all those positive correlations, except only in 2 instances which involved PER\_MS (CUL<->PR\_MS and PER\_MS<->VIS\_MS), all other 76 correlations were significant (p-value<.05). These two non-significant positive correlations were further verified using multi-model analysis in AMOS by setting their covariances to zero as a constraint in each instance and comparing the model fit with the default model (Arbuckle, 2017). The results in the table below verified the non-significant variance. The table also shows two other instances where the covariances were significant. The imposed zero covariance weakened the model fit in significant covariances (1 and 3), and were almost the same in non-significant covariances (2 and 4).

**Table 72: Results of multi-model analysis in AMOS to verify covariance**

Paramete r	Default Model	VIS_MS	PER_MS	VIS_MS	PER_MS
		VIS_LD	VIS_MS	HRM	CUL
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
CMIN	2731.981	2803.526	2732.985	2786.737	2733.102
df	1614.000	1615.000	1615.000	1615.000	1615.000
CMIN/df	1.693	1.736	1.692	1.726	1.692
NFI	0.852	0.849	0.852	0.850	0.852
IFI	0.934	0.930	0.934	0.931	0.934
CFI	0.933	0.929	0.933	0.930	0.933

Result	Weakened	No change	Weakened	No change
Comment	Significant	Not significant	Significant	Not Significant

The multi-model analysis verified the significance results and the correlation output in the previous table, which indicated positive values in all correlations, establishing the fact that educator value expectations are positively correlated with one another.

## 5.9. Findings of Quantitative Data Analysis

This section discusses quantitative analysis findings which answer the research questions which were not related to hypothesis testing.

### 5.9.1 Relative Contribution of Lower Layers and Upper Layers to Value

The research question 7 (RQ7) needed finding an answer to the question: ‘what is the impact of lower layer educator value expectations on the final internal value creation vis a vis the impact of upper layer educator value expectations on the final internal value creation?’ The answer to this could be found out using the weight of the standard estimates for the constructs on each layer. The top 4 layers were given a layer category name as top and the bottom 4 layers were given a layer category name as bottom. The table below in its first 3 columns shows the layer category, layer name and the construct name respectively. The next 3 columns give the standardised estimate of each construct’s estimate on final value, the sum of layer estimates and the sum of category estimates respectively. The Category Total of the top and bottom categories yielded values of 0.529 and 0.644 respectively. Though the ratio of constructs between the two categories were 9:4, largely in favour of the top layers, the results indicated that the impact of the upper layer value fulfilment on final internal value was lesser than the bottom layers, and therefore, we can conclude that the contribution of the lower layers to the final value creation is greater than that of the upper layers.

**Table 73: Sum of standardised estimates of top and bottom layers**

Layer Category Name	Layer Name	Construct Name	Construct Estimate	Layer Total	Category Total
Top	Value Management Layer	VIS_MS	0.043	0.239	0.529
		VIS_LD	0.073		
		VIS_PR	0.123		
	Performance Management Layer	PER_EX	0.105	0.125	

		PER_IN	0.023		
		PER_MS	-0.016		
		VEX	0.013		
	Capability Management Layer	CAP	0.161	0.161	
	Culture Management Layer	CUL	0.004	0.004	
Bottom	Human Resource Management Layer	HRM	0.025	0.025	0.644
	Process management Layer	PRO	0.094	0.094	
	Connectivity & Information	CIM	0.191	0.191	
	Operation Management Layer	ORM	0.334	0.334	

## 5.9.2 Extent of Current Internal Value Creation

The research question 9 (RQ9) requires to find the extent of current internal value creation. This can be calculated substituting the mean values of the exogenous and the endogenous constructs in the path equation. Those values are given below:

<b>Construct</b>	VIS_MS	VIS_LD	VIS_PR	PER_EX	PER_IN	PER_MS	VEX	CAP
<b>Mean</b>	3.535	2.416	3.086	2.674	2.856	1.913	2.154	2.745
<b>Construct</b>	CUL	HRM	PRO	CIM	ORM	VALIN		
<b>Mean</b>	3.636	2.680	2.809	2.430	2.230	2.528		

The path equation is:

$$\begin{aligned} \text{VALIN} = & 0.304 \text{ VIS\_MS} + 0.074 \text{ VIS\_LD} + 0.116 \text{ VIS\_PR} + 0.104 \text{ PER\_EX} + 0.023 \text{ PER\_IN} \\ & - 0.016 \text{ PER\_MS} + 0.014 \text{ VEX} + 0.141 \text{ CAP} + 0.003 \text{ CUL} + 0.024 \text{ HRM} + 0.098 \text{ PRO} \\ & + 0.182 \text{ CIM} + 0.366 \text{ ORM} \end{aligned}$$

Substituting the mean values in the path equation,

$$\begin{aligned} \text{VALIN} = & 0.304 (3.535) + 0.074 (2.416) + 0.116 (3.086) + 0.104 (2.674) + 0.023 (2.856) \\ & - 0.016 (1.913) + 0.014 (2.154) + 0.141 (2.745) + 0.003 (3.636) + 0.024 (2.680) \\ & + 0.098 (2.809) + 0.182 (2.430) + 0.366 (2.230) = 2.996 \end{aligned}$$

The estimated mean value of the endogenous variable by SEM, VALIN=2.528, was not expected to be completely accurate as SEM was not selected with predictive accuracy in mind. However, owing to the fact that the estimated VALIN and the calculated VALIN were both less than 4 (VALIN<4), we can safely conclude that the current SGSESL internal value creation is less than average. Or, since the questionnaire mid-scale was zero, the current internal value creation is negative.

### 5.9.3 Extent of Current External Value Creation

The research question 9 (RQ9) requires to find the extent of current external value creation. This can be calculated substituting the mean values of the IVs and the DV in the regression equation. The mean values of the IVs and the DV are given below:

<b>Construct</b>	TRSK	EMCO	SOSK	BECA	ATTI	CHAT	PEQU	PECA	VALEX
<b>Mean</b>	2.4907	2.5741	2.8963	2.3222	2.4267	2.3194	2.3988	2.2519	2.3156

Substituting these IV values in the regression equation,

$$\begin{aligned}\text{External value} &= -0.174 + 0.277(2.4907) - 0.236(2.5741) + 0.201(2.8963) - 0.232(2.3222) \\ &\quad + 0.264(2.4267) + 0.212(2.3194) + 0.316(2.3988) + 0.222(2.2519) \\ &= 2.3181\end{aligned}$$

The estimated mean value of VALEX (2.3156) and the calculated mean value of VALEX (2.3181) are almost equal. Since VALEX obtained from both methods are less than 4, we can safely conclude that the extent of current SGSESL external value creation is less than average. Or, since the questionnaire mid-scale was zero, the current internal value creation is negative.

### 5.10. Chapter Summary

This chapter presented the process of quantitative data analysis from data evaluation to hypothesis testing. It started with the evaluation of data for outliers and normality in both samples. The data analysis methodologies to be used on the value models 1 and 2 being CFA and MRA respectively, the steps of analysis were done one after the other for the models. The treatment followed the steps: ensuring goodness of fit, descriptive statistics, data analysis and hypothesis testing. The final testing of hypotheses and the research findings enabled answering the research questions raised and set the basis for the final chapter of the dissertation, conclusions and recommendations which would follow.



## 6. Conclusions & Recommendations

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### 6.1. Chapter Overview

Though the research questions raised and the research hypotheses tested in the current research appear prima facie to have been designed to find a solution to a practical issue or an applied problem in a public education system, they were also aimed at attempting to initiate studying much larger theoretical questions, both to the discipline to which the research problem belongs (EA or EMAL), and to general management at large. Since it seemed easier to look at the research conclusions related to the practical problem in the context in which the research questions were raised to start with, and then discuss the findings with complex theoretical connotations afterwards, the conclusions and recommendations concerning the SGSESL are taken up first for discussion, leaving the ones concerning EA and management for discussion in the subsequent subsections.

### 6.2. Summary of the Findings

The researcher identified 7 objectives for conducting the present study. As could be seen in the results, its findings may add to the present theoretical and empirical knowledge of general management, and may also improve the managerial practice, not only in business management, but also in the public and non-profit areas of management. The following subsections summarize the findings under each objective, in order to verify the meeting of the objectives by the research.

#### 6.2.1 Findings Related to Objective 1

*'To do a literary synthesis of the bodies of value related management literature to extract the generic principles of value creation.'*

Finding generic principles of value creation in order to build a generic value creation theory framework was innovative. The historical practice in value creation has so far been to adapt existing value creation models even in areas where the original model is in no way a fit. And this has been happening with total ignorance to the subjectivities of the context in which the model is applied. The idea of value creation being so fundamental in management and the discipline of management has acquired enormously rich body of knowledge and experience across multiple subdisciplines, it was also thought to be possible to identify a set of generic principles of value creation through a synthesis of value related management literature. If there was ever a single field where a generic theory of value could be appealing in it was public education management as it was a field which was averse to business management theory and principles. Since this research initiated with a practical problem in education management which needed a generic value creation solution, the theoretical need and the practical need matched with each other perfectly. The generic theory framework for value creation was to be built through a synthesis of literature, and the current literature review accomplished exactly that, and the theory framework consisted of 56 theoretical principles altogether, with 18 definitive principles, 22 elaborative principles, and 16 implemental principles. The theoretical principles in the framework could provide the answers to the questions 'what, how why, who, where, when' through their relationships, the basic quality of a theory according to Dubin (1978). Thus, the first objective of the research was accomplished through the literary review.

### **6.2.2 Findings Related to Objective 2**

*'To build an integrated model architecture or a conceptual model for value creation using the generic principles of value creation.'*

The generic theory framework of value creation envisaged was not only for theoretical interest, but also was to inform practice, the current research problem, required that it guides the building of an integrated management system that connects all layers of management from top to bottom and cuts across the total width and breath of the system connecting all units. The theory framework built had powerful practical principles, helping the identification of the system as an integrated value network, pointing to the essential components needed in the network and guiding the network to build it into a layered architecture with 9 layers



aligning the whole network in one direction to create value. The model so developed was contextualized in the problem domain, and the components of the value creation architecture/conceptual model were validated during the subsequent exploratory stage through interview data and could also be tested. Thus, the second objective of building an integrated model architecture of value creation was accomplished.

### **6.2.3 Findings Related to Objective 3**

*'To explore the System to find out the value expectations of different stakeholder groups in the System, in order to ascertain the value measures under each value variable, for completing the value creation model.'*

Though the value creation theory framework was built by extracting fundamental principles of value creation in value related management literature, there were theoretical, empirical and practice gaps in terms of how to measure value along the variables in the conceptual model, as the current model was the first in its kind. This void required an exploratory study into the problem domain in order to validate the model, and to identify the measurement scales required to test the model empirically. The exploratory study conducted through interviews resulted in validating the system components and identifying the measurement scales for each variable in the model thereby fulfilling the objectives of the exploratory study. Thus, the objective 3 of the research was also accomplished.

### **6.2.4 Findings Related to Objective 4**

*'To investigate the impact of stakeholder value expectations on value creation.'*

Investigating the impact of stakeholder value expectations on value creation had 2 components to it. The first component was the impact of educator value expectations on the final internal value creation, which was to be tested using the hypothesis 1 on the SEM model; and, the second component was the impact of educationist/intellectual value expectations on the final external value creation, which was to be tested using the hypothesis 3 on the MRM. **In the internal value model**, the value expectations related to 4 constructs (Operand Resource Management, Connectivity and Information Management, Capability Management, and, Programme) showed significant positive impact on the final Internal Value Creation. And value expectations related to 8 constructs (Process Management,

HRM, Culture Management, Value-In-Exchange, Internal Performance, External Performance, Leadership, and Mission) had a positive but non-significant impact on the final Internal Value. The value expectations related to Measurement Performance had a negative and significant impact on the final Internal Value Creation. **In the external value model**, 6 IVs had significant positive impact on the final external value, while 2 IVs had significant negative impact on the final external value creation. Thus, the testing of hypothesis 1 and 2 fulfilled the 4<sup>th</sup> objective of the research.

### **6.2.5 Findings Related to Objective 5**

*'To investigate the nature of relationships between the internal value variables in order to ascertain their relative significance on final value creation.'*

The idea behind investigating the nature of relationships between the internal independent value variables was to test whether they had correlations among themselves to verify in turn that value creation in each layer of the value creation architecture is related to one another. This was to prove the interconnectedness of the value creation work on the horizontal layers of the value network. The testing of the hypothesis 3 showed that out of the 78 pairs of constructs in the architecture 76 had significant positive correlations with each other, whereas only 2 had positive but non-significant correlations. This verified that value creation on the horizontal layers of the value network is inter-related, thereby fulfilling the 5<sup>th</sup> objective of the research.

### **6.2.6 Findings Related to Objective 6**

*'To measure the current level of value creation in the System in order to ensure the acceptability and applicability of the value creation model.'*

The current value creation model had to be used to measure value creation in an actual setting in order to ensure its acceptability and applicability. In order to achieve this, it was essential to use the value creation model in the problem domain. The findings of the quantitative analysis showed that, both current internal and external value creation in the problem domain were negative. The current internal value creation is 2.996 (4 being the mid-point), and the current external value creation is 2.3181. These figures are consistent with the general popular consensus regarding the value creation in the problem domain. And therefore, the results

proved that the value creation model could be used to measure value creation in practice. Thus, the 6<sup>th</sup> objective of the research was also fulfilled.

### **6.2.7 Findings Related to Objective 7**

*'To make recommendations for the educational policy makers on value creation for change, and for researchers, for future research on the subject.'*

This final objective of the research is to be accomplished on the findings related to the previous objectives and to be done within this chapter. Hence, the following 2 sections will be dedicated to make the recommendations for the policy makers of the SGSESL and elsewhere, and the recommendations for future research is presented after the contribution of the present study, fulfilling the final objective.

### **6.3. Recommendations for SGSESL**

Probably the most significant finding of this research for the consumption of SGSESL is that it's current internal and external value creations are both negative. The current research was designed in a such way that it would be able to recommend ways of solving problems if there were any. And, the recommendations below are based on the findings of the direct and indirect findings of the research:

1. The value creation process should begin by putting the proposed external value expectations on top layer to provide direction for all work being done. This will ensure that the all activities are aligned in the same direction.
2. Implement the value creation model architecture and develop the operational measures at each layer depending on the requirements specified by the proposed values. This will need modifications to the proposed values and that should be done in an iterative fashion over time.
3. Change the organisational structure from the current vertical one to a horizontal one, where the activities of each horizontal layer are organised around the need to provide the services required by the upper layer. This will ensure the alignment needed at each layer towards goals.
4. All service requests of each upper layer come down to the lower layer for fulfilment, in other words, each upper layer depends on the layer below it to supply the services requested by it. Hence, the success of goal accomplishment would largely depend on the productivity at the bottommost

layers. The research revealed that the problems in the bottommost layers are responsible for SGSESL lack of value creation more than the upper layers. Therefore, it will be better for the SGSESL to start work from the bottom layers and go up fulfilling the requirements at each layer before launching any programme to revive the system. Until the resource requirements at the bottom are complete, it will be good to keep everything in a designing stage. If the bottom layers cannot cater to the service requests coming from the top, the whole system would soon collapse. Given the distrust people have for the reforms that might as well be the end of the whole programme.

5. Connected with the issue of solving the resource problems at the bottom layers is the problem of inequity in the distribution of resources. This issue came out strongly in this research. Like politics, this is one of the historical problems in SGSESL making the delivery of education classist preventing the accomplishment of lofty educational values. This requirement also demands that resource fulfilment should be the starting point in any change programme.
6. Do away with the current examination-based performance measurement in favour of the proposed scheme. The current performance measurement is probably the most undesirable practice, as it prevents all possibilities of self-regulation in the system towards right goals as it mechanises the whole system.
7. Replace the current knowledge-based curriculum with a capacity-based programme to instil educational values in children rather than relying on imparting knowledge. It also came out strongly in the current research that the current education's imparting of knowledge only serves the purpose of testing in examinations and that knowledge offers little help in real value creation as was verifiable through current level of SGSESL value creation.

In addition to these high-level recommendations, there are also specific action items that came out during the interviews, and which were also verified during the questionnaire stage by dividing them into 2 categories as 'policy related' and 'politically contentious' and putting them for approval to the educationists-intellectuals and educators respectively. These responses were not intended for analysis. And these action items with the average approval scores are reported in the tables below. The first table gives the policy related action items confirmed by the

educationists and intellectuals and the second table gives the politically contentious action items confirmed by the educators. The degree of approval is reported on a scale of 1 to 7 where any score above 4 is a positive score and 7 being the maximum. All the items in the first table (44) have strong approval. All items in the second table (62), except item 44 which is related to a dress code for educators (score 3.91), have approval. There are also few items for which approval is not so strong. Though discussing these items in detail is not warranted here for obvious space constraints, these may be proved to be helpful insights in planning implementation of a change programme as they were developed through interviews of experienced educators and were later confirmed by all.

**Table 74: Action items proposed by educationists-intellectuals**

<b>No.</b>	<b>Action Item</b>	<b>Score</b>
1	Educators need values	6.48
2	Every student should be employable	6.62
3	Give priority to professions the country needs	6.62
4	Schools should have vocational education in all streams	6.47
5	Vocational education in school leads to equality	6.38
6	Vocational specialization should happen after grade8	5.73
7	Educator training should get highest priority	6.63
8	Problems of educators should be solved first	6.42
9	Need a student centred education system	6.70
10	Teach curriculum attractively to discourage private tuition	6.78
11	Exploration should be the mode of learning	6.78
12	Teacher colleges should give priority to Sinhala	5.87
13	Preservice teacher training course should be 4 years	5.83
14	Resource disparities should be eliminated before anything	6.80
15	Facility designs should suit learning	6.67
16	School inspection is a good way of measurement	5.68
17	Reform language education in all grades	6.65
18	Curriculum should be compatible with brain development	6.78
19	Introduce aesthetic education in all grades	6.85
20	Broadening thinking should start in primary	6.85
21	Knowledge acquisition should be a by-product of problem solving	6.67
22	Indigenous knowledge should be brought to school	6.58
23	Language education should be given priority	6.70
24	Mode of learning should be collective and collaborative	6.80
25	Curriculum should flow from cause to effect	6.63
26	Spiritual training other than religious is needed	6.03

27	Literature should be taught in every grade	6.55
28	Comparative culture education is needed	6.35
29	Biography education is needed	6.48
30	Technology as a subject needed only at senior level	5.37
31	Senior curriculum should be narrow and deep	6.05
32	Painting essential in primary	6.45
33	Bilingual education is needed	6.55
34	Province district seat administration is needed	6.15
35	Adopt administration boundaries in education	6.12
36	Make Sinhala compulsory for AL arts students	6.10
37	Curriculum related work should be integrated in one place	6.48
38	A general education is needed till grade8	6.47
39	Teacher recruitment should test aptitude	5.90
40	Service processes and a matrix structure is needed	6.68
41	Abolish division of schools on ethnicity	6.25
42	Abolish division of schools on gender	6.55
43	NEC should have implementation powers	6.43
44	Teacher colleges should be regional centres of education	6.17

**Table 75: Action items proposed by educators**

	<b>Action Item</b>	<b>Score</b>
1	We need new educational goals	6.05
2	Education should produce citizens who love others	6.29
3	Education should imbibe values	6.40
4	Education should produce citizens with morals	6.45
5	Education should cultivate attitudes	6.45
6	Current curriculum has not produced sensible citizens	5.64
7	Co and extra activities needed to produce sensible citizens	6.22
8	Need processes for all service deliveries	6.07
9	Decision making must be research-based and goal-oriented	6.18
10	Decision making should be collective	6.35
11	Need a process for teacher posting and transfer	6.45
12	Education should be practical and not too academic	6.35
13	Students should be exposed to culture in education	6.35
14	Students should be allowed to pursue their passion	6.48
15	Education should relate to society	6.38
16	Students should be immersed in environment for exploration	6.41
17	Hidden curriculum is needed to encourage co-curricular learning	6.23
18	Education should change from examination to experience	6.37

19	Behavioral theories should be used to cultivate good habits	6.37
20	Sports should be made compulsory to every student	6.22
21	Student inclinations should be recognized early and harnessed	6.44
22	Sports and activities are needed to produce a balanced citizen	6.37
23	Schools should be conducted till 5pm for sports and activities	4.46
24	A teacher university is needed	6.33
25	Sports should be made compulsory in teacher preservice training	6.18
26	Education in teacher colleges should be student centred	6.16
27	Education in teacher colleges should be exploratory	6.43
28	Need based teacher training courses are needed	6.46
29	Principal training courses are needed	6.44
30	A cluster school system is needed to achieve educational goals	6.02
31	Mobile labs and libraries are better than fixed ones	5.97
32	Teacher assessment should substitute examinations	5.44
33	Grade5 scholarship examination should be abolished	5.19
34	Facilities in technical schools can be brought to schools	5.79
35	Schools should have facilities for technical education	6.26
36	Schools should be made free from parents' influences	5.84
37	Teacher quarters should be built for a school cluster	6.02
38	Attractive text books are needed	6.18
39	Comparative religion should be taught to eliminate extremism	6.07
40	More male teachers are needed	6.12
41	School admission should be lowered to 4years	4.67
42	Qualified pre-school teachers should be absorbed to the system	5.62
43	Curriculum developers need proper teacher experience	6.43
44	Teachers need a dress code	3.91
45	Private tuition should be abolished	4.82
46	All schools should be mixed	5.52
47	Practical tests needed in teacher recruitment	5.99
48	Central government should take over education managment	5.82
49	Administrator to handle admin work in schools under principal	5.51
50	Three educator services should be combined	5.53
51	Administration service should be separate	5.54
52	Teacher educators should play the role of curriculum developer	6.07
53	Duration of a school study period should be increased	4.39
54	Good teachers should be retained in teaching	6.11
55	Mobile phones should be prohibited to students	5.15
56	Current subject directors to be assigned to teacher university	5.34
57	Counsellors are needed in schools	6.27
58	Educational needs should precede administrative requirements	6.39

59	Career ladder should complete before retirement age	6.38
60	Inter school co-curricular competitions for holistic learning	6.17
61	Best educationists in the country to man NEC	6.41
62	Need a performance-based salary	4.89

#### **6.4. Recommendations for Educational Policy Makers in General**

EA, being unable to demarcate its boundaries or to create the so-called unique identity that it has strived to create for itself, even after 100 years of existence, is still entangled in a theory movement which has no signs of ending (Mulford, 2005; Heck & Hallinger, 2005; Hodgkinson, 1993; Evers & Lakomski, 1991) and is yet to define its objectives clearly (Oplatka, 2009). The failure of such an important field to literally find its feet on the ground appears to be rather problematic. The proposition that the discipline which is primarily responsible for managing the development of human resources, which naturally needs learning from knowledge and experience of all other disciplines should be insulated from borrowing for the sake of its own identity is rather questionable. The objection to borrow from general management is even more problematic.

The great educational thinkers of several generations have espoused a wealth of educational values that should be used as goals of education. Yet, none of those has been used as goals of education in effect so far. This is quite close to doing marketing without knowing what customers want. All the known, if there have been any, have been mere guesswork. None of that have been made part of education management systems as goals or targets. Instead, student test scores which were borrowed from manufacturing during the scientific management era in the USA has remained the sole performance measure to this day. And everything in education management is done to achieve good student test scores. This is despite the vast strides of development performance management has been able to achieve since. One of the most important findings of this research is that the educational values cannot be measured through student test scores and that needs the involvement of eligible country representatives to do it. What education systems are doing today is testing the students for their memory power in an effort to make up their minds that their produce will deliver what is required in the long run. As the results of this research show in the extent of current value creation which is negative, what is being produced by the system is not what is required by the country. It is also notable that



any educational value expectation related to knowledge did not arise anywhere in the current research, despite the fact that many education systems today, are preoccupied with imparting knowledge, apparently to cater to the so-called knowledge society. The current obsession with knowledge is as if knowledge was not required earlier. As this research reveals, intangibles contribute less for value creation, where there is acute lack of resources; and also, intangibles needed for value creation are much more than mere knowledge.

Another notable finding of the current research is that EA and EMALs isolated management practices also flow from their seclusionist attitude. They have not been able to learn at least from the development that has taken place in general management. One of the vestiges of scientific management still remaining in EA and EMAL is huge planning departments at a time where large planning is considered as something out of date. One of the best examples is the SGSESL. Most of the problems that came up in the current research was due to isolated management. This seems partly a response to the political interference that is taking place in the systems as well. A good example is UK, where there is a belief that autonomous schools are a better alternative than central management (Bush, 1999), which has led to gradual establishment of a new stream of thought in educational management by the name EMAL in many ways distinct from EA. There is also a new stream of educational management called 'school management' which has gained wide popularity (Bush, 1999). These are clearly dispensations of isolated management practices. The problem here is that a country's educational value expectations are generally much broader than the value expectations of parents. Catering to the employment-specific value expectations of parents instead of the larger value expectations of a country of the kind this research reveals, a school may well run the risk of commercialising its efforts in the long run, go beyond a point of no return, and end up being answerable to the blame for catering to a selected few. With a performance system based on student test scores, there is no way to measure whether or not a school is on course of achieving larger educational objectives. More significantly, delivering the right kind of education is not something a school can do alone. A national education system which consists of various diverse institutions responsible for delivering diverse services have to work in cohesion to realise the educational value expectations of a country. And the current research recommends the policy makers to implement the proposed model for the reasons and benefits

explained above, and end the historic isolation from knowledge in the other fields and start to profit from the richness of knowledge in management in the long run. Learning from the findings of this research, the specific recommendations for making the national education systems can be given thus:

1. The current standardised test-based evaluation system can measure nothing but memorisation of facts by the students, and it is not able to measure the larger goals (values) of education. The breadth and depth of the educational values that came out of this research show the vastness of the vision we should aim for, and how narrow visioned we are now. So, it is high time that we scrapped this Taylorist evaluation system. Finland as a country has started to do this and has reaped results (Sahlberg, 2021)
2. Treat education management systems as value networks and manage the entire network as one holistic management system. Implement the proposed value creation model architecture to connect the width and breadth and align the top and bottom of the network cutting across all institutions in the network. Integrate work horizontally along the layers and make every layer to provide services to the upper.
3. Populate the values starting from the national educational values extracted from a set of people, educationists and intellectuals, who are capable of representing the whole country in the long-term including posterity and cascade the value expectations of below layers from those values, in addition to having the specific value expectations at each layer of the network.
4. Treat children as belonging to the country, not the parents, in a practical sense, and design and operate the education systems in a way to bring out the innate potential in each and every child, as it is in the best interests of the country in the long term, since the highest forms of value could be co-created only then, as against training the child in a profession of his or her parents' choice.
5. The relative contribution of each layer in the architecture in final value creation may be different depending upon the resource richness and the age of maturity of the system. If there is lack of resource richness, more focus will have to be paid to the lower layers as without the lower layers working effectively, it might be difficult to achieve expected results. In terms of

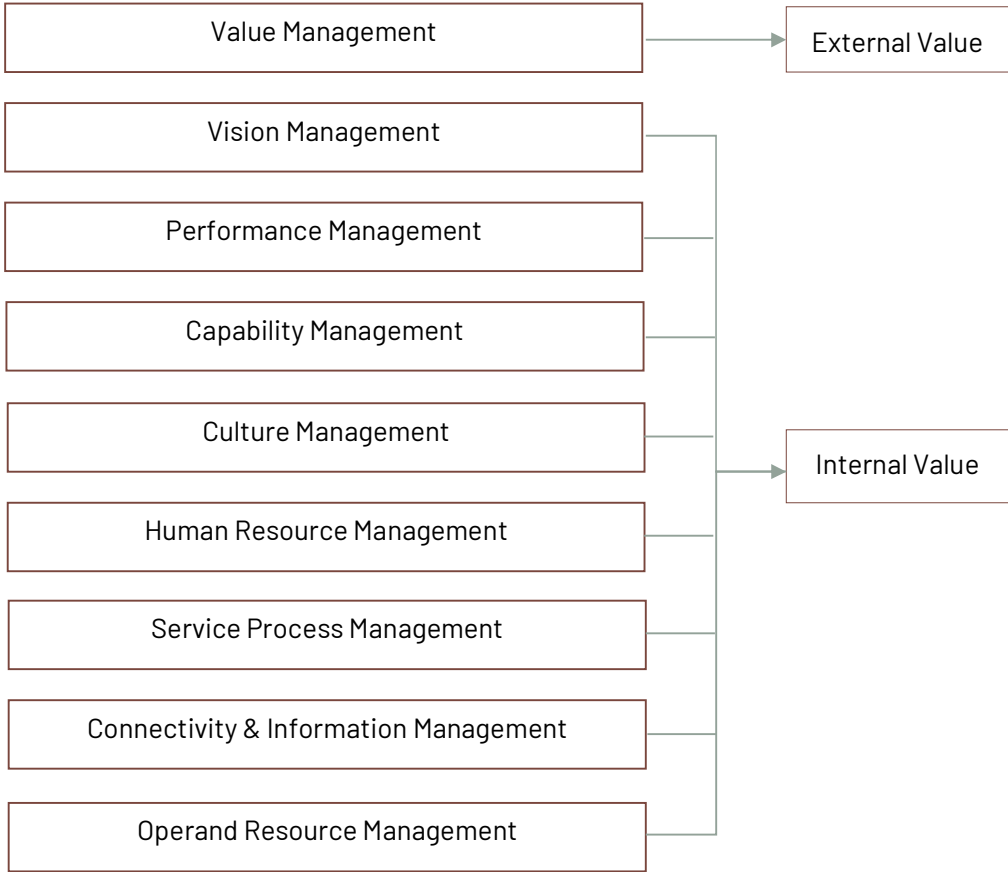
resources, it is more important to ensure equity in resource distribution as the resources without equity in their distribution won't achieve much.

## **6.5. Contribution of the Present Study**

Though this research was predicated on finding a solution to a practical problem in a public domain, the urge for conducting it came from a larger theoretical, empirical, and practical problem concerning general management: Why are not there, generic principles, or a model, of value creation applicable across domains? Why management theory tends to look at problems only analytically not holistically? While also attempting to find a solution to the said practical problem, the current research aimed at finding a vantage point in order to invite the management research community to start to look at the problem of value creation holistically too, for the perceived benefits such a viewpoint can bring. The contributions from various management scholars in the fields of marketing management, value-based management, performance management, strategic management, public value management and value engineering have made it possible to develop generic principles of value creation, as the most fundamental of the value principles in each of those fields are time tested (Vargo & Lusch, 2004; Morin & Jarrell, 2001; Kaplan & Norton, 1996; Porter, 1987; Nonaka, 1994; Grant, 1996). It was a matter of identifying those fundamental principles through a literature synthesis. The fact that the theoretical principles developed through synthesis were validated by the research participants during the interview stage of the current research itself is a testimony to their applicability across disciplines. And their lending themselves to build a value creation model architecture that could be used to measure value creation in a national education system adds more strength to their validity as well. Hence, the theoretical contribution of this research is the building of a generic theoretical principles of value creation which can be used in any type of organisation. It increases the reach of the discipline to scholars and practitioners in other fields allowing them to use management principles in trying to solve their problems. Such breaking of the boundaries, like in the form of public and private, can only be mutually beneficial, as that may elevate the value of general management to the level of a mother discipline, whose general theories are used by all.

The other major contribution of the current research is the extension to the proposed theory in the form of a generic model architecture for value creation (see

figure below) that can be used by all for value creation with customization. The prospect of having such a model architecture customizable to different contexts and scales is an advantage to organisations irrespective of their type, scale, or maturity.



**Figure 38: Generic Model Architecture of Value Creation**

The layers of the model can be integrated or expanded to suit the context or scale. This will also be helpful to mature organisations which feel the need of simplifying their organisations of affairs or of finding alignment. It can also help organisations who are not very clear about their vision or mission which should guide the organisation. The current research was based on the idea that the vision of an organisation should stem from the customer or stakeholder value expectations. This may appear to be contrary to the idea of having a strategy (Porter, 1985; Kaplan & Norton, 1996). Nevertheless, this research posits to advance the argument that making a strategy is nothing else other than selecting a certain segment of customers or stakeholders from a sea of such people and serving that selected segment. Once a segment or a major stakeholder is selected the rules proposed by this research apply. While a business organisation can have a strategy and select a

limited customer segment to serve, a public organisation in the general case will have no such option. Thus, the current research does not have any incompatibility issue with the concept of competitive strategy, and rather it uses strategy as a differentiator between business and public organisations. But the current research contests the proposition that an organisation can have an internal strategy that is aimed at creating shareholder value or internal efficiency, on the basis that the current model architecture ensures that it simplifies the operations, and increases the shareholder or investor profits, as the profits (or value in exchange) will be assured by the co-creation of value in use in the long-term. In short, the proposed model architecture preempts the need of having an internal strategy.

## **6.6. Limitations of the Current Research**

In addition to the geographical, sampling, and methodological limitations which could be identified prior to conducting the research and which were pointed to in the first chapter, the most notable limitation of the current research which could not be identified earlier and which only came out in data analysis was the inevitability of assuming the educators to have a general sense of management. The results showed that it was not so. If there were a possibility of selecting educator participants who are knowledgeable in the affairs on each layer of the value creation model architecture, the outcome of the research would have been more convincing and the established relationships between the layers could have been more meaningful. Since there was no way, the current study could have stratified the sample along the layer functions as such identification was almost impossible in education since these notions of management are not familiar to people there, this could not be avoided. This is the same reason why the model had 2 dependent variables as internal value and external value, where ideally, internal value should have stemmed from external value. If it were possible to extract the upper layer values prior to extracting the lower layer values, and continue the research process in a sequential fashion taking more time (which was not possible in the current case), the cascading down of values from the top to bottom would have resulted in more perfect alignment of the layers in the model. However, these insights are only possible with the experience of this research. Now that there is knowledge on how to go about it, the future research and practical implementations can follow these guidelines.

## **6.7. Recommendations for Future Management Research**

This research being the first known one attempting to build a generic theory of value creation, it is understandably far from being complete. There is still room to bring in more fundamental value creation principles in the areas of management that may have eluded the current study. These new areas may add more principles to the definitive, elaborative and implemental principles of value creation developed here. Even if such studies won't add anything new, they would be of value, as they would serve to make this attempt complete and acceptable. The discipline has obviously divided and subdivided into many streams over time. And it is true that these divisions and sub divisions have served definite useful purposes. But it is also clear that these divisions have also made it a bit more complicated now for it to remain focused on its fundamental objectives. And as such, maintaining the discipline's focus has become all the more important today, against the backdrop in which the whole world appears to have come to a point of beginning to understand that solutions devised by way of analysis through dividing the problems into parts are no longer delivering expected results. In the face of that, the tendency slowly but surely is towards synthesis through which holistic solutions to problems are sought. Also, the differences between organisations as public v. business or for-profit v not-for-profit are diminishing. The tendency to look at all offerings as services (Vargo & Lusch, 2004; Vargo & Lusch, 2011; Gronroos, 2006) has made it possible to view all organisations as service providers, in a context in which all profits and benefits would be determined by the quality of the services provided. This tendency brings the hope of a more inclusive and just world, wherein doing good is what guarantees success. It is to this end that this research wishes to contribute to, and it is for this reason that, this research can be identified as futuristic. And the chief recommendation for future research therefore, is for more research on the same subject of generic principles of value creation to build a body of knowledge on value creation to be useful both in theory and practice. And there are specific recommendations for future research as well.

1. The proposed value creation model architecture is readily usable in applied research in any research context. Since the measures required for populating it will be determined by the context in which it is applied, it is inherently

customisable. That flexibility built into it increases its adaptability and usability and makes it a usable model in future applied research.

2. Another important subject which would be testable, through the application of the proposed model in various research contexts, is the contemporary theory in value creation that the intangibles contribute more to the final value creation than do the tangibles (Nonaka, 1994; Grant, 1996; Kaplan & Norton, 1996; Kaplan, 2010). This argument now has come to be accepted universally without questioning. But the current research revealed that, where there is a shortage of resources, the contribution of intangibles to the final value is comparatively less. As such, this research warrants the counter argument that: is this theory accepted by all valid only in settings in which tangible resources are no longer a basic problem? And this would well be verifiable through applied research on the model set in countries on either side of the divide between resource rich and resource poor.
3. Another recommendation for future research stems from the major limitation of this research to provide proper alignment of the values of the layers of the model due to the lack of previous knowledge. If there would be future research conducted by deriving values from the top to bottom in a sequential fashion, that would be ideal to advance the knowledge built by this research in order to bring to fore the value of having a generic theory of value.

## **6.8. Recommendations for Future EA and EMAL Research**

The expressed reason given by EA and EMAL for keeping away from borrowing from general management is the fear that it might be a conduit for business logic to enter education. This belief is justified at least to a small degree if only if education systems do not work towards the educational goals of the type recommended by this research. If this type of educational values guide everything that is being done in an education system (SGSE), the fear of drifting towards commercialisation would have no basis. Moreover, the value creation model architecture recommended by this research reduces the possibilities of such digression by providing alignment towards the educational values and complete visibility of the whole value creation network to its managers. Being on this vantage point, this research suggests 3 streams of research for EA and EMAL to instigate in order to bring about an end to their search for a theory movement in the long term:

1. A stream of research that will study the educational value expectations of countries, with reference to the values espoused by the great educational philosophers and thinkers, taking the current research as a starting point. This stream of research if triggered will in the long run bridge the current gap between educational expectations and performance, which remaining unknown is causing a number of problems to the entire world.
2. A stream of research that is directed at finding new ways of simplifying the current difficulties in measuring the educational values using human ingenuity. One often used argument to justify the application of the scientific methods in measuring educational output is the difficulty of measuring the educational values prescribed by the educational thinkers. This stream will certainly be a cross disciplinary one, which would cut across the boundaries of the pedagogy, psychology, social psychology, physiology, brain studies, neurology, sociology and various other disciplines. This type of research will assuage the current fears of scrapping the scientific method gradually.
3. A stream of applied research along the line of applying the proposed value creation model architecture on country education systems and bring gradual improvements to it so that we have a basic educational value creation model architecture that can be available for use by every country. The flexibility offered by the proposed architecture to include measures that are more important for a country given her stage of educational development promises a great amount of customisability as well, while also providing a common architecture. As was evident in the results of the current research, the chances of external value expectations of countries to differ are slim. The big differences if there are would be in the area of internal value creation, where there can be differences depending on the stage of the country's development. The resource-rich developed countries may find the activities on the upper layers as more important whereas the resource-poor developing countries would find the activities on the lower layers are more important for internal value creation. Also, this stream of research will provide countries a common platform to share the experiences gained in their individual efforts of raising the standard of human development, and help each other in the development of the human race from its current level, a sine qua non to make the world a better place.



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## Appendix AA: NEC Educational Goals of 1992

No.	Goal (Value)
1	The achievement of a functioning sense of national cohesion, national integrity and national unity
2	The establishment of a pervasive pattern of social justice
3	The evolution of a sustainable pattern of living-a sustainable life style
4	Seeking a livelihood and work opportunities that are, at one and the same time, productive and give avenues of self-fulfilment
5	Participation in Human Resource Development that will support socio economic growth of the country
6	Involvement in nation building activities: learning to care
7	Cultivation of an element of adaptability to change-learn to learn and adapt, developing competence to guide change
8	Coping with the complex and the unforeseen and achieve a sense of security and stability
9	Securing an honourable place in the international community

## Appendix AB: NEC Educationally Relevant Goals of 1992

<b>1</b>	<b>Understanding and valuing the concept of Sri Lankan nation, in the context of global community</b>
	Inculcation of a deep feeling of patriotism and commitment to the service of the nation and its upliftment
	Appreciation of the contribution made by the cultural traditions of every ethnic group and religion to the enrichment of the Sri Lankan nation
	Sensitivity to the role of language use and cultural appreciation in sustaining national cohesion
	Understanding and practice of one's own religion
<b>2</b>	<b>Awareness and sensitivity to the significance of social justice and active elimination of inequalities</b>
	Sense of personal responsibility and accountability
	Ability to negotiate honestly and honourably
	Sense of rights and duties of self and others; a sense of fair-play
<b>3</b>	<b>Awareness of and sensitivity to the assimilation of wholesome values in life and work</b>
	Awareness of and sensitivity to the importance of the evolution of a sustainable life style for the future
	Having an attitude of continuous improvement with the interests of both self and others in view
	Use of leisure, relaxation, recreation and rest which are conducive to mental and physical health
	Awareness and appreciation of ecological balances
	Willingness and ability to contribute constructively to environmental conservation
<b>4</b>	<b>Awareness of patterns of livelihood and work opportunities that are productive and self-fulfilling</b>
	Ability to create wealth for self and family through honest and productive efforts
	Establishment of satisfying and mutually supportive relationships
	Conduct in life and work that does not induce undue physical and mental stress
	Ability to match needs and wants to available resources with contentment in a sustainable life style
	Ability to save and invest wisely
	Ability to map out a feasible strategy for personal development
	Sense of quality in living and working
<b>5</b>	<b>Awareness of salient aspects of national development and the modes of participation in them</b>
	Role of a motivated, competent and adaptable work force in national enterprises
	Significance of effective management through the identification of managerial, supervisory and specialist personnel in diverse contexts of work
	Ability to select and use guidelines and self-study schemes in national and other languages, as circumstances demand
	Awareness of and ability to use formal and informal channels and modes for up-grading personnel
<b>6</b>	<b>The evolution of a deep and abiding sense of concern for one another</b>
	Understanding and appreciation of one's culture and those of others
	Awareness and informed respect for all religions and belief systems
	Awareness of others viewpoints and needs
	Ability to function in a spirit of cooperation, tolerance and informed sensitive compromise
	Awareness and appreciation of interests-self and others-and function while recognising human limitations
	Awareness of modes of realising consensus and mutual agreement, avoiding arbitrary and unilateral actions

	Awareness of the role of consultation, expression of opinion and constructive criticism with responsibility and ability to promote such participatory action
	Capacity to work intensively, with perseverance, and with attention to relevant detail, as situations demand
	Ability to nurture among all participants a deep and abiding commitment and concern for one another
7	Awareness of and sensitivity to rapid change, with the ability to anticipate several alternative strategies
	Appreciation of the critical need to be prepared for disasters: natural and man-made, the unforeseen events likely to be faced by individuals, groups and national institutions; and the institution of anticipatory and participatory actions
	Resourcefulness to initiate fresh constructive action, desisting from fruitless brooding over losses and calamities
	Exploration of new possibilities, alternatives and opportunities, taking initiatives to learn anew, discarding the obsolete and fruitless activities
	Capacity to evolve and put in place survival and life support systems
8	Awareness and the appreciation of a complex, uncertain and crowded world, likely to be even more so in the foreseeable future
	Evolution of a dynamic approach to security and stability, putting in place precautions, safeguards anticipating risks, hazards, failures, errors in planning, programming and judgement
	Awareness of the need for information in the above contexts, sensitive to the critical elements of information that requires to be up-dated and at hand
	Awareness of the relevance of mental and physical health, especially in relation to the young, maintaining good health, developing resistance to diseases, infections, stresses and trauma
	Awareness of and the capacity to manage waste-of diverse types-and other unwanted but inevitable outcomes
	Awareness that malpractices and grievances will appear; capacity to take prompt corrective action or action to redress, as appropriate
	Awareness of laws, due processes, legal safeguards, etc., coupled with a competence to institute efficient and effective action
	Accessibility, availability and affordability of means of prompt and impartial judicial action and, as needed, appeals procedures
9	Awareness of and appreciation of the community of nations and place of one's country in the international domain, as seen from diverse points of view-power, economy, trade and commerce
	Sensitivity to human life and human rights
	The appreciation of viability and vibrancy of institutions of democracy
	Awareness and appreciation of the variety and richness of social and cultural lives of diverse groups
	Recognition of the significance of the international cooperation and also competition
	Achievement of a high quality of life-as seen from multiple points of view
	Awareness and appreciation of national policies: their relevance and limitations
	Awareness and appreciation of the quality of materials and services that originate in Sri Lanka
	Maintenance of a high level of integrity, competence, and intellectual stature of international participants from the country-managers, technocrats, operators, diplomats, politicians, other representatives, leaders from diverse fields of religion, literature, the arts, science, education, industry, trade and commerce

## Appendix AC: NEC Competences of 1992

Competency	Area	Items
<b>Communication</b>	Literacy	Listen attentively, speak clearly, read for meaning, write accurately and lucidly.
	Numeracy	Use numbers for things, space and time, count, calculate and measure systematically.
	Graphics	Make sense of line and form, express and record details, instructions and ideas with line, form and color
<b>Environment</b>	Social	Awareness, sensitivity and skills linked to being a member of society, social relationships, personal conduct, general and legal conventions, rights, responsibilities, duties and obligations.
	Biological	Awareness, sensitivity and skills linked to the living world, man and the ecosystem, trees, forests, seas, water, air and life-plant, animal and human.
	Physical	Awareness, sensitivity and skills relating to space, energy, fuels, matter, materials and their links with human living, food, clothing, shelter, health, comfort, respiration, sleep, relaxation, rest, wastes and excretion. Skills in using tools to shape and form materials for living and learning.
<b>Ethics and religion</b>	Values and attitudes	Assimilation of values so that they may function in manner consistent with the ethical, moral and religious modes of conduct, rituals, practices in everyday living, selecting that which is more appropriate.
<b>Play and use of leisure</b>	Pleasure joy and such human emotions	These find expression in play, sports, athletics and leisure pursuits of many types. These are essential for realising mental and physical well-being. These also link up with such values as cooperation, teamwork, healthy competition in life and work; including such activities as are involved in aesthetics, arts, drama, literature, exploratory research and other creative models of human living.
<b>Learn to learn</b>	Ability to change	Flows directly from the nature of a rapidly changing, complex and crowded world. Whatever one learns, that learning will need updating and review. This require that one should be aware of, sensitive and skilful in sustained attention, and be willing to persevere and attend to details that matter is a given situation. These are the basics in the competence 'learn to learn' throughout life. Further, the information revolution makes this an imperative.

## **Appendix AD: Educational Values of Finland**

1. Respecting the uniqueness of each student and guaranteeing the right to a good education,
2. Promoting each student's growth as a civilized/educated human being and as an active citizen of a democratic society
3. Valuing cultural diversity and regarding it as a source of richness,
4. Understanding the necessity of living sustainably. Every school is expected to build its operating culture and functioning as a learning community on these four pillars.

## Appendix AE: Educational Values of Singapore

At the end of Primary school, pupils should:	At the end of Secondary school, students should:	At the end of Post-Secondary education, students should:
be able to distinguish right from wrong	have moral integrity	have moral courage to stand up for what is right
know their strengths and areas for growth	believe in their abilities and be able to adapt to change	be resilient in the face of adversity
be able to cooperate, share and care for others	be able to work in teams and show empathy for others	be able to collaborate across cultures and be socially responsible
have a lively curiosity about things	be creative and have an inquiring mind	be innovative and enterprising
be able to think for and express themselves confidently	be able to appreciate diverse views and communicate effectively	be able to think critically and communicate persuasively
take pride in their work	take responsibility for their own learning	be purposeful in pursuit of excellence
have healthy habits and an awareness of the arts	enjoy physical activities and appreciate the arts	pursue a healthy lifestyle and have an appreciation for aesthetics
know and love Singapore	believe in Singapore and understand what matters to Singapore	be proud to be Singaporeans and understand Singapore in relation to the world

## Appendix AF: NEC Competencies of 2003

Competency	Area	Items
<b>Communication</b>	Literacy	Same.
	Numeracy	Same.
	Graphics	Same.
	IT proficiency (added newly)	Computeracy and the use of ICT in learning, in the working environment and personal life.
<b>Personality development (added newly)</b>	Generic skills	Creativity, divergent thinking, initiative, decision making, problems solving, critical and analytical thinking, team-work, inter-personal relations, discovering and exploring.
	values	Integrity, tolerance and respect for human dignity
	Emotional	Emotional intelligence
<b>Environment</b>	Social (changed)	Awareness for the national heritage, sensitivity and skills linked to being members of a plural society, concern for distributive justice, social relationships, personal conduct, general and legal conventions, rights, responsibilities, duties and obligations.
	Biological	Same.
	Physical	Same.
<b>World of work (added newly)</b>	Employment related	To contribute to economic development, to discover their vocational interests and aptitudes, to choose a job that suits their abilities and to engage in a rewarding and sustainable livelihood.
<b>Ethics and religion (augmented)</b>	Values and attitudes	Assimilating and internalising values, so that individuals may function in a manner consistent with the ethical, moral and religious modes of conduct in everyday living, selecting that which is most appropriate.
<b>Play and use of leisure (simplified)</b>	Pleasure joy and such human emotions	Pleasure, joy, emotions and such human experiences as expressed through aesthetics, literature, play, sports and athletics, leisure pursuits and other creative modes of living
<b>Learn to learn (Simplified)</b>	Ability to change	Empowering individuals to learn independently and to be sensitive and successful in responding to and managing change through a transformative process, in a rapidly changing, complex and interdependent world.

## Appendix AG: NEC National Goals of 2003

No.	Goal (Value)
1	Nation building and the establishment of a Sri Lankan identity through the promotion of national cohesion, national integrity, national unity, harmony, and peace, and recognising cultural diversity in Sri Lanka's plural society within a concept of respect for human dignity.
2	Recognising and conserving the best elements of the nation's heritage while responding to the challenges of a changing world.
3	Creating and supporting an environment imbued with the norms of social justice and a democratic way of life that promotes respect for human rights, awareness of duties and obligations, and a deep and abiding concern for one another.
4	Promoting the mental and physical well-being of individuals and a sustainable life style based on respect for human values.
5	Developing creativity, initiative, critical thinking, responsibility, accountability and other positive elements of a well-integrated and balanced personality.
6	Human resource development by educating for productive work that enhances quality of life of the individual and the nation and contributes to the economic development of Sri Lanka.
7	Preparing individuals to adapt to and manage change, and to develop capacity to cope with complex and unforeseen situations in a rapidly changing world.
8	Fostering attitudes and skills that will contribute to securing and honourable place in the international community, based on justice, equality and mutual respect.



## Appendix AH: National Committee National Goals of 2009

No.	Goal (Value)
1	Building up a Sri Lankan national through the promotion of national cohesion, national integrity and national unity
2	Respecting human dignity recognizing pluralistic nature and cultural diversity in Sri Lanka upholding tolerance and reconciliation
3	Recognizing and conserving the best elements of the nation's heritage while responding to the challenges of a changing world
4	Creating and supporting an environment imbued with the norms of social justice and a democratic way of life
5	Promoting a sustainable life style based on respect for human values and concern for limited resources
6	Supporting the physical and mental well-being of individuals
7	Cultivating positive elements of a well-integrated and balanced personality
8	Developing human resource for productive work that contributes to the economic development of the country
9	Preparing individuals to adapt to and manage change, and to develop capacity to cope with complex and unforeseen situations
10	Fostering attitudes and skills that will contribute to securing an honourable place in the international community

## Appendix A1: Special Parliamentary Advisory Committee National Goals

No.	Goal (Value)
1	Creating a dedicated citizen with self-dignity who preserves the national, religious and cultural values and heritages of the motherland.
2	Creating a citizen with human values who accepts and appreciates the religious, and racial diversity, national unity, cohesion and integration.
3	Creating and adaptable, contented, balanced, free and democratic citizen.
4	Creating intellectuals, entrepreneurs, leaders and a labour force with knowledge, skills and attitudes and the ability of contributing to the individual and national economic development effectively and efficiently, through innovativeness and scientific thinking.
5	Creating great personalities in different fields who generates new inventions through the advancement and opening out of their abilities.
6	Nourishing modern and science-based knowledge needed to get a competitive position in a new and free global society.

## Appendix AJ: Cooper's Parameters to Classify Literature Syntheses

Parameter	Description
Focus of attention	Material of primary concern from: research outcomes, theories or/and practices/applications
Goals of synthesis	End objective of the review from: integration, criticism or/and identification of central issues
Perspective on the literature	Reviewer's presence or absence in the review process, whether he/she is neutral or espouse a position
Coverage of the literature	The nature of the process of identifying literature: exhaustive, exhaustive with selection, representation of core material and/or central to the reviewer's goal
Organisation of the presentation	Arrangement of the findings based on the categories: historical, conceptual or methodological
Intended audience	Audience can include: specialised scholars, general scholars, practitioners and policy makers and the general audience

## Appendix AK: Summary of Management Evolution

Technology Revolution	Organisational Paradigm	Dominant management model and key elements	Management concept	Emerged in	
Steam power and railways	Professionally managed firm: the rationalised management of a geographically dispersed enterprise	<b>Revolutionising cycle:</b> <b>Line and staff</b> The establishment of specialised line and staff managers, unrelated to the owner, who would responsibly administer a large complex form	Staff and line	1861	
			Line and staff	1869	
			Organisation chart	1889	
		<b>Balancing cycle:</b> <b>Industrial betterment</b> The addition of a social function among the staff responsible for improving workers' living and working conditions	Employee benefit	1895	
			Industrial betterment	1899	
			Welfare work	1906	
Steel and electric power	Factory: The unitary centralised organisation structure	<b>Revolutionising cycle:</b> <b>Scientific management</b> Time and motion study, incentive wages and workflow analysis as ways to optimise and accelerate production in a facility	Scientific management	1896	
			Taylorism	1900	
			Standardising methods	1914	
		<b>Balancing cycle:</b> <b>Human relations</b> Making line managers and staff specialists responsible for responding to the alienation induced by rationalised workstation operations	Human relations	1929	
			Group dynamics	1945	
			Personnel counselling	1945	
Automobile and oil	Corporation: The multi divisional mass-production corporation with strategic integration but operating autonomy in the divisions	<b>Revolutionising cycle:</b> <b>Strategy-and-structure</b> Differentiating internal structure and strategy so as to support the production, marketing and sales of differentiated products to different types of customers	Profit centre	1955	
			Operations research	1956	
			Corporate strategy	1965	
			Multi-divisional organ.	1965	
			Matrix structure	1969	
			Divisionalisation	1971	
			Management by object	1972	
			<b>Balancing cycle:</b> <b>Quality management</b> Deploying a management system to involve personnel at all levels in continuously improving product and process quality	Job enrichment	1972
				Quality circle	1979
				Corporate culture	1980
Organisational learning	1981				
Total Quality Mgt.	1986				
Continuous imp'rment.	1998				
Lean production	1992				

<b>Computers and telecommunication</b>	<b>Network:</b> Linking and rationalising Processes across internal and external boundaries	<b>Revolutionising cycle:</b> <b>Business process</b> redesign of business processes up and down the value chain, redrawing and bridging internal and external boundaries	Business Pro. Redesign	1991
			Outsourcing	1991
			Horizontal organisation	1991
			Process improvement	1991
			Bus. Pro. Reengineering	1992
			Core competencies	1993
			Business Model	1994
			Interfirm network	1995
			Supply chain mgt.	1996
		<b>Balancing cycle:</b>	Knowledge mgt.	1996
		<b>Knowledge management</b>	Intellectual capital	1997
		The cultivation of	Knowledge repository	1998
		communities of practice in	Community of practice	1998
		order to regain, retain, or	Agile (NEAR/5 s'are)	1998
		improve the innovation	Scrum (NEAR/5 s'are)	2005
		capacity of dispersed		
		employees		

## Appendix AL: Foundational Principles of SDL

No.	Premise
1	Service is the foundational basis of exchange
2	Indirect exchange masks the fundamental basis of exchange
3	Goods are distribution mechanism for service provision
4	Operant resources are the fundamental source of competitive advantage
5	All economies are service economies
6	The customer is always a co-creator of value
7	The enterprise cannot deliver value, but only offer value propositions
8	A service-centred view is inherently customer oriented and relational
9	All social and economic actors are resource integrators
10	Value is always uniquely and phenomenologically determined by beneficiary

## Appendix AM: Foundational Principles of SL

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No.	Premise
1	In a value generation sphere closed to the service provider (a customer's sphere), customer/users create value in the form of value-in-use by integrating new resources with existing resources and applying previously held knowledge and skills.
2	Value (as value-in-use) evolves in a cumulative process, or is sometimes destroyed, throughout the customer's value creation process.
3	Value (as value-in-use) is uniquely, experientially and contextually perceived and determined by customers.
4	Firms as service providers are fundamentally value facilitators in a value generation sphere closed to the customer (a provider sphere), such that they develop and provide potential value-in-use for customers and other users.
5	If a platform of co-creation exists or can be established through direct interactions among actors in the value generation process, the service provider can engage with customers' value creation, and opportunities for co-creation of value among actors arise.
6	Between the customers and individuals in their ecosystem, social value co-creational activities that influence the customers' independent value creation process may take place.
7	Service is the use of resources in a way that supports customer's everyday practices-physical, mental, virtual, possessive-and thereby facilitate their value creation.
8	The goal of marketing is to engage the service provider with customers' processes to enable reciprocal value creation among the actors, with service as a facilitator.
9	As service providers, firms are not restricted to making promises through value propositions.
10	In direct interactions, using a platform of co-creation firms as service providers can directly and actively influence customers' value fulfilment and thereby keep promises made, as well as contribute to the establishment and maintenance of customer relationships, marketing extended beyond a predominantly promise making function.

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## Appendix AN: A History of the Evolution of PMM Models

Period	Acronym	Model/Framework
Before 1980s	ROI	Return on Investment
	ROE	Return on Equity
	ROCE	Return on Capital Employed. and other derivatives
1980	EVA	Economic Value Added
	ABC	Activity Based Costing
	ABM	Activity Based Management
1988	SMART	Strategic Measurement Analysis and Reporting System
1989	SPA	Supportive Performance Measures
1990	CVA	Customer Value Analysis
	PMQ	Performance Measurement Questionnaire
1991	RDF	Results and Determinants Framework
1992	BSC	Balanced Scorecard
1994	SPC	Service Profit Chain
1995	ROQ	Return on Quality
	CPMF	Cambridge Performance Measurement Framework
1996	CPMS	Consistent Performance Measurement System
	IPMS	Integrated Performance Measurement System
1997	CBS	Comparative Business Scorecard
1998	IPMF	Integrated Performance Measurement Framework
	BEM	Business Excellence Model
1999	DPMS	Dynamic Performance Measurement System
2000	APL	Action-Profit Linkage Model
2001	MSDD	Manufacturing System Design Decomposition
	PP	Performance Prism
2002	KBS	Kanji's Business Scorecard
2003	DMDPF	Dynamic Multi-Dimensional Performance Framework
	BB	Beyond Budgeting
2004	PPVC	Performance Planning Value Chain
	CEVITA	Capability Economic Value of Intangible and Tangible Assets
2005	HSC	Holistic Scorecard
2006	HPMF	Holistic Performance Management Framework
	PDGBS	Performance Development Growth Benchmarking System



<b>2007</b>	UCDF	Unused Capacity Decomposition System
<b>2010</b>	FSGC	Flexible Strategy Gamecard
<b>2011</b>	PBSC	Proactive Balanced Scorecard
	SDBBSC	System Dynamics Based Balanced Scorecard
<b>2011</b>	SPMS	Sustainability Performance Measurement System

## Appendix A0: Gradual Evolution of PMM

Year	Landmark	Perspective/Direction
1900	Accounting standards	Management Accounting
1914	DuPont Financial Ratio	Management Accounting/Financial Perspective
1920s	Cost Accounting	Financial perspective
1950	Tableau De Bord	
1970	Social Accounting	Financial Perspective/Integrative Perspective
1981	Strat. Management Accounting	Integrative Perspective: complementing strategy, quality, excellence to financial perspective
1987	Business Excellence Model	
1988	Activity Based Costing	
1992	Leading/lagging indicators	Identification of financial/non-financial and leading/lagging indicators
1992	Financial/non-financial measures	
1992	BSC	
1995	Triple Bottom Line	
1996	Consistency in PM	Identification of bringing consistency, integration and dynamics in PM
1997	Continuous improvement/dynamics	
2000	Dynamics in PM	
2002	Stakeholder orientation	Inclusion of stakeholders
2005	Overcoming weaknesses of BSC	
2007	Integrated Scorecard	Updates in BSC
2008	Holistic view of performance	Updates in BSC/Holistic, dynamic, system dynamics and simulation-based view of PM
2010	Methodological rigor of PM	
2011	System dynamics, sustainability	

## Appendix AP: Periodical Evolution of PMM through Eras

Duration	1900-1940	1930-1975	1965-1995	1990-2020
<b>Era</b>	Productivity management	Budgetary control	Integrated performance measurement	Integrated performance management
<b>Rate of change</b>	Slow/ incremental	Fast/predictable/incremental	Turbulent/discontinuous	Disruptive/transformational
<b>Means of production</b>	Infrastructure owned by organisation	Infrastructure/IP owned by organisation	IP owned by the organisation supported by knowledge worker	Knowledge and network connections owned by networkers
<b>Competitive forces</b>	Unclear mix of factors dominated by costs	Focus and differentiation	Value propositions	Being unique in different ways
<b>Nature of work</b>	Manual	Manual work supported by knowledge work	Knowledge work supported by manual work	Network supported by knowledge and manual work
<b>Organising principle</b>	Autocracy	Bureaucracy	Adhocracy	Netocracy
<b>Organisational power</b>	Few powerful individuals	Organisational structure	Processes, process owners and process teams	Individual/small groups in multiple networks
<b>People</b>	Labour force seen as necessary evil	Human resources seen as assets	Teams assets and investment	Individuals and autopoietic teams as innovators and heuristics
<b>Regulatory system</b>	Contracts, laws and regulations	Contracts, laws, regulations and industry standards	Contracts, laws, regulations, industry standards and accepted best practices	Trust, relationships and network standards
<b>Organisational relationships</b>	Inter-organisational and adversarial	Inter-organisational and cooperative	Inter/trans organisational and collaborative	Trans-organisational communities of practice
<b>Market dominance</b>	Producer	Cost-conscious customer	Value-conscious loyal customer	Disloyal/picky/curious/ impulsive customer

## Appendix AQ: Underlying Themes in Extant PMM Literature

Impact Area	Elements	Description
<b>People's behaviour</b>	Strategic focus	Helps to align people and activities with strategy
	Cooperation, coordination and participation	Improves cooperation, coordination and participation internal and external organisation
	motivation	Found mixed results
	Citizenship behaviours	Found mixed results
	Role understanding and job satisfaction	Effect role understanding and job satisfaction positively
	Decision making, learning and self-monitoring	Influence managers cognitive processes depending on the way PMM system is developed and used
	Leadership and culture	Powerful tools of change and managing people depending on culture
	People's satisfaction	Positive
	Perceptions of subjectivity, justice and trust	Helps to bring in subjectivity but the extent which this subjectivity helps is still debatable
	Judgement biases	Likely to generate performance judgement biases
Conflicts and tensions	May create conflicts and tensions among individuals and teams	
<b>Organisational Capabilities</b>	Strategy processes: alignment, development, implementation and review	Influence strategy processes positively
	Communication	Impacts communication strongly
	Strategic capabilities	Foster innovation, organisational learning, entrepreneurship, market orientation etc.
	Management practices	Integrate key management processes such as strategy development, communication, translating strategy into operational terms, strategic feedback and learning.
	Corporate control	Enhance the visibility and comparability of the performance of sub-units, providing better coordination and control. Needs further research.
<b>Consequence for performance</b>	Organisational and business unit performance	Do not automatically improve performance unless the intervening variables are not supportive
	Team performance	Improves the performance of teams
	Managerial performance	Indirectly affects the performance of managers by reducing role ambiguity, goal conflict and by enhancing psychological empowerment, goal clarity, learning and organisational

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citizenship

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Inter-firm performance

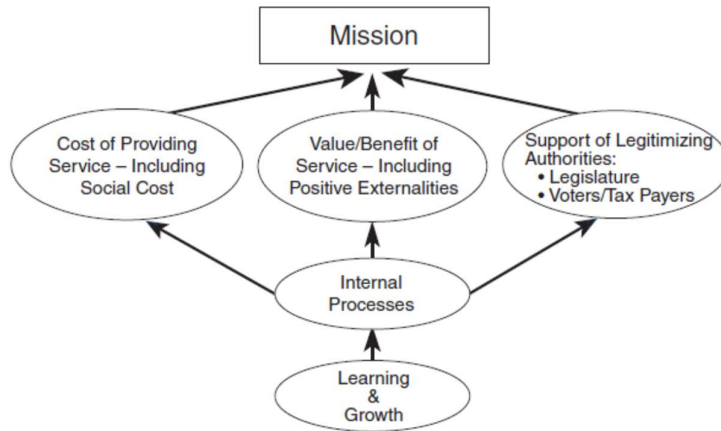
Enhance indirectly by improving cooperation and socialization among the firms

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## Appendix AR: A Comparison of Scopes of PA, NPM and PVM

Parameter	PA	NPM	PVM
<b>Public interest</b>	Defined by politicians/experts	Aggregation of individual preferences demonstrated by customer choice	Individual and public preferences resulting from public deliberation
<b>Performance objective</b>	Managing inputs	Managing inputs and outputs	Multiple objectives: service outputs; satisfaction; outcomes; maintaining; trust/legitimacy
<b>Dominant model of accountability</b>	Upwards through departments to politicians and through them to parliament	Upwards through performance contracts; sometimes outwards to customers through market mechanisms	Multiple: citizens as overseers of government; customers as users; taxpayers as funders
<b>Preferred system of delivery</b>	Hierarchical department or self-regulating profession	Private sector or tightly defined arms-length public agency	Menu of alternatives selected pragmatically (public sector agencies, private companies, JVCs, community interest companies, community groups as well as increasing role of user choice)
<b>Approach to public service ethos</b>	Public sector has monopoly on service ethos, and all public bodies have it	Sceptical of public sector ethos (leads to inefficiency and empire building) favours customer service	No one sector has a monopoly on ethos, and no one ethos always appropriate. As a valuable resource it needs to be carefully managed
<b>Role for public participation</b>	Limited to voting in elections and pressure on elected representatives	Limited: apart from use of customer satisfaction surveys	Crucial and multi-faceted (customers, citizens, key stakeholders)
<b>Goal of managers</b>	Respond to political direction	Meet agreed performance targets	Respond to citizen/user preferences, renew mandate and trust through guaranteeing quality services

## Appendix AS: Public Sector Balanced Scorecard



## Appendix AT: Strengths and Weaknesses of Qualitative and Quantitative Research

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### Strengths

- The data are based on the participants' own categories of meaning.
- It is useful for studying a limited number of cases in depth.
- It is useful for describing complex phenomena.
- Provides individual case information.
- Can conduct cross-case comparisons and analysis.
- Provides understanding and description of people's personal experiences of phenomena (i.e., the "emic" or insider's viewpoint).
- Can describe, in rich detail, phenomena as they are situated and embedded in local contexts.
- The researcher identifies contextual and setting factors as they relate to the phenomenon of interest.
- The researcher can study dynamic processes (i.e., documenting sequential patterns and change).
- The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon.
- Can determine how participants interpret "constructs" (e.g., self-esteem, IQ).
- Data are usually collected in naturalistic settings in qualitative research.
- Qualitative approaches are responsive to local situations, conditions, and stakeholders' needs.

- Qualitative researchers are responsive to changes that occur during the conduct of a study (especially during extended fieldwork) and may shift the focus of their studies as a result.
- Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur.
- One can use an important case to demonstrate vividly a phenomenon to the readers of a report.
- Determine *idiographic* causation (i.e., determination of causes of a particular event).

### Weaknesses

- Knowledge produced may not generalize to other people or other settings (i.e., findings may be unique to the relatively few people included in the research study).
  - It is difficult to make quantitative predictions.
  - It is more difficult to test hypotheses and theories.
  - It may have lower credibility with some administrators and commissioners of programs.
  - It generally takes more time to collect the data when compared to quantitative research.
  - Data analysis is often time consuming.
  - The results are more easily influenced by the researcher's personal biases and idiosyncrasies.
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### Strengths

- Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur.
- Testing hypotheses that are constructed before the data are collected. Can generalize research findings when the data are based on random samples of sufficient size.
- Can generalize a research finding when it has been replicated on many different populations and subpopulations.
- Useful for obtaining data that allow quantitative predictions to be made.
- The researcher may construct a situation that eliminates the confounding influence of many variables, allowing one to more credibly assess *cause-and-effect* relationships.
- Data collection using some quantitative methods is relatively quick (e.g., telephone interviews).
- Provides precise, quantitative, numerical data.
- Data analysis is relatively less time consuming (using statistical software).
- The research results are relatively independent of the researcher (e.g., effect size, statistical significance).
- It may have higher credibility with many people in power (e.g., administrators, politicians, people who fund programs).
- It is useful for studying large numbers of people.

### Weaknesses

- The researcher's categories that are used may not reflect local constituencies' understandings.
  - The researcher's theories that are used may not reflect local constituencies' understandings.
  - The researcher may miss out on phenomena occurring because of the focus on theory or hypothesis *testing* rather than on theory or hypothesis *generation* (called the *confirmation bias*).
  - Knowledge produced may be too abstract and general for direct application to specific local situations, contexts, and individuals.
-



## Appendix AU: Table for Determining Sample Size

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size.  
*S* is sample size.

## Appendix AV: Information Sheet for Interview Participants



### PARTICIPANT INFORMATION SHEET

Thank you for taking time to look at this information sheet, which I have provided you because I would like to invite you to take part in my study. Before you decide, I will explain why I am doing this research and what your involvement would be. If you are interested in finding out more, I will be happy to provide as much information as you need and answer any questions that you may have. Please feel free to discuss this study with others if you wish.

The information sheet is divided into two parts:

--Part I tells you about the purpose of the study and explains what you will be asked to do, if you wish to take part

--Part II tells you more detailed information about how the study will be carried out.

#### PART I

##### **What is the purpose of this study?**

This study aims to explore the views of educationists, educators and intellectuals in Sri Lanka regarding what value they expect the students, who pass out of the General System of Education of Sri Lanka, to have, in order to create value for the country, and the views of the educators, who are serving in the system, regarding what value they expect in exchange of the services they provide to the system, with a view to build an educational value creation model for Sri Lanka and finally to use that model to measure the extent of current value creation in education.

##### **Why have I been invited to take part?**

You have been invited to take part in this because, we have the belief that you, as an educationist/intellectual/educator, are in a very good position to provide valuable insights into the general views of the category that you are invited to represent, regarding the subject under inquiry in this study. We would interview a sample of individuals in a category and you are one in a category.

##### **Do I have to take part?**

No. Taking part in this study is entirely voluntary, and if you do not want to be involved, this will not affect you in any way. If you are interested in taking part, you will be asked to complete a consent form before participating. If you wish to withdraw your consent at any point, you are free to do so without giving any reason.

##### **What will happen to me if I take part?**

If you agree to take part in the study, I will contact you to discuss the information on this sheet. I will try to answer any questions that you may have and will then arrange a convenient time to interview you. The interview is likely to last for about two hours. It can take place either in your home/office or at other place, depending upon your preference. The interview would be audio recorded and later typed up.

##### **What will the interview involve?**

During the interview you will be asked questions related to your views regarding the general school education in Sri Lanka. The questions will mostly focus on the value creation aspects

of education and the value expectations of different stakeholders of education from the education system. For example, I may ask from the educationists/intellectuals what should the students who pass out of the school should have in order to create value for the country, and from the educators what do they expect from the system to create value for the system.

**What are the possible risks of taking part?**

Whilst we do not anticipate that you will experience any distress, you may be aware that speaking about your experience with the education system can be an emotional process. You will be encouraged to take a break whenever necessary during the interview, and you can decide to stop the interview at any point. When the interview finishes, you will be given a list of resources, which you can access, would you feel that this is necessary. I will also provide time at the end of the interview to discuss any concerns.

**What are the possible benefits of taking part?**

Although this study does not intend to provide any specific benefits to individuals taking part, it is hoped that the information we gain could help improve the status of the system of education in Sri Lanka and the knowledge created at the end of the research may benefit not only Sri Lanka but also other countries of the world in improving their systems of education.

**What if there is a problem?**

If you experience any problem due to taking part in the study, I would be happy to discuss these with you. However, contact details for other people involved in the research are available in Part II of this document and they can also help with any problems or complaints.

**Will my participation in the study be kept confidential?**

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details of these procedures are available in Part II of this document.

*Thank you for reading this far. If you are still interested in taking part in the study, please continue to read Part II*

**PART II**

**What will happen if I don't want to carry on with the study?**

You are able to withdraw from the study at any point and you will not be expected to provide a reason. You can contact the lead researcher to discuss withdrawing from the study, at which point any data and personal information relating to you will be destroyed. If your data has already been made anonymous and analysed, it may not be possible for this to be withdrawn. However, the researcher will discuss any concerns with you and will make every effort to withdraw your data.

**Will my taking part in the study be kept confidential?**

Yes. All information about your participation in this study will be kept in accordance with the Data Protection Act-UK (1998) and the University Research Data Management Policy:

- Your interview will be audio recorded and I will later type this up, with all identifying information removed. The audio recording may be listened to by my research supervisor.

- Transcripts (typed copies of your interview) will be kept electronically on a password protected and encrypted computer.
- Your anonymized transcript will be seen by members of the research team, employed by the University of Wales Trinity Saint David.
- Once the research is completed (this is anticipated to be by May 2020) electronic copies of the transcript will be stored securely on the university network until the point of secure disposal.
- If, during the interview, I am concerned that you or somebody else is at risk of harm, I will have to break confidentiality to inform my supervisors and seek advice. However, I would discuss this fully with you at the time.

#### **What will happen to the results of the research study?**

As the study is part of my postgraduate research in Management, it will be submitted to the University for marking. I also hope to publish the findings of this study in a relevant journal and perhaps present this at a conference. A brief report of the findings will be sent to interested participants. Participants will not be identified within any of these publications, but anonymous quotes will be included, if you provide your consent to this.

#### **Who is organizing and funding the research?**

I have organized this research as part of my studies, alongside staff at the University. The expenses are covered by me personally.

#### **Who has reviewed the study?**

All research in the UWTSd are looked at by an individual group of researchers, called the Research Ethics Committee of the University and every aspect as to the conduct of this research is supervised and monitored by that Committee.

#### **What if there is a problem?**

If you have a concern about any aspect of this study, I am happy to discuss it with you and do my best to answer any questions to your complete satisfaction (my contact details are provided at the end of this information sheet). However, if you remain still unhappy and wish to complain formally, you can do so by contacting:

Prof. Gill Venus  
Director of Research, Faculty of Business and Management  
Tel: +44 (0) 1570 424882  
Email: [j.venus@uwtsd.ac.uk](mailto:j.venus@uwtsd.ac.uk)  
Carmarthen Campus  
University of Wales Trinity Saint David, UK

*Thank you very much for taking time to read this information sheet! Please find the contacts below:*

**Researcher:**  
JKHD Walpola  
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## Appendix AW: Consent Form



### CONSENT FORM

**Title of Research Project:**

Building a value creation model for, and measuring the extent of current value creation of, the General System of School Education of Sri Lanka

**Name and Position of Researcher:**

JKHD Walpola, Postgraduate Student, Business School, University of Wales Trinity Saint David

- |  |  |   |  |  |
|--|--|---|--|--|
| 1.   | I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions. | Please initial box<br><input style="width: 100%; height: 30px;" type="text"/>   |  |  |
| 2.   | I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.                | <input style="width: 100%; height: 30px;" type="text"/>   |  |  |
| 3.   | I agree to take part in the study  | <input style="width: 100%; height: 30px;" type="text"/>   |  |  |
| Please tick box<br>Yes                      No |  |   |  |  |
| 4.   | I agree to the interview being audio recorded  | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 30px;"></td><td style="width: 50%; height: 30px;"></td></tr></table> |  |  |
|  |  |   |  |  |
| 5.   | I agree to the anonymized quotes in publications   | <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; height: 30px;"></td><td style="width: 50%; height: 30px;"></td></tr></table> |  |  |
|  |  |   |  |  |

Name and Address of Participant	Date	Signature
Name of Researcher	Date	Signature

## Appendix AX: Educator Complete Value Code Structure

Sub Category	Code	Frequency	
<b>Vision Management</b>	Lack of proper vision	7	
	Vision is limited to impart knowledge	6	
	Lack of proper educational goals	15	
	Vision is limited to operational management	11	
	System is affected by political interference	13	
	Politics not meritocracy counts in the system	7	
	Copying programmes from other countries has failed	5	
	Policy implementation is weak	5	
	Education is subjugated to resource management	6	
	Current curriculum is a shallow collection of facts	12	
	Current curriculum is not connected with real life	7	
	Current curriculum does not impart soft skills	8	
	Values can be imparted through current curriculum	7	
	Current curriculum promotes private tuition	9	
	Lack of R&D facilities	4	
	Freedom from political interference	3	
	Lack of leadership	3	
	Not handled by the best people in the country	2	
	Itemized curriculum prevents complete education	2	
	Soft skills cannot be imparted through curriculum	2	
	Values cannot be imparted through current curriculum	2	
	No follow up after curriculum development	2	
	Operating ethnic schools wanting ethnic harmony	2	
	<b>Total</b>	<b>140</b>	
	<b>Performance Management</b>	Current education does not impart values	9
		Character building not part of current education	8
Education produces senseless citizens		5	
Education does not produce social problem solvers		7	
Current education does not cultivate attitudes		8	
Education does not cultivate good habits		5	
Exam evaluation has created competition		15	
Current evaluation system has produced selfishness		22	
Current exam evaluation and private tuition are linked		12	
Exam evaluation preempts collaboration among people		10	
No clarity in job functions		5	
Educators lack freedom to work creatively		7	
Educators are overloaded with work		6	
Freedom to make decisions		3	
Current exam system is not good for selection		3	
Grade 5 scholarship is harmful for student development		2	
Students are not mentally strong		2	
Education does not create collectivism and harmony	2		

	Education Promotes extremism	2
	Education promotes class hierarchy	2
	Education does not serve economy well	2
	Education does not produce experts	2
	Computer education is over emphasized	1
	Current education creates hatred and blame game	1
	Current education is responsible for vice	1
	Students less sensitive to fellow beings	1
	<b>Total</b>	<b>143</b>
<b>Value in Exchange</b>	Educators do not get a respectable salary	13
	Educators do not get a performance-based salary	6
	Compensation is not en par with respected professions	7
	Educators do not have professional recognition	18
	Educators get convenient work places	2
	Educators get day care facilities for their children	2
	Educators get convenient schools for their children	1
	<b>Total</b>	<b>49</b>
<b>Capability Management</b>	Continuous professional development is not managed	12
	Capability enhancement by further education is poor	12
	Educator education is not quality	5
	Educator education is not well planned	5
	Educators do not get value education training	6
	Educators do not get foreign exposure	3
	Educators do not get proper technology training	3
	Other educator training issues	2
	Educators are not exposed to new knowledge	2
	No proper training for principals	2
	English language training is poor	2
	<b>Total</b>	<b>54</b>
<b>Culture Management</b>	Knowledge sharing is not part of work culture	8
	Work culture is not positive	7
	Openness is not in work culture	6
	Equality is not accepted in work culture	5
	There is lot of resistance to change	3
	System lacks teamwork	2
	No experience sharing among teachers	1
	Work culture lacks harmony	1
<b>Total</b>	<b>33</b>	
<b>Human Resource Management</b>	Human resource adequacy issues	6
	Human resource positioning is problematic	13
	Collaboration is blocked by professional categorisation	5
	Career progression issues	10
	HR services are poor	3
	There are professional conflicts in the system	2
	Job does not give self-satisfaction	2
People reach senior posts when they are old	1	

	Welfare facilities are not adequate	1
	There is no job satisfaction	1
	<b>Total</b>	<b>44</b>
<b>Service Process Management</b>	No grounding of students in culture	12
	Education alienates students from society	7
	Current education is about rote learning	13
	Academic mode of learning reduces males in education	8
	Current education is about passing exams	14
	Rules make operations difficult	10
	Current education cannot even teach Sinhala	4
	Very poor language education	4
	Subject directors not able to provide educational leadership	4
	Curriculum developers lack field experience	4
	Schools go for exam results forgetting education	4
	Practical subjects are taught without practicals	3
	Rigid rules hamper smooth operations	3
	Children do not find role models through education	2
	Teacher selection method does not test aptitude	2
	Students are not grounded in culture	2
	Course books are boring	1
	Lack of literature education de-generates discourse	1
	Students do not have an idea about healthy food	1
	Students can do Arts degrees without passing Sinhala in AL	1
	Students pressurized to get 9As in OL	1
	Education zone demarcations are problematic	1
	<b>Total</b>	<b>102</b>
<b>Connectivity &amp; Information Management</b>	No central database	9
	Information available is seriously limited	11
	No communication through a single network	8
	No online teaching and learning system	5
	<b>Total</b>	<b>33</b>
<b>Operand Resource</b>	System lacks adequate physical resources	12
	A huge disparity in resource disparity exists	18
	Resource disparity promotes school hierarchy	7
	No adequate teaching aids in institutions	8
<b>Total</b>	<b>45</b>	
<b>Internal Value Co-creation</b>	Guidance, direction, and leadership	22
	Quality of training received	24
	Resource base to support the process	21
	Proper curriculum	18
	Method of performance evaluation	20
	Conducive environment	12
	Peace of mind	3
	Students' knowledge	2
<b>Total</b>	<b>122</b>	
<b>Grand Total</b>	<b>765</b>	



## Appendix AY: Educationist-Intellectual Value Code Structure

Category	Code	Frequency
<b>Foundational skills</b>	Universal identity	5
	Love for the country	3
	Mother tongue fluency	8
	Numeracy	3
	Environmental consciousness	8
	Aesthetic sensibilities	7
	Cultural consciousness	4
	Physical health	7
	Physical fitness	4
	Mental health	5
	Physical endurance	3
	Physical flexibility	3
	Rhythmic abilities	5
	Broad world outlook	2
	Mother tongue basic writing skills	2
	Ability to communicate fearlessly	1
	Appreciation of cultural diversity	1
	<b>Total</b>	<b>71</b>
	<b>Transferable skills</b>	Common sense
Ability to adapt to situations		3
Curiosity about the unknown		3
Thirst to learn		5
Ability to learn from the past experiences		3
English proficiency		7
Imaginative capacities		4
Pragmatic approach to work		3
Basic technology skills		3
Readiness to experiment		1
Tendency to question and learn		1
<b>Total</b>		<b>37</b>
<b>Employment competences</b>		Problem solving skills
	Respect for every profession	3
	Efficiency	3
	Capacity to collaborate	4
	Effectiveness	5
	Pursuing own passion	9
	Entry level employability in selected field	6
	Capacity to plan	3
	Capacity to attain goals	3
	Ready for domestic life	2
	Capacity to initiate	1
	Capacity to implement	1

	Economically independent	1
	<b>Total</b>	<b>46</b>
<b>Social skills</b>	Team builder	6
	Team player	4
	Useful to society	4
	Useful to family	3
	Ability to resolve conflicts peacefully	3
	Multilingual	4
	Public Relation skills	3
	Likeable personality	5
	Extrovert	5
	Useful citizen	1
	Useful to self	1
	<b>Total</b>	<b>39</b>
<b>Cognitive capacities</b>	Holistic thinking	6
	Structural thinking	3
	Social thinking	5
	Process thinking	4
	Long-term thinking	3
	Analytical thinking	9
	Deep Analytical thinking	3
	<b>Total</b>	<b>33</b>
<b>Behavioral capacities</b>	Committed	5
	Disciplined	6
	Well mannered	3
	Ethical	3
	Honor social justice	3
	Principled	3
	Responsible	6
	Cultured	4
	Incorruptible	5
	Order compliance	2
	<b>Total</b>	<b>40</b>
<b>Attitudes</b>	Appreciate sustainable development	3
	Appreciate diversity	6
	Respect for fellow beings	10
	Respect for adults	4
	Capacity to respect women	3
	Capacity to bear opposing views	4
	Inclusivity	3
	Treat others irrespective of status	4
	Equality	5
	Meritocratic	3
	Democratic	2
	Capacity to look at society mercifully	2
	Capacity to accept the majority view	1

	Capacity to care for the disabled	1
	<b>Total</b>	<b>51</b>
<b>Character attributes</b>	Humility	3
	Selflessness	7
	Genuineness	4
	Moral integrity	8
	Honesty	5
	Truthfulness	6
	Righteousness	1
	<b>Total</b>	<b>34</b>
<b>Personal qualities</b>	Courage	7
	Patience	5
	Friendly	3
	Helpful	12
	Sharing	5
	Not hyper competitive	4
	Simplicity	3
	Love	9
	Kindness	3
	Punctuality	4
	Active	3
	Diligence	4
	Humanism	6
	Gratefulness	4
	<b>Total</b>	<b>72</b>
<b>Personal capacities</b>	Purposeful in life	4
	Enterprising	5
	Capacity to see the cause & affect relation	4
	Long term planning	5
	Risk taking	6
	No fear of failure	3
	Perseverance	7
	Capacity to absorb pressure	4
	Innovativeness	3
	Tenacity	2
	Mental strength	2
	Creativity	2
	Entrepreneurship	1
	<b>Total</b>	<b>48</b>
<b>External value creation</b>	Harmony with environment, society, culture	4
	Physical and mental fitness	9
	Balanced thinking capacities	10
	Learner qualities	8
	Pragmatic approach to work and life	4
	English and Technology proficiency	9
	Passion pursued employability	4

Team player	3
Collaborator	3
Human respect	4
Meritocratic	3
Behaviors of a developed human being	8
Personal qualities of a developed human	7
Personal capacities of a developed human	6
Character attributes of a developed human	5
<b>Total</b>	<b>87</b>
<b>Grand Total</b>	<b>558</b>

## Appendix AZ: Questionnaire-Educators Sample



Dear Participant,

Welcome and thank you for agreeing to participate in this survey, which is part of my postgraduate research. The main aim of this survey is to get insight into how far the current General School Education System of Sri Lanka has been able to fulfill your value expectations, as a professional serving in it: as a teacher, principal, administrator or a teacher educator. Your data will remain completely confidential. The survey takes approximately 50 minutes to respond to. The findings will only be used for academic research purposes-my postgraduate thesis and journal papers-and will not be part of any other project or a commercial enterprise of any form.

Kind regards,

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Part I				
Gender	Female		Male	
Age				
Civil Status	Married		Unmarried	
Category of Service	SLTS	SLPS	SLEAS	SLTES
Category of Work Place				
Category of School	National		Non-National	
Grade	1	2	3	
Current position				
Specialization				
Highest Edu. Qualifications				
Total Experience (Yrs.)				
Distance (Permanent Residence to work place, km)				

## Part II

### Vision

1	System operates with a clear vision	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Vision goes beyond mere imparting of knowledge	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	System operates with proper educational goals	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Vision goes beyond operations and aim goal achievement	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
5	System is independent of political interference	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
6	Merit is more important than politics in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
7	Copying educational programmes from other countries has been successful	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
8	Policy implementation is efficient	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
9	Education is given more important than resource management	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
10	Current curriculum is coherent	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
11	Current curriculum is connected with real life	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
12	Current curriculum imparts soft skills	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
13	Values can be imparted through the current curriculum	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
14	Current curriculum does not promote private tuition	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### Performance

1	Current education operates to impart values in students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Current education is successful in character building	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Current education produces sensible citizens	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Current education produces social problem solvers	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
5	Current education instills right attitudes in students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
6	Current education cultivates good habits in students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
7	Exam evaluation has not created competition	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
8	Exam evaluation has not produced selfishness	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
9	No link between exam evaluation and private tuition	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

10	Exam evaluation has improved collaboration	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
11	There is clarity in job functions in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
12	Educators have freedom to work creatively	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
13	There is no work overload on educators	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

#### Compensation (Value in Exchange)

1	Educators get a respectable salary for their services	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Educator salary is performance based	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Educator compensation is en par with other respected professions	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Educators do have professional recognition	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

#### Capability Enhancement

1	Continuous professional development is well managed	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Capability enhancement by further education is poor	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Educator education is of good quality	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Educator education is well planned	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
5	Educators get value education training	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

#### Culture

1	Knowledge sharing is part of work culture	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Work culture is positive	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Openness is in the work culture	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Equality is accepted in work culture	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

#### HRM

1	System has adequate human resources	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Human resources in the system are scientifically positioned	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

3	Professional categorisation of educators into 4 helps collaboration	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Equality is accepted in work culture	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### Process

1	Current education process grounds students in culture	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Current education process connects students with society	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Current education process trains students beyond rote learning	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Current mode of learning helps both sexes equally	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
5	Current education goes beyond passing exams	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
6	Rules in the system helps smooth operations	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### ICT

1	All institutions use a central database for all information needs	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Information on almost everything is available on the database	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	All communication through institutions is through the network	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Online teaching is possible to every school and institution	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### Operand Resources

1	Physical resources in the system are adequate	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	No disparity in resource distribution in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Resource disparity promotes school hierarchy	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Schools and teacher colleges have sufficient modern teaching aids	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### Internal Value Creation

1	You are well directed to create value with right leadership and guidance	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	You are well trained to create value with proper education	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	You are well supported to create value by an enabling resource base	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	You are well equipped to create value by coherent curricula	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed



5	You are well aligned to create value with right performance evaluation	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
6	You are well facilitated to create value with a conducive environment	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
7	You are well empowered to create value with the supply of everything required	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

### Part III

#### Solution Recommendations

1	We need new educational goals for the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
2	Education should produce citizens who love others	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
3	Education should impart values in students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
4	Education should focus on character building	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
5	Education should instill good attitudes in students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
6	We need a new curriculum for producing sensible citizens	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
7	Co and extra-curricular activities needed to impart values and common sense	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
8	Services processes are needed for all activities in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
9	Decision making should be research based and with definite purposes	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
10	Participatory decision making is needed in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
11	We need a proper process for postings and transfers	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
12	Education should be practical not academic	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
13	Students should be exposed to culture in education	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
14	Students should be allowed to follow their passion	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
15	Education should be connected with society	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
16	Students should be immersed in environment to explore and learn	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
17	There should be a hidden curriculum for co-curricular learning	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
18	Schools should be converted from focusing on exam results to experiential learning	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
19	Behavioral approach should be used to impart good habits	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
20	Sports should be compulsory for every student for their physical and mental development	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

21	Students innate abilities should be spotted early and they should be made to follow those	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
22	Sports and activities are essential to produce a balanced person	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
23	Schools should be conducted till 5pm for sports and activities	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
24	A teacher university is needed to enhance capabilities in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
25	Sports should be compulsory in teacher colleges	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
26	Teacher training should be student centred to make learning productive in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
27	Teacher training should be exploratory to make learning meaningful in the system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
28	Need teacher training modules for specific needs	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
29	Need principal training courses	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
30	Implement cluster school system to pool resources within an area	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
31	Mobile labs and libraries are better than central ones	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
32	Exam evaluation should be scrapped in favour of assessment by teachers	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
33	Grade 5 scholarship exam should be scrapped	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
34	Build facilities for vocational education in schools	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
35	Facilities in technical schools can be brought to schools	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
36	Schools should be made independent of parents	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
37	Need common teacher quarters for a cluster	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
38	Need more attractive course books	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
39	Comparative religion should be taught to prevent extremism	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
40	Special methods needed in order to increase male teacher intake	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
41	Admit students to school at 4 years to make child development proper	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
42	Recruit qualified pre-school teachers into the system to mitigate teacher shortages	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
43	Teaching experience is vital for curriculum developers	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
44	Teachers should have a dress code	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
45	Private tuition should be abolished	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
46	Abolish categorisation of schools as male female	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

47	Practical tests needed in teacher recruitment to test aptitude	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
48	Central government only rule to prevent complexity and waste in the provincial system	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
49	Principal to lead in every school and an administrator to help in administrative work	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
50	Combine the 3 educator services into one to make the teaching one stream	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
51	Have a separate administrator service to differentiate teaching from administration	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
52	Curriculum developer role should be given to teacher educators	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
53	Duration of a school study session should be increased	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
54	Good teachers should be retained in teaching by having a single educator service	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
55	Mobile phones should be prohibited for students	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
56	Attach current subject directors to teacher university to use their subject expertise	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
57	Counsellors needed in schools to help mitigate the widespread mental health issues	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
58	Educational not administrative needs should take precedence in educational institutions	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
59	Reduce long waits for professionals to rise to senior positions	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
60	Extra-curricular competitions to encourage extra learning	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
61	NEC should be comprised of best teacher educators in the country	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed
62	Educational professionals should be given a performance-based salary	Strongly disagreed	1	2	3	4	5	6	7	Strongly agreed

## Appendix BA: Questionnaire-Intellectuals & Educationists Sample



Dear Participant,

Welcome and thank you for agreeing to participate in this survey, which is part of my postgraduate research. The main aim of this survey is to measure how far the current General School Education System of Sri Lanka has been able to fulfill your value expectations, as an educationist/intellectual, who expect that students who pass out of the system would create value for the country. Your data will remain completely confidential. The survey takes approximately 30 minutes to respond to. The findings will only be used for academic research purposes-my postgraduate thesis and journal papers- and will not be part of any other project or a commercial enterprise of any form.

Kind regards,

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### Part I

Gender	Female	Male
Age		
Civil Status	Married	Unmarried
Service Category	Educationist	Category
	Intellectual	Category

### Part II

Please measure, along the scale given, the amount of presence of each following value in students who passed out of schools, as shown in their efforts to co-create value for the country with you.

#### Foundational skills

1	Universal identity	Highly dissatisfied	1 2 3 4 5 6 7	Highly satisfied
2	Love for the country	Highly dissatisfied	1 2 3 4 5 6 7	Highly satisfied
3	Mother tongue fluency	Highly dissatisfied	1 2 3 4 5 6 7	Highly satisfied
4	Numeracy, basic understanding of measurements	Highly dissatisfied	1 2 3 4 5 6 7	Highly satisfied

5	Understanding that everyone is part of the environment	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Aesthetic taste and sensibilities	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Cultural consciousness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Physical health shown in the ability of not being prone to physical illnesses	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Physical fitness in the ability to endure physical stress of long hours of regular work	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
10	Mental health shown in the ability of not being prone to mental illnesses	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
11	Endurance in the physical body shown in the ability to withstand physical strain for a long period of time	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
12	Flexibility of the physical body to adapt to various demands of work or social life	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
13	Rhythmic ability of body to perform activities in sports or work with/out tools	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Transferrable skills

1	Common sense which enables seeing the similarities between problems	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Basic ability to adapt to various situations easily	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Curiosity about things and the unknown	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Eagerness/thirst to learn	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Ability to learn from the past experiences	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	English language proficiency	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Power of imagination holistically	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Pragmatism: basic tendency to think of problems bent on finding a solution to them	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Basic technology skills	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Employment Competences

1	Practical problem-solving skills	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Respect for every profession	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Efficiency	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

4	Capacity to collaborate	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Effectiveness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Pursuing own passion	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Entry level employability in the selected field of passion	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Capacity to plan	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Capacity to attain goals	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Social Skills

1	Ability of collaborating with individuals to form teams for common projects	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Ability to work together in teams engaged in common projects	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Useful to country and society	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Useful to family	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Ability to resolve conflicts by peaceful means through dialogue	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Multilingual	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Public Relation skills	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Likable persona	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Extrovert	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Cognitive Capacities

1	Basic ability to see things holistically, as a collection of parts with interactions	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Basic ability to visualize the basic constituent elements of things and use that to better the situation	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Basic ability to deal successfully with members of a team to complete a work	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Basic ability to visualize any task as a series of interconnected sub tasks of a process	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Basic ability to be patient until a task is completed in a process: long term thinking	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Basic ability to concentrate on one aspect of a system at one time	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Basic ability to divide an aspect further and unravel hidden things using deep analysis	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

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### Behavioral Capacities

1	Commitment to whatever work one is doing	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Good life and work habits, discipline	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Good manners in dealing with others	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Capacity to conduct according to the accepted ethical norms of society and job	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Honor social justice	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Capacity to stick to dictates of conscience irrespective of pressures, principled	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Capacity to take responsibility to fulfil work and social tasks	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Capacity to show a high order of refinement of a cultural animal	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Capacity to stick to the code of accepted practice at all times, incorruptible	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

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### Attitudes

1	Ability to appreciate the idea of sustainable development	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Ability to appreciate diversity in everything that occurs in the nature	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Ability to respect and honor fellow human beings and their lives	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Ability to respect adults	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Capacity to respect women	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Capacity to associate with individuals who bear opposing views	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Ability to work with people who have different opinions without excluding any	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Capacity to treat individuals equally irrespective of their status	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Capacity to practice the principles of social equality at all times	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
10	Readiness to accept that life opportunities should be given on merit	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

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### Character Attributes

1	Humility	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
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2	Selflessness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Genuineness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Moral integrity (hiri oththappa)	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Honesty	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Truthfulness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Personal Qualities

1	Courage to pursue conviction	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Patience	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Friendly	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Helpful	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Sharing	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	Not hyper-competitive as to gain things at the cost of the others	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Simplicity	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Love	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Kindness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
10	Punctuality	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
11	Active	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
12	Diligence	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
13	Humanism	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
14	Gratefulness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Personal Capacities

1	Aimful/purposeful in life	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Enterprising	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied



3	Capacity to see the relationships between cause and effects	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Long term planning	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Capacity to take risks	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	No fear of failure	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Perseverance	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Capacity to absorb pressure	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Innovativeness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Final Value Creation

**At the time of you interact with the new school graduates in order to create value for the country in the work place or in society, how do you measure their participation in respect of the following value ingredients they possess?**

1	Harmony with environment, society and culture	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
2	Physical and mental fitness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
3	Balanced thinking capacities	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
4	Learner qualities	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
5	Pragmatic approach to work and life	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
6	English and Technology proficiency	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
7	Passion pursued employability	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
8	Team player	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
9	Collaborator	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
10	Human respect	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
11	Meritocratic	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
12	Behaviors of a developed human being	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
13	Personal qualities of a developed human being	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
14	Personal capacities of a developed human being	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
15	Character attributes of a developed human being	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied
16	Overall value creating readiness	Highly dissatisfied	1	2	3	4	5	6	7	Highly satisfied

### Part III

#### Proposed Solutions

1	Capabilities needed to achieve those goals should be inculcated in educators	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
2	Every school graduate should be employable	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
3	Education should give priority to professions the country needs most	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
4	Schools should have vocational education in all streams up to A1.	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
5	Vocational education in school for all professions can lead to equality in society	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
6	Specialization should happen at grade 8 in order to produce experts	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
7	Educator training should get the highest priority in the system	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
8	Problems of educators should be solved first in order to achieve educational goals.	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
9	We need a competence-based, activity oriented and student centred education system	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
10	Schools should teach the entire curriculum attractively to discourage private tuition	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
11	The mode of education should be exploratory	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
12	Sinhala Language should be given importance in teacher colleges	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
13	Duration of pre-service teacher training courses should be increased by 1 year	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
14	Disparities should be eliminated before everything	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
15	Facility designs in schools should fit the purpose of learning	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
16	School inspectors is an effective method of measurement	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
17	Reform language education in all grades	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
18	Curriculum should be compatible with brain development	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
19	Introduce aesthetic education in all grades	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
20	Broadening thinking should start at the primary level	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
21	Knowledge acquisition should be a by-product of problem solving	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
22	Indigenous knowledge should be brought to schools	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
23	Language education should be given priority	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
24	Mode of learning should be collective and collaborative	Highly disagreed	1	2	3	4	5	6	7	Highly agreed

25	Curriculum should focus on processes from cause to effect	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
26	Spiritual training other than religious for everyone	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
27	Literature should be taught in all grades	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
28	Comparative culture education should be taught for students of each culture	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
29	Make biography studies part of education	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
30	Technology use should be introduced only at the senior level	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
31	Curriculum should be narrow and deep	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
32	Painting should be essential for everyone in the primary	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
33	Bilingual education should be part of education	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
34	Province-district-zone administration to avoid complexity	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
35	Make education and electoral boundaries the same to avoid complexity	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
36	Make Sinhala compulsory for all AL Arts students	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
37	Curriculum related work have to be integrated in one place	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
38	A general education is needed up to 12 years (Grade 8)	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
39	Vocational specialization should happen at grade 8	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
40	Recruitment should test aptitude for teaching	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
41	Matrix structure is needed with service processes	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
42	Abolish division of schools on ethnicity	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
43	NEC should have implementation powers	Highly disagreed	1	2	3	4	5	6	7	Highly agreed
44	Teacher colleges should be the regional centre of education excellence	Highly disagreed	1	2	3	4	5	6	7	Highly agreed

## Appendix BB: Skewness and Kurtosis of Educator Variables

	N	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
VIS_1	411	3.32	1.764	3.111	0.257	0.120	-1.178	0.240
VIS_2	411	3.57	1.793	3.216	0.151	0.120	-1.150	0.240
VIS_3	411	3.54	1.747	3.054	0.109	0.120	-1.171	0.240
VIS_4	411	3.70	1.775	3.151	0.035	0.120	-1.127	0.240
VIS_5	411	2.02	1.525	2.326	1.588	0.120	1.761	0.240
VIS_6	411	2.45	1.719	2.955	1.267	0.120	0.711	0.240
VIS_9	411	2.78	1.761	3.100	0.755	0.120	-0.585	0.240
VIS_10	411	3.62	1.649	2.720	0.023	0.120	-0.986	0.240
VIS_11	411	3.09	1.720	2.959	0.433	0.120	-1.074	0.240
VIS_12	411	3.00	1.650	2.722	0.454	0.120	-0.927	0.240
VIS_13	411	3.01	1.670	2.790	0.447	0.120	-1.000	0.240
VIS_14	411	2.70	1.675	2.805	0.727	0.120	-0.504	0.240
PER_1	411	2.69	1.610	2.594	0.750	0.120	-0.403	0.240
PER_2	411	2.57	1.581	2.499	0.862	0.120	-0.303	0.240
PER_3	411	2.46	1.549	2.400	1.042	0.120	0.344	0.240
PER_4	411	2.61	1.555	2.419	0.854	0.120	-0.200	0.240
PER_5	411	2.83	1.590	2.527	0.567	0.120	-0.738	0.240
PER_6	411	2.88	1.651	2.727	0.564	0.120	-0.711	0.240
PER_7	411	1.95	1.579	2.493	1.567	0.120	1.145	0.240
PER_8	411	1.77	1.445	2.087	1.906	0.120	2.313	0.240
PER_9	411	2.02	1.568	2.458	1.360	0.120	0.364	0.240
PER_11	411	2.88	1.574	2.476	0.492	0.120	-0.750	0.240
PER_12	411	2.84	1.619	2.620	0.545	0.120	-0.684	0.240
PER_13	411	2.84	1.514	2.293	0.554	0.120	-0.522	0.240
VEX_1	411	2.12	1.584	2.508	1.299	0.120	0.548	0.240
VEX_2	411	2.35	1.680	2.823	1.010	0.120	-0.176	0.240
VEX_3	411	2.00	1.484	2.202	1.457	0.120	1.140	0.240
CAP_1	411	2.80	1.760	3.097	0.706	0.120	-0.643	0.240
CAP_2	411	2.85	1.817	3.302	0.656	0.120	-0.775	0.240
CAP_3	411	2.76	1.716	2.943	0.686	0.120	-0.624	0.240
CAP_4	411	2.69	1.609	2.590	0.716	0.120	-0.630	0.240
CAP_5	411	2.62	1.729	2.988	0.810	0.120	-0.529	0.240
CUL_1	411	3.77	1.826	3.336	0.028	0.120	-1.189	0.240
CUL_2	411	3.67	1.851	3.426	0.071	0.120	-1.143	0.240
CUL_3	411	3.57	1.800	3.241	0.096	0.120	-1.123	0.240
CUL_4	411	3.54	1.803	3.249	0.094	0.120	-1.146	0.240
HRM_1	411	2.95	1.693	2.866	0.598	0.120	-0.680	0.240
HRM_2	411	2.45	1.428	2.039	0.887	0.120	0.022	0.240
HRM_3	411	2.67	1.522	2.315	0.630	0.120	-0.522	0.240
HRM_4	411	2.65	1.586	2.517	0.685	0.120	-0.435	0.240
PRO_1	411	2.85	1.569	2.462	0.502	0.120	-0.706	0.240
PRO_2	411	2.81	1.629	2.655	0.711	0.120	-0.372	0.240
PRO_3	411	2.74	1.752	3.070	0.828	0.120	-0.361	0.240

<b>PRO_4</b>	411	2.87	1.613	2.602	0.631	0.120	-0.396	0.240
<b>PRO_5</b>	411	2.69	1.764	3.113	0.878	0.120	-0.230	0.240
<b>PRO_6</b>	411	2.90	1.526	2.328	0.525	0.120	-0.549	0.240
<b>CIM_1</b>	411	2.66	1.614	2.606	0.656	0.120	-0.611	0.240
<b>CIM_2</b>	411	2.40	1.462	2.138	0.884	0.120	0.024	0.240
<b>CIM_3</b>	411	2.24	1.487	2.211	1.146	0.120	0.564	0.240
<b>CIM_4</b>	411	2.42	1.656	2.742	0.948	0.120	-0.324	0.240
<b>ORM_1</b>	411	2.48	1.462	2.138	0.847	0.120	0.012	0.240
<b>ORM_2</b>	411	2.20	1.524	2.324	1.295	0.120	0.901	0.240
<b>ORM_3</b>	411	2.00	1.361	1.851	1.441	0.120	1.488	0.240
<b>ORM_4</b>	411	2.23	1.512	2.287	1.266	0.120	0.870	0.240
<b>VALIN_1</b>	411	2.63	1.601	2.565	0.828	0.120	-0.283	0.240
<b>VALIN_2</b>	411	2.50	1.615	2.607	0.859	0.120	-0.379	0.240
<b>VALIN_3</b>	411	2.30	1.478	2.186	1.181	0.120	0.652	0.240
<b>VALIN_4</b>	411	2.54	1.554	2.415	0.850	0.120	-0.333	0.240
<b>VALIN_5</b>	411	2.46	1.532	2.347	1.008	0.120	0.350	0.240
<b>VALIN_6</b>	411	2.51	1.559	2.431	0.994	0.120	0.148	0.240
<b>Valid N (listwise)</b>	411							

## Appendix BC: Skewness and Kurtosis of Educationist-Intellectual Variables

	N	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
FOSK01	60	2.18	1.255	1.576	0.970	0.309	0.346	0.608
FOSK02	60	3.10	1.694	2.871	0.336	0.309	-0.995	0.608
FOSK03	60	3.37	1.756	3.084	0.113	0.309	-1.330	0.608
FOSK04	60	4.23	1.651	2.724	-0.411	0.309	-0.778	0.608
FOSK05	60	2.40	1.330	1.769	0.826	0.309	-0.121	0.608
FOSK06	60	3.17	1.475	2.175	0.194	0.309	-0.966	0.608
FOSK07	60	2.43	1.442	2.080	0.804	0.309	-0.162	0.608
FOSK08	60	2.80	1.447	2.095	0.709	0.309	-0.276	0.608
FOSK09	60	2.12	1.195	1.427	1.126	0.309	1.072	0.608
FOSK10	60	2.43	1.226	1.504	0.758	0.309	0.157	0.608
FOSK11	60	2.72	1.342	1.800	0.498	0.309	-0.348	0.608
FOSK12	60	2.67	1.284	1.650	0.410	0.309	-0.701	0.608
FOSK13	60	2.60	1.182	1.397	0.326	0.309	-0.499	0.608
TRSK01	60	2.70	1.344	1.807	0.314	0.309	-1.031	0.608
TRSK02	60	2.85	1.549	2.401	0.683	0.309	-0.558	0.608
TRSK03	60	2.83	1.542	2.379	0.432	0.309	-1.013	0.608
TRSK04	60	2.85	1.603	2.570	0.610	0.309	-0.766	0.608
TRSK05	60	2.25	1.114	1.242	0.623	0.309	-0.089	0.608
TRSK06	60	2.62	1.415	2.003	0.385	0.309	-1.096	0.608
TRSK07	60	2.07	1.191	1.419	1.237	0.309	1.331	0.608
TRSK08	60	2.25	1.174	1.377	1.054	0.309	1.167	0.608
TRSK09	60	4.17	1.897	3.599	-0.356	0.309	-1.150	0.608
EMCO01	60	2.67	1.336	1.785	0.379	0.309	-0.958	0.608
EMCO02	60	2.28	1.379	1.901	0.951	0.309	0.004	0.608
EMCO03	60	2.95	1.523	2.319	0.295	0.309	-0.931	0.608
EMCO04	60	3.28	1.530	2.342	0.236	0.309	-0.746	0.608
EMCO05	60	3.37	1.594	2.541	0.278	0.309	-0.922	0.608
EMCO06	60	2.93	1.706	2.911	0.764	0.309	-0.189	0.608
EMCO07	60	2.62	1.209	1.461	0.372	0.309	-0.492	0.608
EMCO08	60	2.88	1.497	2.240	0.708	0.309	-0.133	0.608
EMCO09	60	2.82	1.372	1.881	0.587	0.309	-0.434	0.608
SOSK01	60	2.83	1.317	1.734	0.134	0.309	-0.898	0.608
SOSK02	60	2.73	1.287	1.656	0.422	0.309	-0.405	0.608
SOSK03	60	2.85	1.338	1.791	0.459	0.309	-0.289	0.608
SOSK04	60	3.78	1.637	2.681	-0.118	0.309	-1.043	0.608
SOSK05	60	2.83	1.317	1.734	0.410	0.309	-0.299	0.608
SOSK06	60	2.95	1.556	2.421	0.477	0.309	-0.568	0.608
SOSK07	60	2.87	1.408	1.982	0.471	0.309	-0.630	0.608
SOSK08	60	3.38	1.519	2.308	0.095	0.309	-0.981	0.608
SOSK09	60	3.23	1.588	2.521	0.206	0.309	-0.893	0.608
COCA01	60	2.27	1.071	1.148	0.637	0.309	-0.153	0.608
COCA02	60	2.73	1.233	1.521	0.532	0.309	-0.270	0.608
COCA03	60	2.98	1.444	2.084	0.345	0.309	-0.901	0.608

COCA04	60	2.57	1.212	1.470	0.547	0.309	-0.045	0.608
COCA05	60	2.37	1.288	1.660	0.847	0.309	0.072	0.608
COCA06	60	3.23	1.731	2.995	0.519	0.309	-0.844	0.608
COCA07	60	2.53	1.620	2.626	0.927	0.309	-0.126	0.608
BECA01	60	2.88	1.403	1.969	0.366	0.309	-0.650	0.608
BECA02	60	2.65	1.233	1.519	0.316	0.309	-0.872	0.608
BECA03	60	2.95	1.333	1.777	0.227	0.309	-1.153	0.608
BECA04	60	2.67	1.174	1.379	0.169	0.309	-0.732	0.608
BECA05	60	2.60	1.304	1.702	0.555	0.309	-0.408	0.608
BECA06	60	2.02	1.049	1.101	0.512	0.309	-1.076	0.608
BECA07	60	2.32	1.200	1.440	0.998	0.309	0.736	0.608
BECA08	60	2.05	1.096	1.201	0.778	0.309	-0.371	0.608
BECA09	60	2.63	1.390	1.931	0.616	0.309	-0.143	0.608
ATTI01	60	2.80	1.246	1.553	0.122	0.309	-0.553	0.608
ATTI02	60	2.70	1.306	1.705	0.584	0.309	-0.395	0.608
ATTI03	60	2.73	1.339	1.792	0.466	0.309	-0.632	0.608
ATTI04	60	3.08	1.533	2.349	0.411	0.309	-0.475	0.608
ATTI05	60	2.93	1.425	2.029	0.376	0.309	-0.638	0.608
ATTI06	60	2.60	1.210	1.464	0.233	0.309	-0.839	0.608
ATTI07	60	2.53	1.282	1.643	0.748	0.309	0.374	0.608
ATTI08	60	2.35	1.205	1.452	0.727	0.309	-0.170	0.608
ATTI09	60	2.33	1.284	1.650	0.782	0.309	-0.039	0.608
ATTI10	60	2.62	1.427	2.037	0.751	0.309	0.354	0.608
CHAT01	60	2.70	1.306	1.705	0.348	0.309	-0.860	0.608
CHAT02	60	2.37	1.262	1.592	0.626	0.309	-0.553	0.608
CHAT03	60	2.27	1.247	1.555	0.936	0.309	0.429	0.608
CHAT04	60	2.40	1.167	1.363	0.680	0.309	0.444	0.608
CHAT05	60	2.65	1.338	1.791	0.501	0.309	-0.289	0.608
CHAT06	60	2.52	1.242	1.542	0.620	0.309	0.416	0.608
PEQU01	60	2.27	1.205	1.453	0.363	0.309	-1.005	0.608
PEQU02	60	2.55	1.213	1.472	0.468	0.309	-0.207	0.608
PEQU03	60	3.18	1.359	1.847	0.284	0.309	-0.656	0.608
PEQU04	60	3.22	1.354	1.834	0.269	0.309	-0.751	0.608
PEQU05	60	2.87	1.384	1.914	0.406	0.309	-0.626	0.608
PEQU06	60	2.25	1.188	1.411	0.373	0.309	-1.162	0.608
PEQU07	60	2.52	1.255	1.576	0.360	0.309	-0.954	0.608
PEQU08	60	2.95	1.395	1.947	0.557	0.309	-0.254	0.608
PEQU09	60	3.02	1.420	2.017	0.374	0.309	-0.692	0.608
PEQU10	60	2.32	1.308	1.712	0.651	0.309	-0.390	0.608
PEQU11	60	2.92	1.510	2.281	0.329	0.309	-0.624	0.608
PEQU12	60	2.43	1.226	1.504	0.644	0.309	-0.069	0.608
PEQU13	60	2.42	1.381	1.908	0.758	0.309	-0.221	0.608
PEQU14	60	3.05	1.512	2.286	0.369	0.309	-1.052	0.608
PECA01	60	2.77	1.370	1.877	0.479	0.309	-0.414	0.608
PECA02	60	2.67	1.386	1.921	0.590	0.309	-0.316	0.608
PECA03	60	2.23	1.079	1.165	0.434	0.309	-0.721	0.608
PECA04	60	2.07	1.006	1.012	0.586	0.309	-0.279	0.608
PECA05	60	2.32	1.200	1.440	0.815	0.309	0.617	0.608
PECA06	60	2.40	1.251	1.566	0.691	0.309	0.025	0.608

<b>PECA07</b>	60	2.58	1.183	1.400	0.302	0.309	-0.010	0.608
<b>PECA08</b>	60	2.27	1.163	1.351	1.061	0.309	1.734	0.608
<b>PECA09</b>	60	2.80	1.436	2.061	0.293	0.309	-1.187	0.608
<b>VALEX01</b>	60	2.55	1.185	1.404	0.446	0.309	-0.456	0.608
<b>VALEX02</b>	60	2.62	1.195	1.427	0.362	0.309	-0.399	0.608
<b>VALEX03</b>	60	1.98	0.854	0.729	0.202	0.309	-1.200	0.608
<b>VALEX04</b>	60	2.57	1.254	1.572	0.885	0.309	1.047	0.608
<b>VALEX05</b>	60	2.62	1.379	1.901	0.852	0.309	0.766	0.608
<b>VALEX06</b>	60	2.63	1.353	1.829	0.749	0.309	-0.048	0.608
<b>VALEX07</b>	60	2.28	1.209	1.461	0.679	0.309	-0.348	0.608
<b>VALEX08</b>	60	2.45	1.254	1.574	0.623	0.309	-0.103	0.608
<b>VALEX09</b>	60	2.83	1.509	2.277	0.446	0.309	-0.843	0.608
<b>VALEX10</b>	60	2.42	1.183	1.400	0.587	0.309	0.028	0.608
<b>VALEX11</b>	60	2.57	1.407	1.979	1.277	0.309	2.064	0.608
<b>VALEX12</b>	60	2.40	1.153	1.329	0.596	0.309	0.283	0.608
<b>VALEX13</b>	60	2.48	1.242	1.542	0.699	0.309	0.113	0.608
<b>VALEX14</b>	60	2.28	1.316	1.732	1.068	0.309	1.396	0.608
<b>VALEX15</b>	60	2.42	1.211	1.468	0.675	0.309	0.073	0.608
<b>VALEX16</b>	60	2.10	1.115	1.244	0.555	0.309	-0.782	0.608
<b>Valid N (listwise)</b>	60							