

**An onto-epistemological (re)framing and (re)connecting of  
organisations as praxeological multi-capital value systems**



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## **Abstract**

Organisation stands as one of humankind's greatest inventions, and reconceptualising organisations to meet the ever-diversifying needs of the modern stakeholder community one of its most significant challenges. Historically, scientific management principles simplified the challenge through a profitable operations practice imperative, which reinforced a creation and destruction value dualism, and causal and value dead ends. However, value is contingent upon meeting needs, demanding that organisations leverage a wider and connected set of capitals to meet the diverse needs of modernity. This research seeks to understand how praxeologically inert legacy organisations can generate value by (re)connecting capitals and (re)framing as multi-capital value systems. The study's setting is the university-led Made Smarter Leadership Development programme which provided an insightful longitudinal case study over the two-year programme life-cycle. The research surfaced rich qualitative insights on participant sense-making journeys across a diverse set of participant-researcher touchpoints, and also collected associated quantitative survey data. Analysis was conducted in three streams, and iteratively built up a complementary organisational model ontology. Stream one, a qualitative ethnographic study utilised grounded theory analysis to surface the prâxis (re)framing priorities of organisations. Analysis of such priorities yielded an onto-epistemological perspective of an organisation, and novel insights were generated on prâxis (re)framing strategies, organisational maturity, and how prâxes and frames combine as a relational onto-epistemological duality. Stream two's quantitative analysis of respondent data identified the 20 significant prâxis-elements that form six systemically correlated and causally related capital factors. Findings indicate how multiple capitals connect as an organisational structure which orchestrates value flows between capital factors. Stream three elaborated on the prior two streams' empirically-grounded foundations through sensemaking systems dynamics theory. This modelling produced both empirical findings and a generalisable methodology to reconceptualise organisations as a connected praxeological multi-capital value system. Specifically, findings informed how means-ends dynamics orchestrate complex capital interactions, which form pan-organisational value journeys, and ultimately form generalisable value archetypes. In summary, the research confirmed an organisation is a connected multi-capital praxeological value system, this outcome enabled by the discovery of a novel onto-epistemological perspective of organisations.

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## **List of abbreviations**

GDEA .....	Good Dividends Evaluation Audit
CLD .....	Causal Loop Diagram
MSLP .....	Made Smarter Leadership Programme
SDG .....	Sustainable Development Goals
WBCSD .....	World Business Council for Sustainable Development
SME .....	Small and Medium Enterprises

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## Declaration

This thesis has not been submitted in support of an application for another degree at this or any other university. It is the result of my personal endeavour and includes nothing that is the outcome of work done in collaboration except where specifically indicated. In line with Lancaster University alternative format guidelines, the following details co-authorship of papers: -

<b>Paper title</b>	<b>Primary author &gt; 50 %</b>	<b>Co-authors</b>
<i>An onto-epistemological prâxis (re)framing of Small and Medium Enterprises in a UK manufacturing context</i>	Eamon Mulligan	Steve Eldridge Steve Kempster Robyn Remke
<i>Understanding how connected multi- capital prâxes shape organisations as value systems</i>	Eamon Mulligan	Steve Eldridge Steve Kempster Robyn Remke
<i>Towards designing multi-dimensional organisations as a dynamic praxeological system of capital interactions</i>	Eamon Mulligan	N/A sole authored

## **Chapter One - Introduction**

### **1.1 Relevance and contribution of the research**

This research examines manufacturing medium enterprise organisations who aspire to future proof their businesses through notions of multi-capital value and digital innovation. Consequently, the study seeks to understand how organisations can be (re)framed from profitable operations practice to (re)connected praxeological multi-capital value systems. Contemporary digital innovation has precipitated significant globalisation and connection phenomena, thus helping to fulfil the diverse and rapidly evolving needs of the stakeholder community which ultimately translate into wider value realisation. In an organisational sense, multi-discipline phenomena manifest when previously segmented industries have morphed, bounded knowledge domains have (re)connected, and disparate individuals connect in social communities and global business ecosystems.

In parallel, organisational life expectancy is decreasing, and according to McKinsey the average life-span of companies listed in Standard & Poor's 500 was 61 years in 1958, while in 2016 was less than 18 years (Garelli, 2016). Innosight (2020) suggest that much of the decrease in life expectancy of S&P companies is being driven by technological change, which is happening at unprecedented speed. Relevant to this research, the annual death rate of UK small and medium enterprises (SME) was 11.2% in 2019 (Office for National Statistics, 2021). Underpinning this pathology, legacy organisational theory and routinized practice has framed such organisations as profitable operations creating a core primacy to maximise financial capital and operational efficiency. Such recipes for success also propagate bounded structures, a creation and destruction value dualism, and value and causal dead-ends.

Multi-dimensional is a topical description of contemporary organisations. In this research context, multi-dimensional represents the interactions of multiple capitals and disciplines. As disciplines are a branch of knowledge and praxeology is a core tenet of the research, the broad research area of interest is to examine multi-dimensional organisations as connected praxeological multi-capital value systems. This research goal is achieved by investigating the capitals and prâxes which are important to organisations, the inter-capital interactions, and how prâxis enables multiple capitals to connect as dynamic pan-

organisational value systems. In essence, the research investigates the wider value interactions at play in an organisation as a connected multi-capital system, and how such value journeys could be operationalised in a one-organisation structure. Moreover, this conceptualisation of an organisation encapsulates the modern imperatives of circularity, regeneration, and interconnectedness. This (re)framing is essential to fulfil the diverse needs of modernity as espoused in the UN Sustainable Development Goals (United Nations, 2017), the circular economy, and other multi-capital frameworks. Consequently, understanding value realisation and optimisation within connected organisations is a fundamental aim of the research. In this research context, value is realised by meeting stakeholder needs, which also implies that capital as ‘accumulated labour’ (Bourdieu, 1986, p. 241) represents the accumulation of value, assuming of course that such labour is effective and efficient at generating intended value outcomes.

To shape such connected organisations, the research employed an iterative mixed methods research approach which generated a complementary set of organisational models. This model ontology confirmed an organisation as a praxeological multi-capital value system. Furthermore, the modelling highlighted connections as being differentiating organisational resources, and the building blocks for the means-ends configurations that underpin empirically identified pan-organisational value journeys. Analysis also confirmed that means-ends dynamics are common to key theories which underpin the research, namely praxeology, finality, and framing theories. For such means-ends dynamics, the relationships between means and ends is conceptualised by different configurations in finality theory which orchestrate the delivery of ends (goals). Moreover, the research demonstrated that patterns between means and ends can produce different outcomes dependent upon the organisational context. The achievement of goals or ends represent the realisation of value, and this research’s original contribution modelled multiple interactions of means-ends configurations as pan-organisational value journeys. In this conceptualisation, multiple capitals and related prâxes are dynamically connected, and such complementary interactions orchestrate complex inter-capital operations that realise and optimise value.

The research aims are achieved by evaluating the pivotal role of prâxis in enabling such dynamic multi capital interactions. As previously mentioned, the research setting provided diverse qualitative and quantitative data, and supported a mixed methods approach. Thus,

the research design combined the findings from stream one's qualitative grounded theory analysis, stream two's quantitative structured equation modelling, to create stream three's systems dynamics model of an organisation as a connected praxeological multi-capital value system. Therefore, the unique contribution of this study, is to identify alternative organisational designs by (re)connecting capitals which mitigates extant profitable operations practice inertia. This outcome is achieved through a generalisable sense-making design methodology which leverages a more dynamic prâxis framing and thus enables novel approaches to value realisation and optimisation.

## **1.2 Overview of the societal and academic context**

The UK Government's industrial strategy envisages triggering a UK manufacturing renaissance. Made Smarter, the digital transformation programme of this industrial strategy identified the key challenges to achieving this vision as: the faster innovation, increased pace, and wider adoption of industrial digital technologies (IDTs); more ambitious, informed and focused leadership for digitalisation; and upskilling workforces and identifying future skills (UK Government, 2017). Small and medium enterprises are seen as core to this renewal given their contribution of 60% of total UK employment, 52% of total UK sales turnover, and high volatility with annual business birth rates of 13% and annual death rates of 11.2% (UK Parliament, 2021). Value destruction, primarily through waste is equally significant, according to Dey et al (2020, p. 141)

‘SMEs contribute up to 70% of global pollution collectively, manufacturing SMEs are reported to account for 64% of air pollution, whereas only 0.4% of these SMEs comply with an environmental management system. SMEs consume more than 13% of total global energy demand, and cost-effective energy measures could shave off as much as 30% of their consumption (International Energy Agency, 2015)’.

Thus, reframing SMEs to optimise wider capitals such as natural and social (innovation) in their business and operating models would have a profound impact on the UK's communities, environment, economy, and organisational culture.

The study's research setting is the university-led Made Smarter Leadership Programme (MSLP) for manufacturing medium enterprises. MSLP's pedagogy incentivised a reflective evaluation of extant organisational purpose and profitable operations practice,

and included theoretical and practical content on pivotal organisational concepts such as leadership, strategy, and change. MSLP and its associated data collection activity executed from September 2019 to June 2021, against a backdrop of significant exogenous events, namely Covid-19 and BREXIT. The UK went into official Covid-19 lockdown on 26 March 2020, when lockdown measures legally came into force (Institute for government, 2021). Originally scheduled for '29 March 2019, the UK left the EU on 31 January 2020 and entered a transition period' (UK Parliament, 2021a, p. 62). The timing of these exogenous events ensured that MSLP data incorporated both pre- and post- event perspectives. This suggested that specific analysis would be prudent, however categorical analysis of the data using appropriate indicators (cohort number, pre- and post- Covid-19, and pre- and post- BREXIT indicators) confirmed no significant influence on the models or findings. Therefore, the research's findings represent a more elemental dimension of organisations. Furthermore, the research did not test the delivery efficacy of the Made Smarter Leadership Programme. Rather the research focused on addressing the topical and important research area of interest and generating novel insights on the next generation of organisations.

The dominant manufacturing meta-narrative grounds organisations in traditional engineering and scientific management principles which juxtapose legacy profitable operations practice with ever-emergent multi-capital stakeholder needs and digitally connected global communities. Such legacy theories create bounded disciplines and shape organisations' mental models towards optimising financial returns and operational efficiency. In addition, from a praxeology perspective, contemporary literature tends to focus on theories of practice, specifically routinised practice (Reckwitz, 2002), this highlighted by the recent practice turn movement in which 'scholars explicitly take practices as a category of analysis in one way or another' (Cornut, 2015, p. 4). Cornut elaborates that the notion of a practice turn was coined by Schatzki, Cetina, and von Savigny (2001) and implies that 'a significant number of scholars turn to practices, that they have enough similarities to be considered part of the same broad movement, and that they bring something novel to the discipline' (2015, p. 4). Taken together, the concepts and logics developed in association with this shift in emphasis to practices form what has come to be labelled 'practice theory' (Cornut, 2015, p. 4). However, Schatzki (2001, p. 11) challenged the homogeneity of such a concept 'given the multiplicity of impulses, issues and oppositions, it is not surprising that there is no unified practice approach'.



In a profitable operations frame, routinized organisational practice manifests as: processes (a prescribed set and sequence of actions); routines (the fixed order and regular way of doing things); and standard operating procedures (step-by-step instructions to execute repeatable tasks). However, an alternative framing for the dynamic aspect of organisations is provided by praxeology, and specifically prâxis as ‘purposeful action’ (Rigg, 2014, p. 651), which Nicolini (2013, p. 26) elaborates as ‘action informed by knowledgeable value-driven deliberations’, and Freire (1985), suggests is enabled by the synthesis of theory and practice in which each informs the other. Crucially, praxeology and specifically prâxis forms one of the core foundations of this thesis.

From a praxeological perspective, prevailing technical and sociological innovations of the era have shaped tranches of organisational theory and related practice. These tranches can be condensed into classical, scientific, neo-classical, and modern. Adam Smith (1776) in his *Wealth of Nations* first introduced the invisible hand and laissez-faire ideology as the dominating theory of work which through individual self-interest and market freedom, the best interests of society, as a whole, are fulfilled. Importantly, this paradigm connects work systems with the wider environment, conceptually fits closely with praxeology and contingency theories. Taylor (1911), Ford and other practitioners introduced scientific management principles creating new industrial practice centred on productivity and efficiency, arguably shaping organisational practice as profitable operations. Such profitable operations practice has historically been the dominant frame in manufacturing organisations. Consequently, traditional organisations were designed to meet the demand for large volumes of standardized products under varying levels of uncertainty, and with the objective of providing stability and predictability (Weick, 2004). Neo-classical theory followed placing customer needs firmly at the core of the organisation and shaping numerous quality and re-engineering movements championed by gurus such as Deming, Drucker, and Ohno. Finally, contemporary organisational lenses include the social and behavioural sciences, and aspire to better understand and optimise relationships with the stakeholder community who expect meaningful value creation across a much wider set of connected and complementary needs, and thus capital dimensions. These systemic movements suggest that organisations shaped by scientific management (Taylor, 1911) principles of long-gone eras are inadequate in meeting the diverse needs of modernity. Consequently, this research addresses the critical challenge of how organisations can (re)frame from bounded profitable operations practice to a multi-capital value system that

(re)connects capitals, fulfils a much wider set of stakeholder needs, and therefore generates new opportunities to realise and optimise value.

### **1.3 Research direction and aims**

Many practitioners intuitively recognise the concept of connected multi-capital value, dismiss the theory-practice dualism, and aspire to transcend the static and bounded structures inherited from long-gone eras. However, there are few, if any, studies that empirically and conceptually shape operationalizable details of such a multi-dimensional organisation. Consequently, the purpose of this thesis is to advance understanding of how organisations can be (re)framed from profitable operations practice into (re)connected praxeological multi-capital value systems. Specifically, the study seeks to generate insights on the relationship between organisational value and the interactions of capitals and prâxes, such novel conceptualisations grounded in empirical observations. Therefore, the broad aims of this thesis are to: -

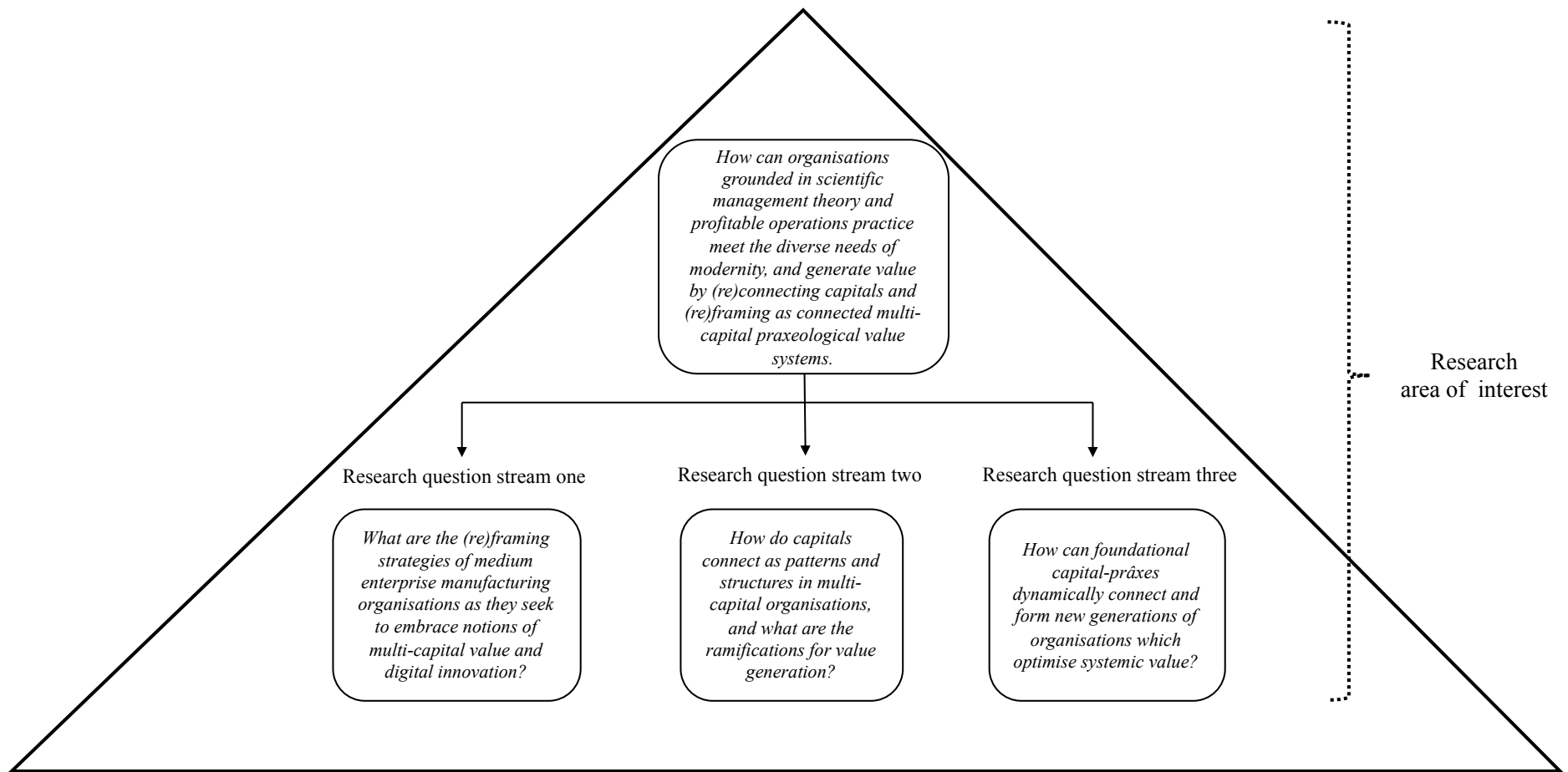
- Understand the prâxis (re)framing priorities and indeed strategies of organisations as they seek to future-proof through notions of multi-capital value and digital innovation
- Identify which capitals are important to organisations
- Establish how patterns (configurations) of significant prâxis-elements form capitals
- Quantitatively test the nature, strength, and direction of relations between capitals as patterns of prâxis-elements
- Understand how static and dynamic capital connections form pan-organisational value journeys, and ultimately generalisable value archetypes

Therefore, the research also evaluates how well organisational theory can help understand, conceptualise, and indeed operationalise the phenomena that form a connected praxeological multi-capital value system.

The research unfolded in three streams: stream one qualitatively analysed the prâxis (re)framing strategies of organisations as they embraced appropriate content (theory and practice) on leadership, change management, strategy, digital innovation, organisational measurement, Agile project delivery, and notions of multi-capital value; stream two collected pan-organisational survey data, modelled the multi-capital prâxis interactions, and quantified the inter-capital correlations and causal effects of a connected

organisational value system; and stream three leveraged the empirical findings from stream one's praxis (re)framing strategies and multi-capital value insights, and stream two's quantitatively modelled connections with sensemaking systems theory to reconceptualise a dynamic multi-capital organisation, and also shape a generalisable methodology to design such organisations. In essence, stream three was elaborated on the complementary insights of streams' one and two, thus fulfilling the key criterion of mixed methods research, while also ensuring that the research's overall contributions were empirically grounded.

The research structure highlighting the overarching research area of interest, and the three complementary research streams that ultimately shaped the integrated set of findings are now presented in Figure 1.1 below: -



**Figure 1.1: Integrated research structure**

## 1.4 Thesis structure

The MSLP programme presented an insightful case study, its structure and pedagogy enabling the collection of diverse data across the entire programme life-cycle. Thus, the research setting supported a mixed methods research design comprising two data collection activities, and three related analysis streams. The findings of each stream were documented in a related paper, suitable for publication in a peer-reviewed journal (titles in italics Figure 1.2 below). Individual research streams produced discrete yet complementary insights, the latter providing a further set of thematic findings. Findings are also itemised into empirical observations, theoretical contributions, and practical implications. The research topology is illustrated in Figure 1.2 below, and specifically highlights the dual role of the Good Dividends Evaluation Audit (Appendix A), and the flows between the research components. Solid lines indicate a direct input, whereas dotted lines are an indirect input.

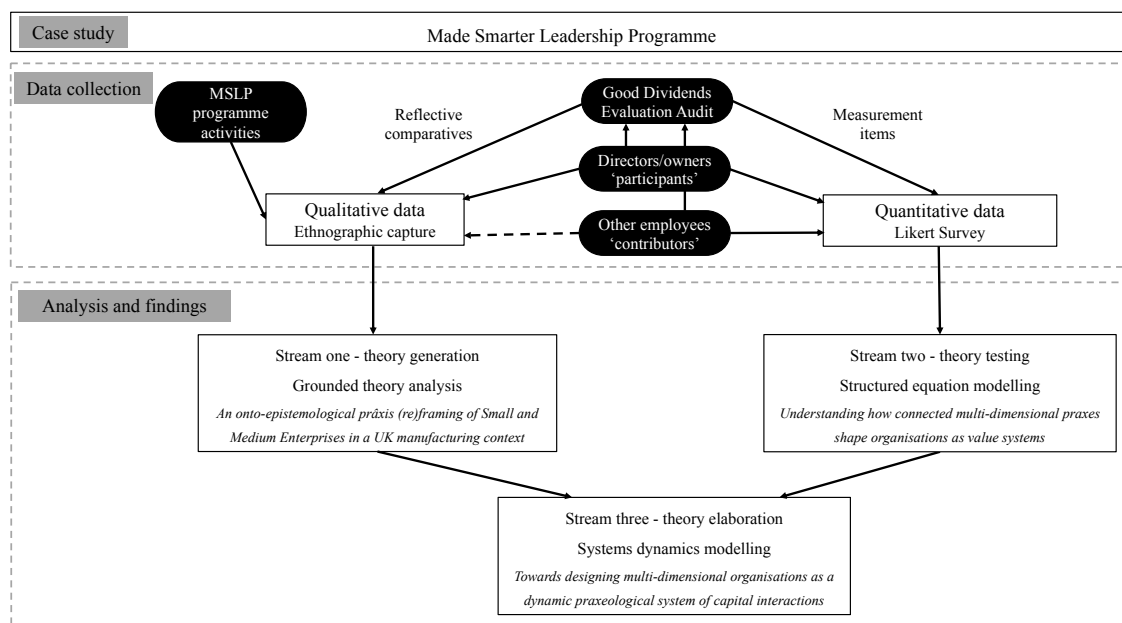


Figure 1.2: High level data collection and analysis, and stream/paper structure

The Good Dividends Evaluation Audit (GDEA) (Kempster, Maak, and Parry, 2019, p. 4) had a dual purpose for both MSLP, and the research. Firstly, as a reflective tool, and secondly as a measurement instrument where the items broadly reflected ‘purposeful actions’ (Rigg, 2014, p. 651) or *prâxes*. The survey contained eight constructs, six capitals, and two overarching constructs, namely governance and responsible leadership. Each

construct had five questions, one of which evaluated digital prâxis. Thus, participant organisations were requested to both reflect on and evaluate their multi-capital prâxes, and this approach generated valuable qualitative and quantitative insights.

In addition to the 40 GDEA measurement items, each respondent provided ten demographic variables, making 50 measurement elements in total. Additional analysis indicators were added, namely Covid19 flag, Brexit flag, cohort number, and actor-type for each research question focus. There were 207 respondents which provided an integrated dataset of approximately 10,500 data items. Statistical analysis of the data provided a visualisation dashboard of comparatives which participants could reflect on, and discuss within their organisations, and also with other participants. Comparatives examined such frames as: scoring patterns for the eight initial constructs; participant perspectives versus a diverse set of contributors from their organisations; and digital versus non-digital perspectives. In addition, the 10,500 data items provided the input data for structured equation modelling which surfaced the latent capital factors, their patterns of significant prâxis-elements, and the connections between such capital factors. Collectively, these qualitative and quantitative building blocks formed a multi-capital organisational model.

This manuscript presents the theoretical underpinnings, research methods, three journal papers, and combined findings presented as empirical observations, theoretical contributions, and practical ramifications in the following sequence of chapters.

Chapter two investigates the organisational theories relevant to the high-level research interest that an organisation could be represented as a dynamic praxeological multi-capital value system. Significant to this research are the primary theoretical areas of praxeology, (re)framing, multi-capital value, and systems dynamics theory. Supplementary perspectives are provided by configuration, contingency, complementarity, and finality theories.

Chapter three provides an overview of the research design and methodology, and examines the benefits and challenges of leveraging complementary qualitative and quantitative frames in a mixed methods (mixed strategy) approach. Specifically, this chapter considers the ontological and epistemological perspectives of a mixed methods approach. In

addition, theory production in the form of inductive, deductive, and abductive ways of reasoning are discussed. Finally, the chapter details the sequence and interaction of such methods, the ramifications for quality, and how the interaction of complementary methodological components has contributed to this study.

This thesis contains three connected research papers. Papers one and two provide the empirical and directional foundations for paper three, and all papers complement each other in the overall thesis contribution. The three manuscripts are detailed in chapters four, five, and six.

Chapter four documents the details of research stream one in the paper titled '*An onto-epistemological prâxis (re)framing of Small and Medium Enterprises in a UK manufacturing context*'. This ethnographic case study examines the (re)framing journeys of participant manufacturing medium enterprise organisations as they embrace notions of multi-capital value and digital innovation in order to future proof their businesses. Grounded theory analysis surfaced an original conceptualisation of an organisation as a relational onto-epistemological structure at the intersection of praxeology and (re)framing theories. The study specifically surfaces the detailed praxeological basis of (re)framing strategies through the complex interactions of prâxis, theory, and practice, and framing and reframing. Theoretically framing such prâxis (re)framing strategies underpins the research's findings in the form of: prâxis-frame duality; prâxis maturity, (re)framing maturity, and their complementary interaction in organisational maturity; prâxis (re)framing virtuous circles; and multi-capital value journeys.

The paper in chapter five, entitled '*Understanding how connected multi-capital prâxes shape organisations as value systems*' documents the details of research stream two. This paper quantitatively examines the multi-capital connectivity dimension of participant organisations based on respondent's answers to the GDEA survey. A structural equation model was developed in which the structure of, and connections between prâxis-elements and capitals were hypothesised to test the viability of an organisation as a connected praxeological multi-capital value system. Quantitative analysis was executed in three phases: exploratory factor analysis confirmed that the data had sufficient quantity and quality to perform structured equation modelling, also providing initial direction on the underlying capital factors and their configurations of significant prâxis-elements; confirmatory factor analysis yielded a measurement model that confirmed latent capital

factors, their significant [retained] prâxis-elements, and the systemic correlations between capital factors; and multi-variate regression analysis evolved the measurement model into a structural model of causal relations between the retained capital factors. Both models were used to test hypotheses that an organisation is a connected set of capitals that are constituted from patterns (configurations) of significant prâxis-elements. The interactions of multiple capitals were further evaluated through the intersections of relevant structural theories, namely complementary, configuration, and contingency theory.

Chapter six documents the details of research stream three in the form of the paper titled '*Towards designing multi-dimensional organisations through a systems-theory-as-prâxis frame*'. This paper evolved the prâxis (re)framing strategies and multi-capital value insights identified in stream one, and stream two's quantified correlations and causal relations, into a further set of empirical findings, and a generalisable methodology for the design of multi-capital organisations. The methodology generated a dynamic perspective of an organisation through the sense-making application of systems dynamics theory. Specifically, the methodology incorporates the dynamic interactions of capitals and prâxes, and combines these interactions into a set of pan-organisational means-ends value journeys, which ultimately form value archetypes.

Chapter seven summarises the overall contribution of this thesis, the implications of the findings, and the research's limitations and opportunities for future research. The findings are presented at both stream level, and in aggregated thematic form, collectively clarifying the overall contributions of the thesis and showcasing the unique benefits accrued from a mixed methods approach. For ease of understanding, the findings are presented as empirical observations, theoretical contributions, and practical contributions. Significant to this research, chapter seven highlights how prâxis transcends organisations as a foundational dimension, and how capital prâxis dynamics orchestrate complex inter-capital operations into organisational value journeys, which in turn suggest such journeys form generalisable value archetypes.



## Chapter Two - Literature Review and Theoretical Foundations

As indicated in the introduction, the broad thesis of this research is to (re)frame organisations from exploitative profitable operations practice and its embedded scientific management theory, and (re)connect as a dynamic, praxeological, and multi-capital value system. Significant for this research, an organisation is in essence a system that facilitates a shared purpose, Kim (1999, p. 2) elaborating that a system is ‘any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose.’

This research’s broad theoretical framework focuses on organisational theory, and specifically examines (re)framing organisations as connected onto-epistemological structures. Given the broad research context, MSLP provided injections of appropriate theory and practice and surfaced alternative multi-capital perspectives to neo-liberal capitalism, unsurprisingly therefore, praxeology, multi-capital value, systems dynamics, and (re)framing theories provided significant input to the research. The detailed theoretical discussions of individual papers are presented in chapters four, five, and six, however, the overall theoretical framework underpinning the research is thematically structured and presented in this chapter. This discussion highlights how the key theories advance an understanding of the connections between praxeology, capital, and value in an organisational system, and therefore complements the detailed theoretical, discussions in each paper.

In addition to the four foundational theories mentioned above, supporting insights on organisational connections are provided by configuration, contingency, complementarity, and finality theories. Specifically, capitals as configurations (patterns) of praxis elements, contingencies as intra- and inter- capital (mis)fits, and complementarities as multi-capital interactions which facilitate value optimisation contribute to (re)framing and (re)connecting organisations. Furthermore means-ends dynamics was identified as common theoretical utility across praxeology, finality, and framing theories. This theoretical framework is connected with associated research methods in Figure 2.1 below. Figure 2.1 also maps the theories to the three research streams and their respective papers, and visualises how streams map to specific methods of: analysis; theory production; and ways of reasoning.

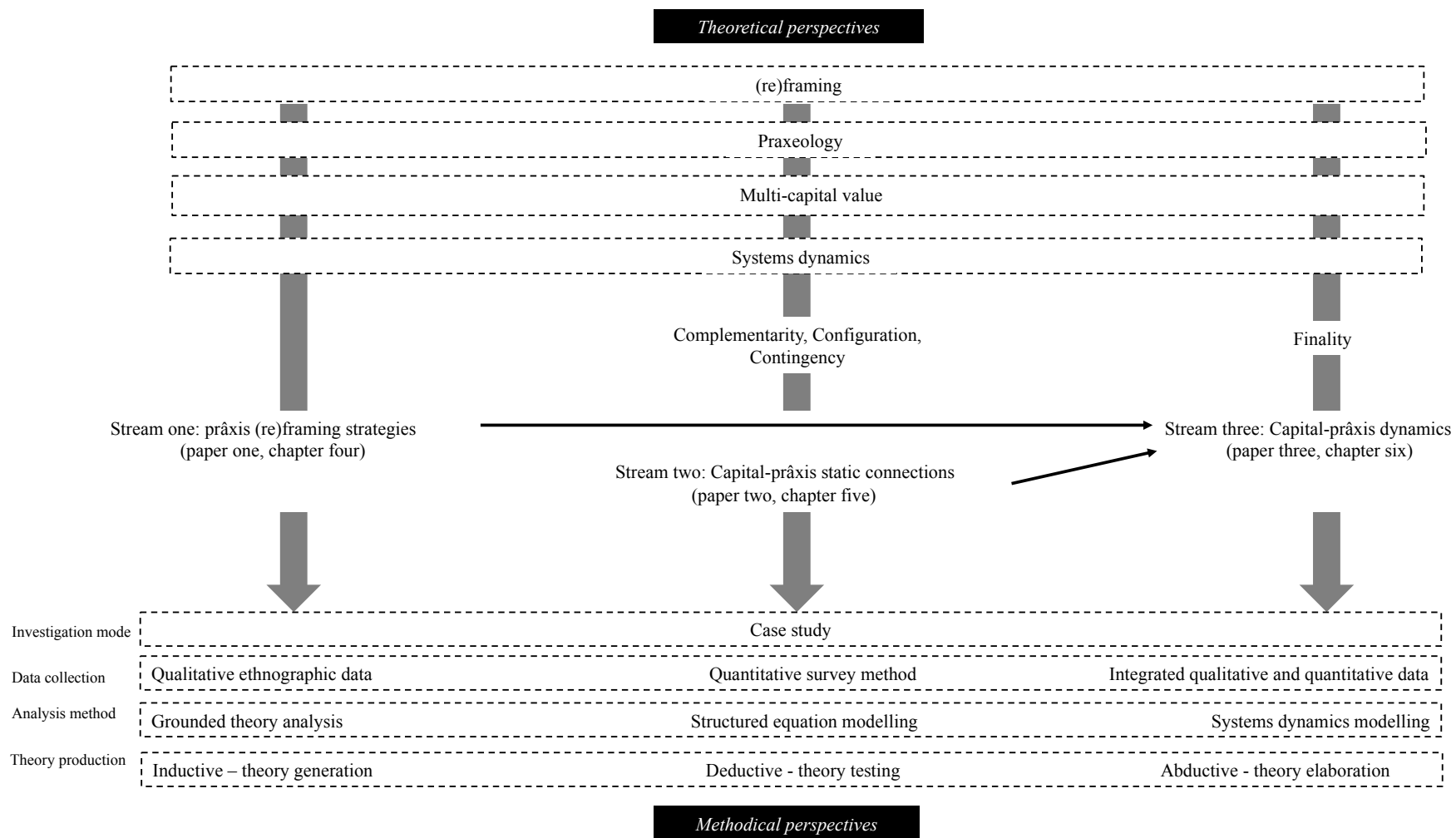


Figure 2.1: Theoretical and methodological framework

In summary, the above framework illustrates how the key theoretical and methodological perspectives enable the three research streams. Using the four fundamental theories (re)framing, praxeology, multi-capital, and systems dynamics, this chapter will examine extant literature and thematically discuss the influences on the research.

## **2.1 Positioning the theoretical framework in the context of the research**

To aid understanding of the theoretical arguments within this chapter, the key theoretical concepts along with their contextual meanings within the research are initially summarised in Table 2.1 below. This guide is intended as a simple theoretical frame of reference to aid clarity and transparency as the reader navigates both the detailed discussions in this chapter, and indeed the overall thesis.

For clarity, within this manuscript, the term (re)framing signifies a contextual interaction of both framing and reframing, implying that framing and reframing could connect as a virtuous circle. In this research context, the reality is that multiple virtuous circles of framing-reframing will enact as part of (re)framing. The term (re)connecting represents a connected outcome by either connecting for the first time, or reconnecting previously disconnected objects. In a contingency theory context, a (mis)fit could represent either a fit or a misfit (depending upon the scenario) between an organizational structure/element and its external environment (Donaldson, 2001). Furthermore, duality represents the state of combining two different things (Cambridge Dictionary, 2022) which can co-exist. An illustration from physics is the concept of wave-particle duality, in which electrons and photons can exhibit properties of both waves and particles as elaborated by Einstein in 1905, Compton in 1922, and De Broglie in 1924 (Britannica, The Editors of Encyclopaedia, 2022). Specific to this research are the concepts of prâxis-frame (stream one), prâxis-element (stream two), and prâxis-accumulator duality (stream three). A further conceptual clarification is that stream two's prâxis elements and stream three's prâxis-accumulators represent the same underlying duality, rather the modelling context is different. The former reflects a static model (stream two), and the latter reflects a dynamic model (stream three) in which accumulators can be influenced by dynamic flows (related prâxes in this context). This latter definition is consistent with systems dynamics theory (Kim, 1999).

Table 2.1: Key theoretical concepts

Concept	Definition
Praxeology	Praxeology etymologically derives from the Greek word prâxis (‘purposeful action’) and logos (‘word’ or ‘thought’ or ‘principle of knowledge’), and can be understood as a theory of practical knowing. (Rigg, 2014, p. 651).
Practice	A routinized type of behaviour which consists of several elements, interconnected to one other thus providing a way of cooking, consuming, working etc (Reckwitz, 2002, p. 249).
Prâxis	Purposeful action (Rigg, 2014, p. 651); action informed by knowledgeable value-driven deliberations (Nicolini, 2013, p. 26); the synthesis of theory and practice in which each informs the other (Freire, 1985).
Prâxis-element	A connected pair where prâxis influences a related element, examples being strategising and strategy, and digitally innovating and digital maturity.
<b>Thesis context</b>	<i>Prâxis represents purposeful and value-driven actions enabled by a synthesis of theory and practice.</i>
Factor (latent)	Underlying dimensions, that explain the correlations amongst a set of observed variables (Daryanto, 2012; UCLA, 2021).
Capital	Capital is accumulated labour...which, in its objectified or embodied forms, takes time to accumulate and which, as a potential capacity to produce profits and to reproduce itself in identical or expanded form (Bourdieu, 1986, p. 241).
<b>Thesis context</b>	<i>Capital factors are comprised of patterns of prâxis-elements, and interfaces between capitals are enabled through the interactions of prâxis-elements.</i>
Configuration	Constellations of elements that commonly occur together because their interdependence makes them fall into patterns (Meyer, Tsui, and Hinings 1993).
Contingency	A (mis)match between an organizational structure/element and its external environment (Donaldson, 2001).
Complementarity	Doing more of one thing increases the returns to doing more of another (Milgrom and Roberts, 1995).
Patterns	Sets of events that form repeatable trends (Karash, 2022).
Structure	The network of relationships that create behaviour. The essence of structure is not in the things themselves but in the relationships of things (Karash, 2022).
<b>Thesis context</b>	<i>Elements, prâxes, capitals, and their <b>connections</b> provide the building blocks of multi-dimensional organisations. Thus, connections are enabling resources.</i>

Table 2.1: Key theoretical concepts – continued

<b>Concept</b>	<b>Definition</b>
Means-ends	Means-ends configurations are dynamic patterns of interactions between means and goals, and are common to praxeology, finality, and framing theory.
Finality	Configurations that represent means-ends dynamics (Kruglanski et al., 2015).
Feedback (loop)	Feedback recognises that as well as one cause (A) leading to an effect (B), B will also affect A in various ways, this circular causality is a ‘feedback loop’ (Open University, 2021).
Virtuous circle	To count as virtuous, acts must be done with a right reason or justification (Eikeland, 2014, p. 656), therefore virtuous circles are recurring patterns of actions, each one increasing the beneficial effect of the next.
<i>Thesis context</i>	<i>Organisational means-ends configurations orchestrate dynamic inter-capital operations.</i>
Value	The importance or worth of something for someone, thus meeting a need.
Archetype	Captures the common stories – dynamic phenomena that occur repeatedly in diverse settings (Kim, 1992, p. 2); generic structures - patterns of structures that recur again and again (Senge, 2006, p. 93).
<i>Thesis context</i>	<i>Value is determined by meeting stakeholder needs, and the means-ends interactions of multiple capitals form pan-organisational value journeys and ultimately value archetypes.</i>
System	A system is any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose (Kim, 1999, p. 2).
<i>Thesis context</i>	<i>An organisation is a system of multiple capitals, each comprising a configuration of praxis-elements, and connected by a set of dynamic praxeological interactions.</i>

## 2.2 Theoretically framing (re)framing strategies

In this research context, reframing generates alternative framings of organisational success that differ from extant profitable operations practice. Reframing is defined as ‘identifying and then changing the way situations, experiences, events, ideas, and/or emotions are viewed’ (Robson Jr and Troutman-Jordan, 2014, p. 2) which leads to the discovery of alternative plausible realities (Ramirez and Wilkinson, 2016). As illustration, the dominant

manufacturing strategy has been framed by scientific management theory inherited from industrial visionaries such as Smith (1776), Taylor (1911), and Ford. Consequently, the conventional strategy of twentieth century western car manufacturers pivoted around a core dualism between ‘reduced cost versus improved quality’ (Kamauff, 2010, p. 4). Enter the Japanese who rejected this dualism, reframed their organisation’s strategy using lean philosophy, and generated significant success by embracing both frames of the paradox. According to Bourdieu and Wacquant (1992, cited in Kaplan, 2008, p. 744), ‘framing practices can define what is at stake’ and the ‘introduction of new frames is a means to transform interests through a collective effort of meaning making’. Thus, framing is not a set of symbolic actions distinct from substantive outcomes, but instead a process by which these outcomes are constructed in virtuous circles ‘interests shaped ideas, but frames also created contexts for action, contexts that then reciprocally shaped the interests that participants came to have’ (Kaplan, 2008, p. 747). Consequently, effective (re)framing is a dynamic process of meaning construction and necessitates a praxis-frame duality.

Significant to this research, innovation is a key method for reframing alternative plausible realities. In addition, social (innovation) was one of the initial eight constructs in the GDEA, and digital innovation identified as one of the mediating capital factors in the study’s causal models. Small firms can be more innovative because they have greater flexibility, versatility, and capacity to adapt to their environment. A smaller firm size fosters collaboration and cooperation among employees, and requires less effort to coordinate them (Mintzberg et al, 2005). Although most small firms lack the necessary means to invest in innovation, a major advantage is that their size gives them more flexibility and independence from institutional bureaucracy and this structure can foster innovation (Laforet, 2009). Moreover, large and small firms tend to be more innovative than medium size firms are, as the latter lack the intrinsic advantages of the other two groups, that is, scale and flexibility (Bertschek & Entorf, 1996). Therefore, SMEs’ innovation usually has a development orientation, whereas that of large companies usually focuses on research. While this approach is driven by SMEs’ lack of financial resources to handle research it creates practical insights on the scope and intent of innovation in SMEs. Nicholas, Ledwith, and Bessant (2013) investigated the innovation search strategies that firms use to escape their existing mental models and explore new cognitive frames by applying Bessant and von Stamm’s (2007) commonly used set of 12 search strategy clusters. Seven strategies were used to explore new cognitive frames for dis-continuous

innovation ideas, namely: sending out scouts; exploring multiple futures; corporate venturing; corporate intrapreneuring; brokers and bridges; deliberate diversity; and idea generators. However, five strategies: using the web, working with active users, deep diving, probe and learn, and mobilising the mainstream, in addition to exploration could also be appropriate for exploitive search within the established frame. Critical to this research, Nicholas, Ledwith, and Bessant's (2013) study of small and large companies identified that variation in innovation success is related to the degree framing strategies are employed rather than the availability of greater resources.

Systems dynamics theory provides further insights into reframing organisational dynamics, in which combinations of behavioural feedback loops and temporal delays can explain bewildering and often counterintuitive organisational phenomena. These alternative insights are primarily surfaced by: reframing an organisation as a connected whole; challenging existing cause and effect thinking through dynamic loops rather than linear causal paths; and evaluating if there are key leverage points in the system which act as specific points of intervention and have a significant influence on organisational behaviours. Furthermore, the systems dynamics' framework surfaces the influence of the 'link between mental models and destructive defensive reasoning' (Argyris, 2004, p. 1) in organisations. Significant for this research, stream one surfaced extant and aspired mental models, and key elements such as clarity-of-purpose which contributed to praxeological inertia, yet also surfaced opportunities for value realisation and optimisation. Such multi-capital value insights formed a key input to stream three's dynamic (re)framing of pan-organisational value journeys. The theoretical contribution of organisational (re)framing is summarised for each stream in Table 2.2 below, and their combination also provides an integrated perspective across the thesis: -

**Table 2.2: Organisational reframing context**

<b>Stream</b>	<b>Theoretical contribution of (re)framing</b>
One	(re)framing exploitative profitable operations practice to ambidextrous (exploitation and exploration) multi-capital prâxis, enabled by digital innovation, suggested that (re)framing provides the ontological dimension of an onto-epistemological perspective of an organisation.
Two	Quantitative modelling (re)framed a set of initial organisational constructs and raw data into an organisational structure of systemically connected capital factors, each capital comprised of a configuration of significant prâxis-elements.
Three	This stream (re)framed static structures of capital factors with prescribed causal start and end points to a dynamically connected system of capital feedback loops. Specifically, this novel (re)framing identified the means-ends configurations and complex capital prâxis operations that form pan-organisational value journeys.

### **2.3 Reframing organisations as praxeological systems**

A key theoretical perspective of this research concerns the differences between ‘routinised practice’ Reckwitz (2002, p. 249), and prâxis as purposeful and value-driven actions enabled by a synthesis of theory and practice. This perspective is further developed by examining how prâxis, theory, and practice interact with framing and reframing as prâxis (re)framing strategies, and ultimately form prâxis (re)framing virtuous circles. In essence, this interaction develops an original onto-epistemological perspective of an organisation. To set the theoretical context for the study, the pivotal concepts of practice and prâxis are now positioned.

#### **2.3.1 Practice**

Practice can be described as ‘a routinised type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, “things” and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge’ Reckwitz (2002, p. 249). In this routinised behaviour, practitioner identity and practice are interconnected with: homo economicus enacting rational decisions; homo sociologicus a norm-following, role-performing individual; and homo practicus as a carrier of practices, a body/mind who ‘carries’, but also ‘carries out’ practices (Reckwitz, 2002). While practice can be



positioned as routinised behaviour, Nicolini & Monteiro (2017) advise that performing a practice also requires adapting to new circumstances, as its accomplishment is neither mindless repetition nor complete invention. Giddens' (1984) elaborates in his stratification model, that actors have, as an inherent aspect of what they do, the capacity to understand what they do while they do it, through the three levels of consciousness, namely discursive, practical, and the unconscious.

Cornut (2015, p. 4) elaborates on the concept of practice, suggesting that 'there is a progressive gradation between the concepts of behaviours, actions, and practices, in that behaviours are constitutive of actions, which are constitutive of practices.' This framework is broadly in line with Schatzki's (2012, p. 13) understanding of practices as 'an organized constellation of different people's activities'. Significant to this research, Kemmis et al. (2014) informs that practices can be considered as instances of praxis that are enabled and constrained by specific arrangements that occur at sites, namely material-economic (the doings of the practice), social-political (the relating of the practice), and cultural-discursive arrangements (the sayings that characterize the practice). One of the most influential practice movements was the practice turn which according to Neumann (2002, p. 628) means to turn away from 'a study focusing on language and words, to study social action as enacted in and on the world'. However, given the 'multiplicity of impulses, issues and oppositions, it is not surprising that there is no unified practice approach' (Schatzki, 2001, p. 11). Therefore, the practice turn should be treated 'as a diverse, complex, and sometimes contradictory set of approaches, in which there is no such thing as the theory of practice but a variety of theories focused on practices' (Cornut, 2015, p. 4).

An alternative explanation of practice behaviour suggests that practitioners are not trying to maximize their payoff in all situations, a commonly held homo economicus and financial capital optimisation view. Rather their identity standard is set to participate in 100% of the available exchanges (Burke & Stets, 2009). Similarly, Giddens (1984) suggests that action is a continuous flow and should not be reduced to the acts of individuals, their intentions, motivations, and reasons.

Collectively, these insights support the research's conceptualisation of an organisation as a dynamically connected praxeological multi-capital value system, in which the multiple exchanges and interactions of capitals form the key dynamics of an organisation.

### 2.3.2 Positioning prâxis

Aristotle is credited as the originator of the concept of prâxis, positioning it as doing, and distinguished it from theôria as contemplative theory, and poiêsis as making or production (Kuepers, 2019; Kemmis and Smith, 2008; Eikeland, 2014). He also suggested ‘a distinction between forms of knowledge, and sanctioning both ideologically and sociologically the fact that material activity “real-time practice” and “real knowledge” lay at opposite ends of a continuum’ (Nicolini, 2013, p. 27).

In Aristotle’s frame of reference there are ‘three ways of knowing and forms of wisdom, namely episteme, phrônêsis, and téchnê’ (Eikeland, 2014, p. 654). Episteme or scientific knowledge: is the apprehension of universal principles and essences arrived at through use of analytic rationality (Nicolini, 2013); ‘seeks the truth for its own sake’ (Kemmis, 2012, p. 149); and encompasses ‘deductive demonstration as a way of reasoning’ (Eikeland, 2014, p. 654). Episteme thus represents ‘a non-intervening theoretical knowing, made up of *theôria* “insight” or *theôrêsis* “spectatorship”’ (Eikeland, 2014, p. 654). Phrônêsis is practical wisdom (Nicolini, 2013; Eikeland, 2014) encapsulated in ‘the moral disposition to act wisely, truly, and justly, with both goals and means open to review’ (Kemmis, 2012, p. 149), and requires ‘deliberation’ as a way of reasoning (Eikeland, 2014, p. 654). Téchnê is close to our modern notion of art or skill (Nicolini, 2013), which Kemmis (2012, p. 149) suggests is ‘to act in a true and reasoned way according to the rules of a craft’, Eikeland (2014, p. 654) elaborating that téchnê requires ‘technique and calculation’. The aim of episteme is to produce theôria that is ‘contemplation through theoretical reasoning’ (Kemmis, 2012, p. 149); the aim of phrônêsis is to produce prâxis or ‘action informed by knowledgeable value-driven deliberations’ (Nicolini, 2013, p. 27); while the aim of téchnê, instrumental rationality, is poiêsis which is the ‘creation or production of material or durable artefacts’ (Nicolini, 2013, p. 27).

Subsequent elaborations of prâxis were proposed by thought leaders such as Hegel, Marx, Heidegger, and Gadamer (Kuepers, 2019; Eikeland, 2014). The Hegel(ian) and Marx(ian) perspectives offered ‘idealist, respectively materialist, interpretations of social, productive and revolutionary prâxes as forms of world-making’ (Kuepers, 2019, p. 340). Heidegger, and Gadamer focused on the difference between prâxis and téchnê as different forms of

activity, also emphasising the concept of *phrónêsis* and its immanence to *prâxis* as their point of departure for modern phenomenology and hermeneutics.

*Prâxis* is a kind of enlightened and ‘elevated’ action that people ‘undertake in the knowledge that one’s actions affect the well-being and interests of others; consider all the circumstances and exigencies at a particular moment; take the broadest view they can of what it is best to do; often involve in-the-moment decisions about complex and demanding situations; and act’ (Kemmis and Smith, 2008, pp. 4-5). People, individually and collectively change the world through the immediate effects and long-term consequences of their actions (Kemmis, 2008), and *prâxis* emerges in such actions as sayings, doings, and relatings that are more or less coherently bundled together (Kemmis and Smith, 2008). Thus, *prâxis* demands creative thinking, care, compassion and critical consciousness – thinking outside or beyond the rules. Critically, from an onto-epistemological perspective it is ‘in *prâxis* that we submit ourselves— that all of us are submitted— to the discipline of reality’ (Kemmis, 2008, p. 158). In this sense, Kemmis is connecting the ontological perspective of reality with the epistemological perspective of *prâxis*.

### **2.3.3 Praxeological interactions**

Significant to this research, Aristotle also established the partial incommensurability between practice and theory, and the irreducibility of practical wisdom (*phrónêsis*) to theory, practical wisdom being a ‘non-inferential and non-deductive form of knowledge’ (Nicolini, 2013, p. 27). *Phrónêsis* is concerned with good action – doing the morally appropriate in ever variable circumstances (Broadie and Rowe, 2002, p. 114) and thus engaging in *prâxis*. This ability to action in dynamic circumstances critically differentiates *prâxis* as being able to meet the ever-diversifying multi-capital needs of the modern stakeholder community. In an educational context, it is the existence of tensions that call forth *prâxis* in a person’s conduct and that such *prâxis* can be ‘nurtured through a balance between support and challenge, and between theory and practice’ (Kemmis and Smith, 2008, P. 10). Crucially, *prâxis* ‘implies or presupposes a special form of theoretical understanding in practitioners’ (Eikland, 2014, p. 654; Freire, 1985) concurring that *prâxis* is the synthesis of theory and practice in which each informs the other. Heidegger (1962, p. 99) also dismissed the dualism between theory and practice ‘action must employ theoretical cognition if it is not to remain blind’ further elaborating that ‘theoretical

behaviour is just looking, without circumspection. But the fact that this looking is non-circumspective does that mean that it follows no rules: it constructs a canon for itself in the form of method'. In the theoretical frame of this thesis, method is an artefact of practice, thus Heidegger connects theory and practice. Sinha and Van de Ven, (2005, p. 389) also connect both concepts, espousing that organisation as 'the system of arrangements and procedures for doing work...bridges the gap between organisational theory and practice'. They further elaborate that comparative frames can surface praxeological dualities 'for a practitioner, a modularity problem could be that of deciding at what points to cleave work systems into components for allocation among subunits...For a scholar, a modularity problem could be that of choosing the appropriate unit(s) of analysis for examining the architecture of a work system' (Sinha and Van de Ven, 2005, p. 391).

Strategy provides an illustrative frame to conceptualise the contribution of praxeology to organisations. In an organisational strategy context, Vaara & Whittington (2012, p. 290) position praxeology as a framework involving practice, prâxis, and practitioners: -

'practices refer to the various tools, norms, and procedures of strategy work, from analytical frameworks such as Porter's Five Forces to strategic planning routines; prâxis refers to the activity involved in strategy-making, for example, in strategic planning processes or meetings; and practitioners are all those involved in, or seeking to influence, strategy-making'.

In a strategic context, prâxis is connected with sensemaking (drawing from Heidegger) where strategy is a second-order label attributed retrospectively to patterns of actions and practices (Tsoukas, 2010). In Tsoukas's view, the bulk of strategy-making is based on organisational actions and practices that are not made sense of or given sense to as strategic as they are happening in prâxis. By observing participant strategy-making activities, Regner (2003) reveals how strategies often inductively emerge from activities in the organisational periphery, by contrast to the deductive planning of the corporate centre. Many aspects of organisational life pass by unnoticed as organisations develop rigid practice routines and systematic patterns of behaviour, however Golsorkhi (2010, p. 123) also informed that the 'analysis of strategic conduct will tend to show that strategies are typically improvised and reinterpreted in particular moments of prâxis'. The serendipitous invention of the weak adhesive which enabled 3M's Post-it notes, is a classic example

where unintended consequences from a failed experiment were retrospectively strategised. Strategising can be further typified as: -

‘Retrospective reframing – articulating or reinterpreting the premises of non-deliberate actions – discloses an aspect of the practice and enables an agent to be explicitly aware of it...Moreover, when a practical situation is looked at from a reflective distance, detached from a specific practical concern, the latter becomes occurrent, and the agent develops thematic awareness’ (Golsorkhi, 2010, p. 55).

A critical ramification therefore is that strategy generation could be ‘retrospective reframing’ (Golsorkhi, 2010, p. 55). Weick (1995, p. 78) concurs when he writes ‘capitalizing on retrospective reframing is what effective strategists do all the time’. This discussion thread highlights another important research frame, namely the relationship between prâxis and practice, suggesting prâxis is the interdependence and integration of theory and practice in a meaningful way within a social context, where informal theories are part of prâxis as they are always already written into practice (Zuber-Skerritt, 2001).

#### **2.3.4 Praxeological dynamics**

In principle, prâxis ‘cannot be adequately captured in a system of universal rules—and hence cannot be the subject of episteme, because it has to do with mutability, indeterminacy, and particulars’ (Nicolini, 2013, p. 27). As much as phrônêsis is part of the very being of those practising it, the practitioners, practices and actions are always conditioned and constrained to some extent by contextual circumstances and forces. In fact, many practices in today’s organizations and institutions are more like a hostile ground for growing phrônêsis (Pitman, 2012). In an operational sense, being pressured to successfully perform, practitioners with their practices seem to find it difficult to realise the excellences of practical wisdom in prâxis, begging the question ‘how can both orientations, the one towards excellence in prâxis and the one towards “success” in poiêsis, be brought together while considering them as constrained?’ (Kuepers, 2019, p. 351). This pivotal question is perhaps best answered through some practical illustrations (Table 2.3) where clearly prâxis and practice are not mutually exclusive, and the value-adding contextual reality of prâxis is self-evident: -

Table 2.3: Praxeological gradations (first example elaborated from Cornut, 2015, p. 4)

<b>Behaviour</b>	<b>Action</b>	<b>Practice</b>	<b>Prâxis</b>
Sitting at a desk	Sitting at a desk and checking a passport in an airport	Checking passports in airports (security)	Prioritising people who are on a flight that is about to close or have special needs
Playing a musical instrument (music)	Playing a song on a musical instrument (musical theme – melody)	Performing cover songs in a band (musical genre - keys, arrangement, harmony)	Jazz band improvisation during a live performance (musical improvisation, audience engagement)

Significant to this research, Aristotle further highlighted the relationships between starting points, means and ends for the three ways of knowing (Eikeland, 2014, p. 654). The calculating *tékhnê* is the knowledge that steers the activity of making (*poiêsis*) in which the means and ends are known, and indeed distinguishable from one another. Conversely, as many organisational ends are typically indeterminate (e.g. acting for the good of the organization; striving to be a good technician, team member, manager, etc.), practical wisdom is needed to specify them in particular situations (Russell, 2009). In *prâxis* there can be ‘no prior knowledge of the right means by which we realise the end in a particular situation’, Bernstein (1983, p. 147) elaborating that ‘the end itself is only specified in deliberating about the means appropriate to a particular situation’.

As a practical illustration, participatory governance is both a means to enhanced governance, and as an end in itself (Malena, 2009). In a praxeological context, means-ends relations can be generalised where the ‘non-intellectual ethical virtues provide the ends developed primarily through *prâxis* and critical dialogue, while *phrônêsis* deliberates about “means”’ (Eikeland, 2014, p. 624). Aristotle suggested that *phrônêsis* deliberates the means, while the virtues provide the ends (Eikeland, 2014). Significant to this research, Eikeland (2014, p. 655) concludes that in *prâxis*, there is ‘no formal separation or difference between starting point, means and end, and they all coalesce’.

Similarly, in pragmatism, ‘consensus about both means and ends has to be established, which results in the co-ordination of thought, knowledge and action’ (Biesenthal, 2014, p. 647). Most importantly, this research established that means-ends configurations are a common concept within praxeology, finality, and framing theories, and will be further discussed in later sections.

As *prâxis* is realised (in action) in the real world, guided by good intentions for individuals and humankind, and shaped by traditions of thought about a particular field of practice, it immediately begins to affect the world in uncertain and indeterminate ways (Kemmis, 2008). Uncertainty is crucially important to the notion and significance of *prâxis* in organisations. In uncertain situations, it is not clear what the best means are to deal with the situation, nor, more importantly, is it clear what the appropriate ends are in the situation. Within such a means-ends context, *phrônêsis* is conceptually significant and consists of: -

‘a preparedness to understand a given situation in different ways, and not to accept immediately that the situation is what it appears to be; an openness to experience - simply to experiencing the world in new ways, by trying out a new way of being in the world; the readiness to act in uncertainty and to use and learn from experience’ (Kemmis, 2012, p. 155).

By comparison, *poiêsis* is the application of known means in pursuit of known ends, and a fit with the concept of profitable operations practice as adopted in this research.

Critically, Kuepers (2019, p. 340) suggests that ‘*prâxis*, practices, and practical wisdom (*phrônêsis*) inform, mediate and reinforce each other’. However, Kemmis (2008, p. 158) clarifies that it is ‘*prâxis* that allows *phrônêsis* to develop therefore *phrônêsis* follows *prâxis*, and not vice versa’. Moreover, a reintegration of *prâxis*, practices, actions, and practical wisdom could be a possible response to the constraining regimes of neoliberalization with its corporatization, commodification and privatization of public assets and domains, and also implies the opening up of new fields for capital accumulation (Kuepers, 2013). In summary, ‘changing or developing *prâxis* requires changing and developing the practice architectures within which particular practices occur’ (Kemmis and Smith, 2008, p. 10). The theoretical contribution of praxeology is itemised for each

stream in Table 2.4 below, and their combination provides an integrated perspective of the role of praxeology across the thesis.

**Table 2.4: Reframing organisations as praxeological systems**

<b>Stream</b>	<b>Theoretical contribution of praxeology</b>
One	Ethnographical research surfaced both extant praxeological inertia, and aspirational prâxis (re)framing strategies which exhibited a prâxis-frame duality. Findings indicated that prâxis provides the epistemological dimension, and prâxis maturity combined with the ontological (re)framing maturity dimension provides a novel onto-epistemological approach to organisational maturity. Analysis further identified that an organisation can be conceptualised as a relational onto-epistemology comprised of prâxis (re)framing virtuous circles, and connected structures of frames, and foundational and relational prâxes.
Two	The conceptualisation of prâxis-frame duality is further observed in a prâxis-element duality. Quantitative modelling of a set of initial organisational constructs identified capital factors consisting of patterns (configurations) of significant prâxis-elements. Thus, prâxis is proposed as a key conceptual building block of connected multi-capital organisations.
Three	The role of prâxis in organisations was elaborated as dynamically orchestrating the interactions and interfaces between capitals. Stream two's prâxis-element duality was reconceptualised as a dynamic prâxis-accumulator duality. Capital prâxis interactions conceptually form means-ends configurations that determine the organisation's capital operations and multi-capital value journeys.

### **2.3.5 Summary**

Extant profitable operations practice and its embedded scientific management principles embrace *téchnê* as a way of knowing, *poïêsis* as a way of reasoning, and represents a deterministic means-end scenario. Conversely, in this research context, prâxis (Freire, 1985; Nicolini, 2013; Rigg, 2014) represents purposeful actions enabled by a dynamic synthesis of theory and practice, and is an appropriate concept for the often-indeterminate means-ends scenarios that constitute the workings of a real organisation. For example, Unilever's corporate vision is "to make sustainable living commonplace", Standard Chartered's brand promise is 'Here for good, always', Apple's vision statement 'We



believe that we are on the face of the earth to make great products, and that's not changing'. Many internal organisational goals are similarly indeterminate such as being 'a trusted business partner', 'a good manager', and 'a great leader'. Moreover, literature surfaced significant relationships between practical wisdom (phronêsis), actions, practice and theory, and their synthesis as praxis. Consequently, this research proposes that the reintegration of epistemological concepts in praxeology with a more effective (re)framing ontological approach will generate original onto-epistemologically grounded organisations, and generate opportunities for further value realisation and optimisation.

## **2.4 (Re)framing organisations as multi-capital value systems**

### **2.4.1 Value ambiguity**

Framing of organisational value praxis is oversimplified around a creation and destruction value dualism, a linear value flow, and the notion of causal and value dead-ends.

Unsurprisingly, organisational value realisation focuses on financial capital and operational capabilities, exploits technical efficiency, and is primarily measured by post hoc lagging indicators. However, recent studies have suggested that standardised financial performance measurement indicators don't accurately reflect organisational value.

Presenting a compelling analysis that challenged the primacy of financial returns, Lev and Gu (2016) argue that intangible assets such as innovation, research and development, IPR; and people are the true determinants of organisational value. Moreover, they emphasise that identifying, maintaining and developing, and deploying these strategic resources is critical to organisational success. In essence, Lev and Gu (2016) suggest an economic theory of the firm that is grounded in resource-based theory (Wernerfelt, 1984).

A further fallacy of prescribing success around a profitable operations monologue was articulated by March and Simon (1958, cited in Sinha and Van de Ven, 2005, p. 400) 'the notion that conflicting selection pressures can somehow be aggregated into a single measure of performance is presumptuous, when in reality, organizations and the individuals in them juggle a host of conflicting expectations and assessments that create a payoff function too difficult to assess and optimize'. Russo and Harrison's (2005) studies on environmental emissions illustrated reverse causality, in that organization design components might be reactions to, rather than causes of, firms' performance, and thus generated further ambiguity on the drivers of organisational value. Research in a manufacturing context added to the confusion on what drives performance in that 'changes

in workers' actual activities had tiny effects, whereas the differences in the plant managers' expectations seemingly had much larger effects' (Dunbar and Starbuck, 2006, p. 174). Brunsson (1982a, p. 4) further elaborated that 'when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations.' Collectively, these insights 'illustrate how difficult it is to interpret empirical research results that attempt to link aligned organization design components to performance' (Dunbar and Starbuck, 2006, p. 174).

In line with the exploration of innovative multi-capital models, one praxis (re)framing perspective relevant to this study focuses on exploitation and exploration, and indeed the tension between them. Exploitation is the maximisation of payoff from existing knowledge (March, 1991; Martin, 2009), and as the 'administration of business creates reliability in the form of consistent, predictable outcomes' (Martin, 2009, p. 19). Exploration as the search for new knowledge, is the 'invention of business, and creates validity and outcomes that meet a desired objective' (Martin, 2009, p. 19). Companies are more comfortable with analysing and exploiting existing knowledge, rather than the 'uncertainty and randomness of intuitive thinking associated with exploration' (Martin, 2009, p. 19), March (1991, p. 71) adding that the 'relationship between exploitation and exploration is a source of tension, and thus a concern of organisations as adaptive systems'.

Identifying and managing the tension between exploration and exploitation is a critical challenge, therefore strategic renewal requires that organisations explore and learn new ways while concurrently exploiting what they have (Crossan, Lane, and White, 1999). In Crossan, Lane, and White's (1999) 4i framework of organisational learning (intuiting, interpreting, integrating, and institutionalising), feed forward relates to exploration, and feedback relates to exploitation. Feed forward is the transference of learning from individuals and groups through to the learning that becomes embedded or institutionalized in the form of systems, structures, strategies, and procedures (Hedberg, 1981; Shrivastava, 1983). Feedback relates to exploitation and to the way in which institutionalized learning affects individuals and groups. Expert intuition supports exploitation; while entrepreneurial intuition supports exploration, and generates new insights. Exploration (feed forward) and exploitation (feedback) are two attractor patterns both competing for

resources and creating an organisational tension as many existing resource allocation processes inhibit the development of new insights given their emphasis on a track record of proven success (Bower, 1970; Burgelman, 1983). This success paradox is a key source of organisational inertia. Relevant to this study, legacy profitable operations practice and its associated mental models are primarily exploitative while the diverse needs of modernity demand that organisations also explore multi-capital value, the latter, requiring (re)framing through injections of appropriate prâxis. Consequently, value (re)framing should embrace a praxeological ambidexterity leveraging both exploitation and exploration.

#### **2.4.2 Multi-capital fundamentals**

There is a rich tradition in French social science research of examining the relevance of capital within society, notably Foucault, Bourdieu, and de Certeau. These research frames tended to focus on the macro aspects of power in society. However, aspects of Bourdieu's research such as capital categories and the relationship between praxeology and capital is relevant to this study. Bourdieu's Theory of Social Action enlightens that 'it is through prâxis people produce, and reproduce their culture, social structure, and economic wealth' (Öztürk, 2005, p. 250). This framing of prâxis also surfaces and connects three of Bourdieu's forms of capital, namely cultural, social, and economic, the fourth capital being symbolic. A key building block of organisations, capital exists in many forms, Bourdieu (1986, p. 241) interpreting Marx, conceptualised capital as 'accumulated labour', however Bourdieu also informed that capital as 'a source, form of wealth, which produces power' (Öztürk, 2005, p. 254). In this context, capital can be conceptualised as the capacity to exercise control over one's own future and that of others (Bourdieu, 1986). Bourdieu (1986, p. 265) further elaborated -

'Capital can present itself in three fundamental guises: as economic capital, which is immediately and directly convertible into money and may be institutionalised in the form of property rights; as cultural capital, which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of educational qualifications; and as social capital, made up of social obligations ("connections"), which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility'.

Bourdieu also introduces symbolic capital ‘it can be seen that the exhibition of symbolic capital (which is always very expensive in economic terms) is one of the mechanisms which (no doubt universally) make capital go to capital’ Bourdieu (1977, p. 181). The different types of capital can be distinguished according to their reproducibility or, more precisely, according to how easily they are transmitted, i.e., with more or less loss and with more or less concealment; and the rate of loss and the degree of concealment tend to vary in inverse ratio (Bourdieu, 1986). Relevant to this research, Bourdieu has introduced the notion of dynamic capital transmission and conversion ‘but only at the cost of a more or less great effort...where profits in one area are necessarily paid for by costs in another’ (Bourdieu, 1986, p. 264). While this research’s specific goals and Bourdieu’s interests are not fully aligned, Bourdieu’s conceptualisation has surfaced significant considerations, namely: are there fundamental capital categories; how do multiple capitals dynamically interact; and how is organisational value determined by such multi-capital interactions.

The circular economy is one highly topical multi-capital concept that builds on the notions of regeneration, circularity, and interconnectedness. It encapsulates an economic model that is regenerative by design and ‘attempts to conceptualize the integration of economic activity and environmental wellbeing in a sustainable way’ (Murray et al, 2017, p. 369). Circular in this context means an economy that would: ‘turn goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste’ (Stahel, 2016, p. 435); and ‘replace the “end-of-life” concept with reducing, alternatively reusing, recycling and recovering materials in production / distribution and consumption processes’ (Kirchherr et al, 2017, p. 224). Humanity continues to ‘make, use, dispose’ (Stahel, 2016, p. 435) which explains why the world is only 9% circular (World Business Council for Sustainable Development, 2019) (WBCSD). While moving towards a circular economy should imply decoupling resource consumption from economic performance (WBCSD, 2019), Stahel (2016, p. 435) crucially informs of circular real-world synergies between resource optimisation and economic success ‘a study of seven European nations found that a shift to a circular economy would reduce each nation’s green-house-gas emissions by up to 70%, yet grow its workforce by about 4% — the ultimate low-carbon economy’. Therefore, the circular economy is in essence a connected multi-capital system, in which: human and natural resources are optimised; effective institutional, natural, and financial outcomes are created; employment through

meaningful work is generated; innovation (both social and digital) is a core capability; and reputation is a benefit for the contributors in such a model.

The circular economy (WBCSD, 2019, p. 6) is visualised in Figure 2.2 below, and synergetic with this research, the concepts of regeneration, circularity, multiple interconnected capitals, prâxis, and means-ends value journeys are evident: -

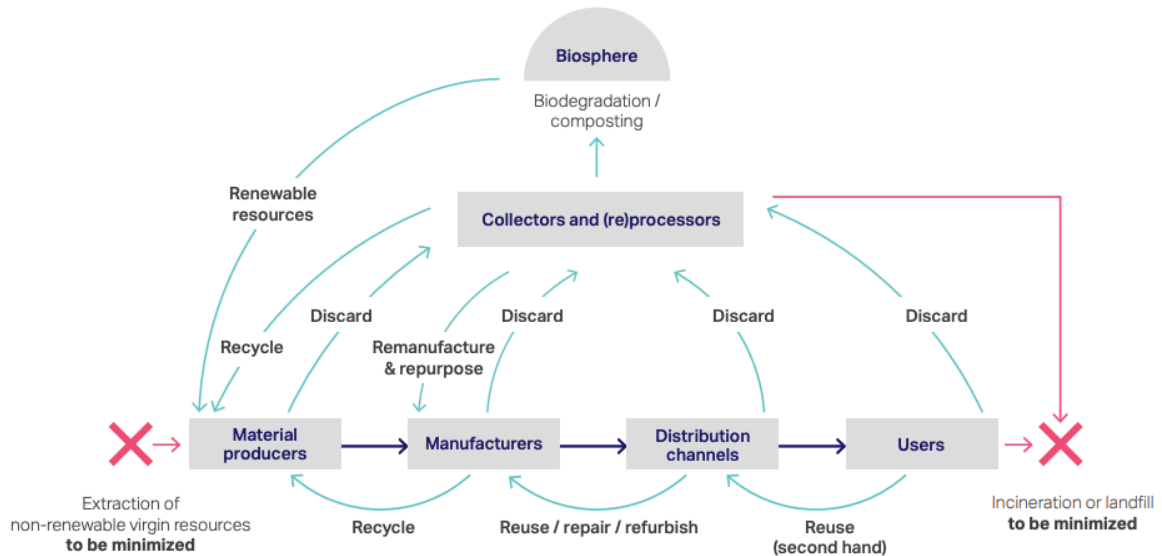


Figure 2.2: Circular economy (WBCSD, 2019, p. 6)

Another regenerative and circular system of capitals is the Good Dividends framework (Kempster, Maak, and Parry, 2019; Kempster and Jackson, 2021) in which each capital produces a good dividend. In the Good Dividends framework, reputational capital is associated with the value placed on the strength of the organisation’s brands in terms of product and service recognition and associated customer loyalty, and produces the brand dividend. Human capital offers a strong sense of employee skills and commitment in enabling the products and services of the organisation to fulfil customers’ needs, and produces the human resources dividend. Social capital reflects communities which have a sense of place and are enjoyable, rewarding and sustainable places to live and work, and produces the social innovation dividend. Natural capital demonstrates the validity of the organisation’s authentic engagement with tangible outcomes manifest in the world, and produces the planetary/community dividend. Institutional capital reflects ‘processual know-how’ that offers quality, timeliness and reliability to the offering through optimised

production techniques that minimise the use of resources, and produces the operational dividend. Finally, financial capital accumulated from the other capitals that enables reinvestment in the other good dividends – the notion of an integrated, circular and virtuous set of capitals centred on enhancing stakeholders’ value, and produces the financial dividend. The GDEA construct to good dividend mapping is summarised in Table 2.5 below.

**Table 2.5: GDEA construct to good dividend mapping**

<b>Construct</b>	<b>Good Dividend</b>
Human capital	Human resources
Social capital	Social innovation
Natural capital	Planetary/community
Institutional capital	Operational
Financial capital	Financial
Reputational capital	Brand
Responsible leadership (non-capital)	
Governance (non-capital)	

As discussed in section 1.4, Kempster, Maak, and Parry’s (2019) Good Dividends Evaluation Audit framework provided the initial multi-capital position for the research. Therefore, a diverse set of frameworks that incorporate multiple capitals were analysed to evaluate if the GDEA capitals were consistent with other industry and scholarly analyses. Applying epistemic relativism to the GDEA capitals described in the prior section yielded a comparative analysis of capital categories at play in various organisational systems as illustrated in in Table 2.6. Significant for this research, this comparison demonstrates a strong level of consistency across different frameworks, and provides confidence that the GDEA is a robust starting point for the examination of a multi-capital organisation.

**Table 2.6: Common capital categories within multi-capital frameworks**

<b>Capital</b>	Bourdieu (1986)	Kaplan & Norton (1996)	Roland (2011)	Lev & Gu (2016)	Adams et al (2017)	Kempster, Maak, & Parry (2019)
Economic	✓					
Financial		✓	✓	✓	✓	✓
Intellectual			✓		✓	
Innovation (digital)				✓		
Social (innovation)						✓
Experiential			✓		✓	
Learning & innovation		✓				
Human			✓	✓	✓	✓
Stakeholder / relationships				✓		
Social / relationships				✓		
Social	✓					
Cultural	✓		✓			
Purpose / spiritual			✓			
Natural			✓		✓	✓
Strategic resources				✓		
Operational		✓				
Institutional						✓
Manufactured / Manufacturing					✓	
Material			✓			
Reputational				✓		✓
Customers		✓				
Symbolic	✓					

Arguably, in extant organisational practice, maximising financial capital has primacy, enabled by the exploitation of operational capabilities, while this thesis seeks to demonstrate that exploring the potential of wider multi-capital connections surfaces additional opportunities for value realisation and optimisation.

### 2.4.3 Summary

The theoretical contribution of multi-capital value is itemised for each stream in Table 2.7 below. Most importantly, these complementary perspectives provide insights on how profitable operations practice can be (re)framed into dynamic multi-capital praxeological organisations, and ultimately form multi-capital value archetypes.

**Table 2.7: (Re)framing organisations as multi-capital value systems**

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<b>Stream</b>	<b>Theoretical contribution of multi-capital value</b>
One	Injection of multi-capital and digital innovation frames surfaced current and aspired mental models of organisational value. Routine and bounded organisational events can be (re)framed as pan-organisational value journeys, and provide empirically grounded challenges to the legacy success paradox. Crucially, the value frames of participant organisations formed a key conceptual building block for stream three’s value journeys and archetypes.
Two	Modelling confirmed the capitals, their prâxis-elements, and inter-capital connection that are significant to value generation, and thus advanced the suggestions of Bourdieu’s and other capital theories. Findings further confirmed how independent capital factors both directly and indirectly influence (through mediating capital factors) the dependent capital factors (reputational, institutional, and natural capital factors) as tangible value outcomes. Such connected structures support the theoretical hypothesis that multiple capitals interact to form an organisation.
Three	Findings from prior streams were conceptually (re)framed into a dynamic multi-capital organisation through the application of systems dynamics theory. Specifically, stream one’s empirical multi-capital value journeys and general value insights, and stream two’s connected multi-capital factor structures and value flows are further elaborated into an organisational design blueprint. These re-conceptualised patterns and structures in essence (re)connect causal and value dead-ends into multi-capital value journeys, and ultimately generalisable value archetypes.

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In summary, literature has highlighted a number of descriptive frameworks which conceptualise value dynamics around the key concepts of circularity, regeneration, and interconnectedness of multiple capitals. Lepak, Smith, and Taylor (2007, p. 192) clarify that it is ‘essential to understand not only how value is created, but also the consequences of value creation’. Literature also highlighted the importance of organisational dynamics such as the tension between exploitation and exploration, and feedback loops in realising value. These value dynamics illustrate a core tenet of this thesis, in that organisations exist to fulfil the diverse needs of the modern stakeholder community which demands exploring



and exploiting connected multi-capital value. Thus, this research proposes that there are no causal and value dead-ends, and the legacy value creation and destruction dualism is an over-simplification. Rather, by conceptualising that multi-capital needs and therefore value are systemically connected through dynamic capital prâxis interactions, organisations can ambidextrously leverage new value dynamics.

## **2.5 (Re)framing and (re)connecting systems and structures**

### **2.5.1 Connections as an organisational fundamental**

This research examines the praxeological multi-capital value interactions of an organisation as a connected system. Therefore, understanding the dynamics of connections within a system is critical to the success of this research. According to Blokland & Reiners (2020, p. 1) ‘a system consists of three kind of things: “elements”, “interconnections” and a “function” or “purpose”’. In a systems dynamics context, a system can be described as a set of things - people, cells, components, molecules, and so on, interconnected in such a way that they produce their own pattern of behaviour over time (Meadows, 2008). In addition to systems dynamics theory, the concept of connections in organisations pervades literature, for example: social systems as regularised patterns of interactions Giddens (1984); connections in feed forward and feedback loops (Crossan, Lane, and White, 1999); knowability and interactions in complexity theory (Snowden, 2002); interconnected attractor patterns (Morgan, 2006); and patterns of interlocked behaviour or nexi (Belbin, 2010). However, in a normal *modus operandi*, connections can appear to be static, and in this framing the dynamic connections of organisations may only be observed in tangible change events. Therefore, an often-unnoticed organisational dimension concerns the tension between static and dynamic forces, Senge (1994, p. 132) highlighting that ‘we do not notice what keeps things stable rather we notice dramatic growth or decline’. Dunbar and Starbuck (2006, p. 176). further inform that it is ‘theoretical assumptions rather than practical experiences that impose static perspectives on organization designs and that suggests to designers that their focus should be on aligning components, after which they can just sit back and wait for the desired results to appear.’

Exploration was introduced in section 2.4.1 as the search for new knowledge and the invention of business, and Kurtz & Snowden (2003) elaborate that exploration is an opening up of possibilities by reducing or removing central control without a total

disruption of connections. Belbin (2010) also observed the common themes of exploration, connections, and attractors when measuring the performance of teams using a set of multi-capital outcomes, namely profitability, customer satisfaction ratings, and 360-degree evaluations. Interestingly, these outcomes are synergetic with the financial, reputational, and human capitals discussed in this research. Connections between team members were measured by looking at strong and sustained patterns of interlocked behaviour between team members called nexi. High performance teams displayed superior connections and interactions with one another. For high performance teams the number of nexi was 32, medium performance 22, and 18 for low performance. Teams in which participants fail to connect, expressing their 'self' view, advocating only their own position, and providing negative feedback, produce interactions in which nothing new is produced. High ratios of positivity to negativity, and strong connectivity between team members create flexible dynamics in which the gravitational pull of the thinking pattern changes, creating new ideas and enhanced performance levels. Kauffman's (1993) work on simulation of complex systems also evaluated how the number of connections between agents within a system determines its dynamics. Few connections between agents encourage repetitive patterns and thus, stability, while many connections introduce competing constraints and lead to instability. Significant to this research, literature suggests that connections are a key dimension of organisations, an important consideration in determining the balance between static and dynamic forces, and can influence performance and therefore organisational value.

### **2.5.2 Connecting organisations – systems dynamics theory**

One of the pivotal theories in understanding the dynamic connections, tensions, and indeed counterintuitive behaviour of organisations is systems dynamics theory. A core principle of systems dynamics theory, is that behaviour cannot be understood by examining components in isolation, rather, the system as a connected whole is more than the sum of the parts. Within that whole perspective the importance of micro-level perspectives also needs to be considered 'because a division as an organizational module can constitute a crucial source of architectural innovation but may hamper the discovery and realization of such, it is important to study organizational change from the perspective of a given module rather than only an aggregated system (Tushman 1977, Karim 2006)' (Albert, 2018, p. 890). Consequently, understanding the macro and micro structures, and indeed their

interaction is key. One of the pioneers of systems theory, Richmond (1994, p. 139), framed systems dynamics as ‘the art and science of making reliable inferences about the behaviour of systems by developing an increasingly deep understanding of their underlying structure.’ Broadly, a structure can be defined as an arrangement of, and relations between the parts or elements of something complex such as an organisation. Relevant to this research context, patterns and structures provide critical insights into the underlying connections at work in an organisation.

In order to understand observed and often bewildering organisational behaviours, Senge (2006) suggests we must first identify and then understand the systemic structures and their underlying mental models that cause such behaviours. However, a review of previous systems thinking work led to the identification of different views of ‘what a generic structure is and, hence, what transferability means’ (Lane and Smart, 1996, p. 87). A tentative working definition of generic structures was provided by Paich (1985, p. 127) as ‘dynamic feedback systems that support particular but widely applicable behavioural insights’. Similarly, Giddens conceptualises structure as a set of dynamic relations ‘to say that structure is a “virtual order” of transformative relations means that social systems, as reproduced social practices, do not have structures but rather exhibit “structural properties”’ (1984, p. 17). The significance of structure was epitomised by Forrester (1980, p. 18) in his seminal statement that ‘probably 20 basic structures would span 90% of the policy issues that most managers encounter’. Deming (1986) also concurred on the fundamental significance of structure elaborating that different people in the same structure will produce similar results, in essence the structure causes 85% of all problems, not the people.

In systems dynamics theory, recurrent patterns of structure are known as system archetypes which are a key modelling concept. System archetypes, according to Lane and Smart (1996, p. 100) are ‘recurrent patterns of structure which attempt to explain commonly occurring dysfunctional behaviours in complex dynamic systems.’ In systems dynamics theory, system archetypes are often visualised in causal loop diagrams constructed from combinations of: reinforcing or amplifying feedback loops that act as engines of rapid growth or decay; balancing or stabilising feedback loops that enforce a goal; and temporal delays or interruptions to the flow of influence that make the consequences of actions appear gradually and unconnected to events (Forrester, 1961;

Meadows, 1982; Senge, 1990; Kim, 1994; Lane, 1998; and Wolstenholme, 2004). As illustration, to explain most commonly observed patterns and structures of system behaviour, Senge et al. (1994, p. 150) identified ten generic systems archetypes, namely: 'Limits to Growth (Limits to Success); Shifting the Burden; Eroding Goals (Drifting goals); Escalation; Success to the Successful; Tragedy of the Commons; Fixes that Fail; Growth and Underinvestment; Accidental Adversaries; and Attractiveness Principle'. Significant to this research, causal loop diagrams represent how multiple capital factor feedback loops connect as dynamic structures, and provide plausible explanations of organisational phenomena which can be further generalised as archetypes. These systems dynamics tools thus provide novel and dynamic ways of reconceptualising organisations.

### **2.5.3 Finality theory and means-ends configurations**

In a multi-capital organisation, there will be both static connections and dynamically connected value journeys. The classic principle of causality is a somewhat static frame, and maintains that, similar initial conditions produce similar results, and consequently, that dissimilar results are due to dissimilar initial conditions. Conversely, finality theory addresses the 'epistemic uncertainties and hence modelling limitations of a system that displays myriad (ever evolving and dynamic) paths by analysing the different means-ends configurations' (Khatami et al., 2019, p. 8935). Literature surfaced numerous finality and associated means-ends configurations. Unifinality is a configuration, in which 'one goal is served by a single means' (Kruglanski et al., 2015, p. 72). Equifinality is where: a final state may be reached by any number of different developmental routes (Von Bertalanffy, 1968); a situation in which multiple plausible explanations exist for a single outcome (Williams et al., 2020); or one goal is served by multiple means (Kruglanski et al., 2015). The opposite principle, multifinality, suggests that similar initial conditions may lead to dissimilar end states. So, the process, rather than the initial conditions, is responsible for creating future states (Buckley, 1967). The multifinality configuration refers to a situation wherein 'a single means is seen as serving more than one goal, thus affording the attainment of several objectives via a single activity' (Kruglanski et al., 2015, p. 71). Though the multifinality configuration maximizes value (that accumulates across the different goals the multifinal means may attain), it may sacrifice the perceived instrumentality of each means because of a dilution effect, related to the number of links between the means and the goals. The basic premise of the dilution hypothesis is that

‘adding more goals to a single means renders this means subjectively less instrumental with regard to each individual goal, with highly distinctive goals amplifying the dilution effect, and less distinctive (or more similar) goals attenuating it’ (Zhang, Fishbach, and Kruglanski, 2007, p 398). Finally, the counterfinality configuration depicts a pattern of goals-means relations wherein ‘a means seen to serve a given focal goal is at the same time believed to undermine another goal’ (Kruglanski et al., 2015, p. 71). Relevant to this research, extant manufacturing organisations exhibits equifinality and counterfinality, ensuring the dominance of profitable operations practice and a zero-sum game value frame. This research’s conceptualisation of multi-capital organisations extends finality theory to demonstrate how capital prâxis connections form organisational value journeys. Specifically, the research elaborates on how different means-ends configurations interact and complement one another in such pan-organisation value journeys, and identifies the need for the concept of omnifinality. Omnifinality is a necessary conceptualisation where many to many capital connections display a multiple means to multiple ends configuration. This research discovered that means-ends dynamics is common to prâxis, finality, and framing theories, and connected these concepts through systems dynamics theory. The following sections now develop this novel conceptualisation of connected organisations.

#### **2.5.4 Leverage as a fundamental of connected non-linear systems**

The ‘butterfly effect’ was empirically detected in weather systems by Lorenz (1972), and often explained by the analogy where the impact of a butterfly flapping its wings on one side of the world has a significant impact on a weather pattern on the other side of the world. Modelling indicated that this effect is due to the systemic connections and accumulations of multiple small changes and that initial conditions are important in determining large changes in a later end state. El Sawy et al. (2010, p. 844) explain such phenomena in terms of ‘configurations that exhibit the property of nonlinearity in which small triggers can cause large effects’. A similar concept in systems dynamics, key leverage points, are ‘places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything Meadows’ (1999, p. 1). Therefore, initial conditions and triggers are synonymous with key leverage points (Meadows, 1999; 2008), Meadows also highlighting that such points are points of power, not intuitive, and are often used backwards worsening the problems under investigation. Furthermore, the highest leverage in a system is often in

a completely unexpected source (Senge, 1994). Significant for this research, in any connected multi-capital organisation there will be key leverage points which can determine initial conditions, and trigger ‘butterfly effects’ across the organisation with important ramifications for value realisation and optimisation.

The significance of leverage within a multi-capital context, was also exemplified by (Verity, 2012) who highlighted the power of social capital and innate social obligations. Simply asking someone to work in partnership towards a common goal (end) is a powerful intrinsic human motivator and proves more powerful than money. Once a social obligation is changed to a financial transaction, the moral contract is broken often with unintended negative consequences and irreversible momentum. For example, an organisation that wants to enforce deadlines often finds that the level of compliance actually reduces once punitive financial measures are introduced. Simply, the human psyche is happy to trade the (financial capital) loss, whereas the prior moral obligation (social and reputational capitals) was more fundamentally binding.

To evaluate what is actually going on in a connected system, Weinberg (2001) suggests three critical systems thinking questions, namely: why do I see what I see; why do things stay the same; why do things change. The 2008/9 financial crisis is a good illustration of the powerful dynamics in a systemically connected system, and Weinberg’s three critical systems thinking questions can surface why the global financial ecosystem was so severely impacted. In the era leading up to the crisis the financial system became considerably more complex as the ‘separation between hedge funds, mutual funds, insurance companies, banks, and broker/dealers blurred thanks to financial innovation and deregulation’ (Billio et al, 2012, p. 555). These complex organisational relations were an inevitable consequence of connecting digital infrastructure, competition, and economic growth, created much greater interdependence and systemic risk, and answer ‘why do I see what I see’ in terms of systemic complexity and interconnectedness. In a standard economic cycle which exhibits expected levels of variation, effective risk management practice and prudent regulatory governance would be sufficient to maintain stability. In essence, governance acts as a balancing loop, ensuring that within the system ‘things stay the same’. However, at the time of the great financial crisis, the level of systemic interconnectedness (reinforcing loop) had reached a critical level. This systemic level of interconnectedness between hedge funds, banks, brokers, and insurance companies, was

analysed by Billio et al. (2012, p. 547) and illustrated in Figure 2.3 below. The type of institution causing the relationship is colour coded as: green for broker/dealers, red for hedge funds, black for insurers, and blue for banks.

As the same feedback loops and dynamics apply to both the financial capital requirements and risk management practice (balancing loops) of banks and insurance companies, this reinforcing synergy may amplify aggregate fluctuations. As witnessed during the financial crisis, if the riskiness of assets held by one bank increases due to heightened market volatility, and all banks engage in concurrent liquidations, a devastating positive feedback loop may be unintentionally generated. Such a reinforcing loop explains ‘why do things change’, and in this case resulted in an ever-accelerating and systemic destruction of value in the financial system.

Jan2006 — Dec2008

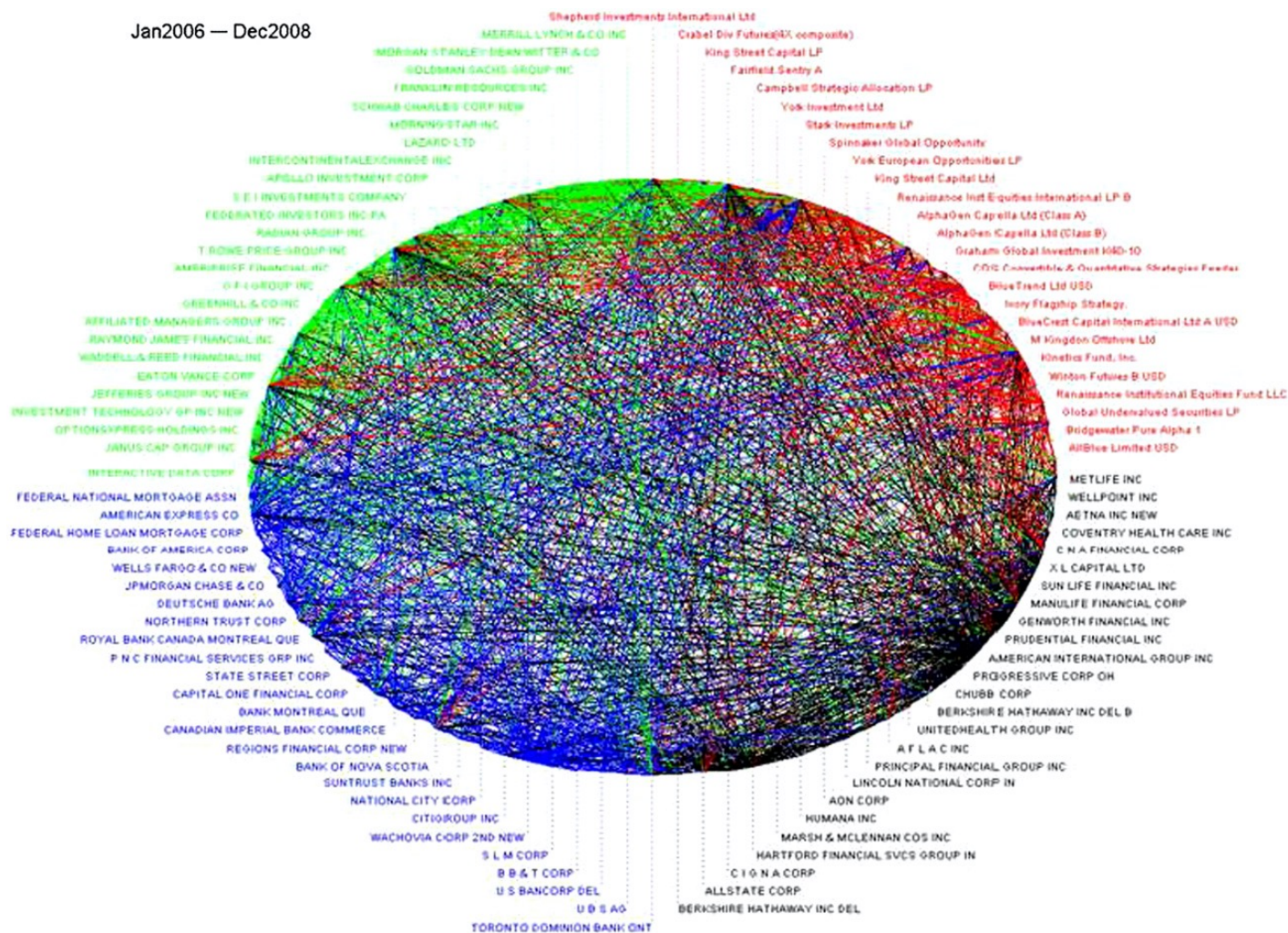


Figure 2.3: Financial system interconnectedness (From Jan 2006 to Dec 2008) (Billio et al., 2012, p. 547)



Another commonly used analogy used to conceptualise a connected system in systems dynamics theory is the iceberg model. Hall's (1976) cultural iceberg model suggests that the visible part (above the water) are the behaviours that we see, while the submerged aspect broadly represents beliefs, values, and thought patterns which underpin the visible behaviours. In systems dynamics theory, the iceberg model was further developed as a set of four sequential layers (Senge, 1990; Maani & Cavana, 2007), starting at the top with seen events; then through unseen patterns, structures, and at the bottom mental models. Organisational layers get more intangible yet more influential from the visible top (events) to the submerged bottom (mental models). Consequently, greater leverage can be obtained at the lower levels. Senge (1990) suggests that the system events are what we see, and the patterns are a series of less noticed phenomena that when performed together interact to create events. The systemic structure of the iceberg represents how the system is organized, for example in terms of physical, social, and regulatory structures. The iceberg model suggests that it is the system structure which generates the patterns and events. At the base of the iceberg, the mental model level of the iceberg represents the assumptions, beliefs, and values that shape and perpetuate the system structures Senge (1990). Senge also emphasised that the mental models of individual stakeholders in the system are often different, and can conflict. The iceberg model of a connected system is visualised in Figure 2.4 below: -

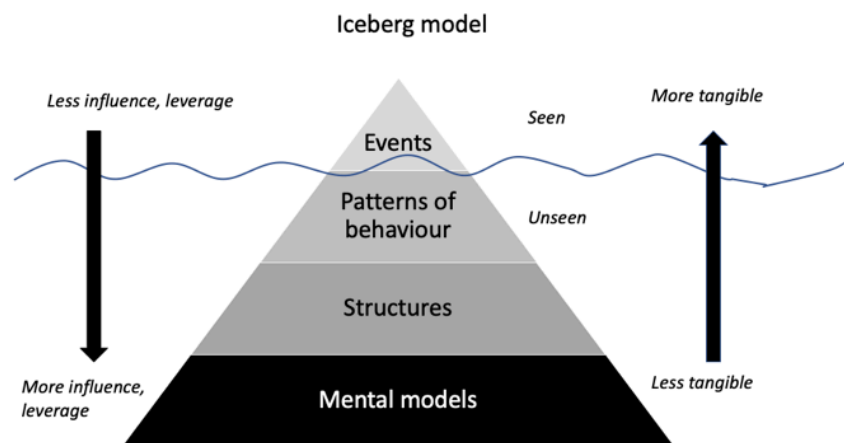


Figure 2.4: Systems iceberg (adapted from Senge, 1990; Maani & Cavana, 2007)

Organisational discourse increasingly argues that sports systems are complex in nature (Hulme et al., 2018b). As illustration of the significant theoretical and practical implications of the iceberg model, McLean et al.'s (2019) analysis of the recurring issues

for coaching in Australian soccer is presented. This analysis identified the elements of the overall Australian soccer coaching system, and how such elements are connected together in a systems iceberg. The identified events, patterns, structures, and mental models are illustrated in Figure 2.5 below: -

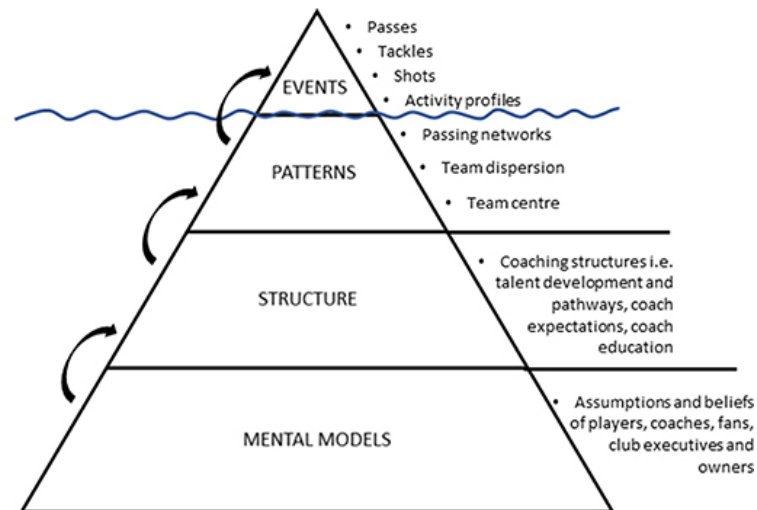


Figure 2.5: Coaching elements in Australian soccer (McLean et al, 2019, p. 2)

The iceberg model can provide further generalisable insights by mapping the iceberg model layers and the concept of key leverage points introduced earlier in sections 2.2 and 2.5. Meadows (2008, p. 194) suggests 12 key points of intervention, and Table 2.8 lists these key leverage points ordered in increasing degree of effectiveness, that is, 1 is the most effective, and 12 is the least effective: -

**Table 2.8: Key leverage points (Meadows (2008, p. 194))**

#	Key leverage point
12	Constants, parameters, numbers (such as subsidies, taxes, standards).
11	The sizes of buffers and other stabilizing stocks, relative to their flows.
10	The structure of material stocks and flows (such as transport networks, population age structures).
9	The lengths of delays, relative to the rate of system change.
8	The strength of negative feedback loops, relative to the impacts they are trying to correct against.
7	The gain around driving positive feedback loops.
6	The structure of information flows (who does and does not have access to information).
5	The rules of the system (such as incentives, punishments, constraints).
4	The power to add, change, evolve, or self-organize system structure.
3	The goals of the system.
2	The mindset or paradigm out of which the system — its goals, structure, rules, delays, parameters — arises.
1	The power to transcend paradigms.

Mapping these points against the systems iceberg, the most effective points of intervention are observed in the lower, more abstract mental models' level of the iceberg model, and the least effective correlating with the tangible and measurable parameters of the visible events layer. However, Meadows (2008) urges caution in that: the order is not rigid; the higher the leverage the more inaccessible the point is likely to be and the more the system will resist it; and most importantly, it will not be evident the direction the leverage needs to be applied to create the necessary outcome. Thus, the iceberg model provides a simple and somewhat counterintuitive summary of a connected organisation, where individual levels connect with, and influence other levels. The research will later use this theoretical model as a means to visualise how streams' one, two, and three combine and contribute to the research area of interest.

### 2.5.5 Summary

Systems dynamics literature has surfaced events and elements, patterns (configurations) of elements, structures, and underlying mental models as the building blocks of organisational systems. Such foundations ultimately connect and intersect to form an organisational whole which is comprised of micro and macro structures, and indeed their interaction. The theoretical contribution of organisations as dynamically connected systems is itemised for each stream in Table 2.9 below, and their combination provides an integrated perspective of such interactions and connections across the entire thesis.

**Table 2.9: Reframing organisations as connected systems**

<b>Stream</b>	<b>Theoretical contribution of connections</b>
One	Analysis suggests that prâxis (re)framing strategies form a connected meta level journey: framing - (re)framing context - reframing journey. At the micro level, prâxis (re)framing enacts within structures that dynamically connect practice-prâxis-framing-reframing as virtuous circles. These micro building blocks further connect to form relational organisational prâxis (re)framing onto-epistemologies at differing levels of abstraction. As illustration, in the prâxis (re)framing strategy that addresses digital maturity, digitisation (data), digitalisation (process), and digital transformation (organisational model) are both constituted from, and connect together using common virtuous circle building blocks.
Two	Empirical measurement analysis quantified the systemic connections between capital factors. Findings highlighted that each capital factor consisted of a connected pattern of significant elements (configuration). This modelling also identified the nature, strength, and direction of inter-capital connections, thus conceptualising the structure of a multi-capital organisation.
Three	The empirically derived findings from streams one and two, qualitative prâxis (re)framing insights and confirmed capitals respectively, were elaborated into a connected system of dynamic capital prâxis interactions. These connections were further conceptualised as pan-organisational means-ends (finality) value journeys which orchestrated the pan-organisational capital prâxis operations.

Critical to this research, these complementary perspectives highlight the systemic level of capital connections within an organisation that continuously and dynamically interact.

## **2.6 Thematic summary of the theoretical perspectives**

This research examines how organisations can be (re)framed from exploitative profitable operations practice and (re)connected as praxeological multi-capital value systems. In so doing the study seeks to produce theory on new onto-epistemological forms of organisation, this goal achieved through an original set of iterative and complementary organisational models. The modelling journey broadly conceptualises the (re)framing strategies of manufacturing medium enterprises, surfaces their current and aspired value states, quantifies connected structures of capital factors and their significant praxis-elements, and evolves these structures with prescribed causal start and end points to a dynamic system of interactive capital factor feedback loops. Many theories relevant to this research scope, have focused on problem solving and analogue research contexts. Furthermore, theory is often bounded within mono-disciplines, which can overlook multi-discipline themes and novel theoretical intersections. Conversely, this research focuses on the positive value realisation and optimisation opportunities of (re)connecting organisations around multi-capital needs, and seeks ways of applying multi-disciplines in generating novel insights. Four thematic-level theoretical perspectives are now presented which clarify the conceptual advances originated in this research, and complement the prior stream-based perspectives.

### **2.6.1 Organisation as an onto-epistemology duality**

While praxeology theory and its core concept praxis have been significant since the Greek philosophy era, contemporary praxeological studies have focused more on ‘routinized practice’ (Reckwitz, 2002), the practice turn, and innumerable as-practice studies. Organisational studies such as Sinha and Van de Ven (2005) have specifically highlighted praxeological dichotomies on how practioners and scholars interpret empirical organisational domains. In a manufacturing context, profitable operations practice is enabled by téchnê and poiēsis, while phrónēsis and praxis are essential to meet the ever-diversifying multi-capital needs of modernity. Kuepers (2013) advised that the reintegration of praxis, practices, actions, and practical wisdom (phrónēsis) could be a possible response to the constraining regimes of neoliberalization. In a strategy context, Golsorkhi (2010) further informed that strategies are typically improvised and

reinterpreted in particular moments of prâxis. In essence, they are shaped by retrospective reframing rather than being outcomes of prescribed corporate practice, which implies a strategic connection between prâxis and (re)framing. This research extends such perspectives by proposing the reintegration of epistemological concepts from praxeology with ontological (re)framing concepts. In summary, this research develops a novel onto-epistemological perspective of an organisation through a prâxis and (re)framing duality, and exemplifies its contribution in a value realisation and optimisation context.

### **2.6.2 Means-ends dynamics as a common multi-theory utility**

Examination of extant literature identified that means-ends dynamics are a common building block of praxeology, finality, and framing theories. From a praxeology perspective, Aristotle highlighted the significance of ‘the relationships between starting points, means and ends for the three ways of knowing and forms of wisdom, namely episteme, phrônêsis, and téchnê’ (Eikeland, 2014, p. 654). Aristotle further elaborated that, téchnê produces poïêsis in which the relationship between means and ends is external and when the end is achieved, both activities stop. Conversely, phrônêsis produces prâxis which ‘carries its end within itself, and the end of prâxis is not a separate external product as in poïêsis but rather excellent prâxis, or *eupraxia*’ (Eikeland, 2014, p. 655). Justice is an example of a virtuous prâxis and prâxis is not just an aspect of justice, in other words justice is not a mere means for something else, it is also an end (Eikeland, 2014). In this research, meaningful work is an example of a concept that is both a means and an end in itself.

A review of finality literature yielded multiple means-ends configurations, namely unifinality, equifinality, multifinality, and counterfinality (Buckley, 1967; Von Bertalanffy, 1968; Kruglanski et al., 2015; Zhang, Fishbach, and Kruglanski, 2007). This research proposes that profitable operations practice exhibits equifinality and counterfinality behaviour, ensuring the dominance of a zero-sum value game. Such a perspective mitigates organisational uncertainty through a prescriptive means-ends configuration. Similarly, Kaplan’s (2008) research suggests that framing is not a set of symbolic actions distinct from substantive outcomes, but instead a process by which these outcomes are constructed in virtuous circles. In essence, framing is a dynamic way to construct means-ends configurations.

Rather than evaluate means-ends dynamics as separate phenomena within bounded disciplines, this research positions it as a theoretical utility and conceptual building block of multi-capital organisations. In addition, the interaction of multiple capitals will create a scenario in which many means enact with many ends in an organisation necessitating the concept of omnifinality.

### **2.6.3 Connecting capitals also connects pan-organisational value**

There is considerable ambiguity on the drivers of organisational value and performance (Dunbar and Starbuck, 2006; Brunsson, 1982a). Section 2.4 for example, challenged the primacy of financial capital and its legacy measures (Lev and Gu, 2016). Such ambiguity is symptomatic of the influence of profitable operations practice and artificially created dualisms. Conversely, systems dynamics theory clarifies that the system as a connected whole is more than the sum of the parts, and Albert (2018) elaborates that individual micro-level perspectives are equally important. This suggests that organizations should be studied from both the micro perspective of individual capitals, and a connected macro multi-capital system.

This research resolves such a granularity conundrum by proposing that an organisation is a system of multiple capitals, each capital comprising a configuration of praxis-elements, and connected by a set of dynamic praxeological interactions. In this sense, capitals are connected within an organisational whole, yet, capital factors retain their purpose and identity, and are in essence sub-patterns of the overall organisational configuration.

In practice, systems dynamic theory is often enacted through a problem-solving frame that focuses on understanding and mitigating value destroying behaviours. Empirical findings from such studies were conceptualised into systems archetypes as ‘recurrent patterns of structure’ (Lane and Smart, 1996, p. 100). This study’s unique lens elaborates systems archetypes as value archetypes which take a more positive value realisation and optimisation frame. Value archetypes as connected multi-capital systems would mitigate the value creation and destruction dualism and causal and value dead-ends, yet acknowledge the praxeological necessity of an exploration and exploitation ambidexterity. Similar to the process of identifying systems archetypes, value archetypes are grounded in

empirical foundations from participant organisations such as significant events and mental models, multi-capital self-assessments, and identified (re)framing priorities. Therefore, a key conceptualisation of this research is that connected capitals form the basis of pan-organisational value journeys, and ultimately generalisable value archetypes.

The concept of means-ends dynamics identified in section 2.6.2 as a theoretical utility surfaces an interesting organisational consideration regarding the relationship between means-ends configurations and value. Bourdieu (1986, p. 253) abstracted the principle of the conservation of mass energy (Einstein and Lawson, 1921) to capital interactions and suggested a zero-sum value game applies ‘profits in one area are necessarily paid for by costs in another’. However, this research is grounded in organisations that are open systems where prâxis, capitals, and thus value, are dynamically and bilaterally exchanged with external stakeholder communities. Consequently, this research argues that the constraint of a zero-sum value game is mitigated by these significant exogenous connections, yet makes the role of connections and key leverage points more complex and fundamental.

#### **2.6.4 Connections as differentiating fundamentals in dynamic systems**

This thesis seeks to examine an organisation as a connected value system, and specifically to understand the detailed characteristics of such connections, their theoretical underpinnings, and practical implications. The circular economy is one highly topical example of a connected multi-capital value system, however most studies conceptualise it descriptively. Consequently, while there have been many theoretical and indeed practical studies of connected multi-capital value systems, this research suggests that an integrated qualitative and quantitative representation is needed, and indeed an empirically grounded and theoretically informed design methodology.

Core to systems dynamics theory is the concept of feedback loops. Governance, for example, in a profitable operations practice paradigm is most likely operationalised as a control function, a balancing feedback loop that maintains stability and compliance with policy and operating practice. However, governance can be reframed as a reinforcing feedback loop that performs a directional role to do the right thing, and ensures that strategy and policy are connected with execution.



Prior studies on connections and interactions in various organisational contexts (Kauffman, 1993; Belbin, 2010; Zhang, Fishbach, and Kruglanski, 2007) have been somewhat conflicting on the optimal level of connections. One perspective suggests that too many connections introduces destructive competition. An alternative view proposes that a higher level of connections and interactions is a feature of high performing organisational teams. Thus, a key imponderable of this study is how connections can optimise an organisation's value dynamics.

The 2008/9 Financial Crisis further evidenced the enormous impact of interactive reinforcing and balancing feedback loops within a dynamically connected system. Moreover, wide studies have indicated that static and dynamic connections are a fundamental consideration for organisations. Consequently, this research examines if connections constitute a new strategic resource class which differentiates organisations, and thus extends the existing resource-based theory (Wernerfelt, 1984).

### **Chapter Three – Research design and methodology**

Multiple capitals, prâxes, connections, and the notion of circulatory and regenerative value, can be used to (re)frame and (re)connect future generations of organisations. To achieve this (re)framing, the research investigates the notion of connected multi-capital organisations, specifically: what are organisational multi-capital (re)framing priorities; how configurations of significant prâxis-elements form capital factors; which capital factors are significant for organisations; how capital factors connect as patterns and structures in the form of feedback loops; and how foundational capital prâxis structures form pan-organisational value journeys, and ultimately value archetypes. To answer these broad questions a mixed methods approach was utilised to collect and analyse both rich qualitative insights and quantitative pan-organisational survey responses. Qualitative data was ethnographically sourced from a diverse set of formal and informal participant-researcher touchpoints. Quantitative data was sourced in survey mode from the GDEA (Kempster, Maak, and Parry, 2019) which contained an initial set of eight constructs and 40 elements of interest.

In the context of this data collection, the research area of interest, and guiding questions are re-iterated in Figure 3.1 below: -

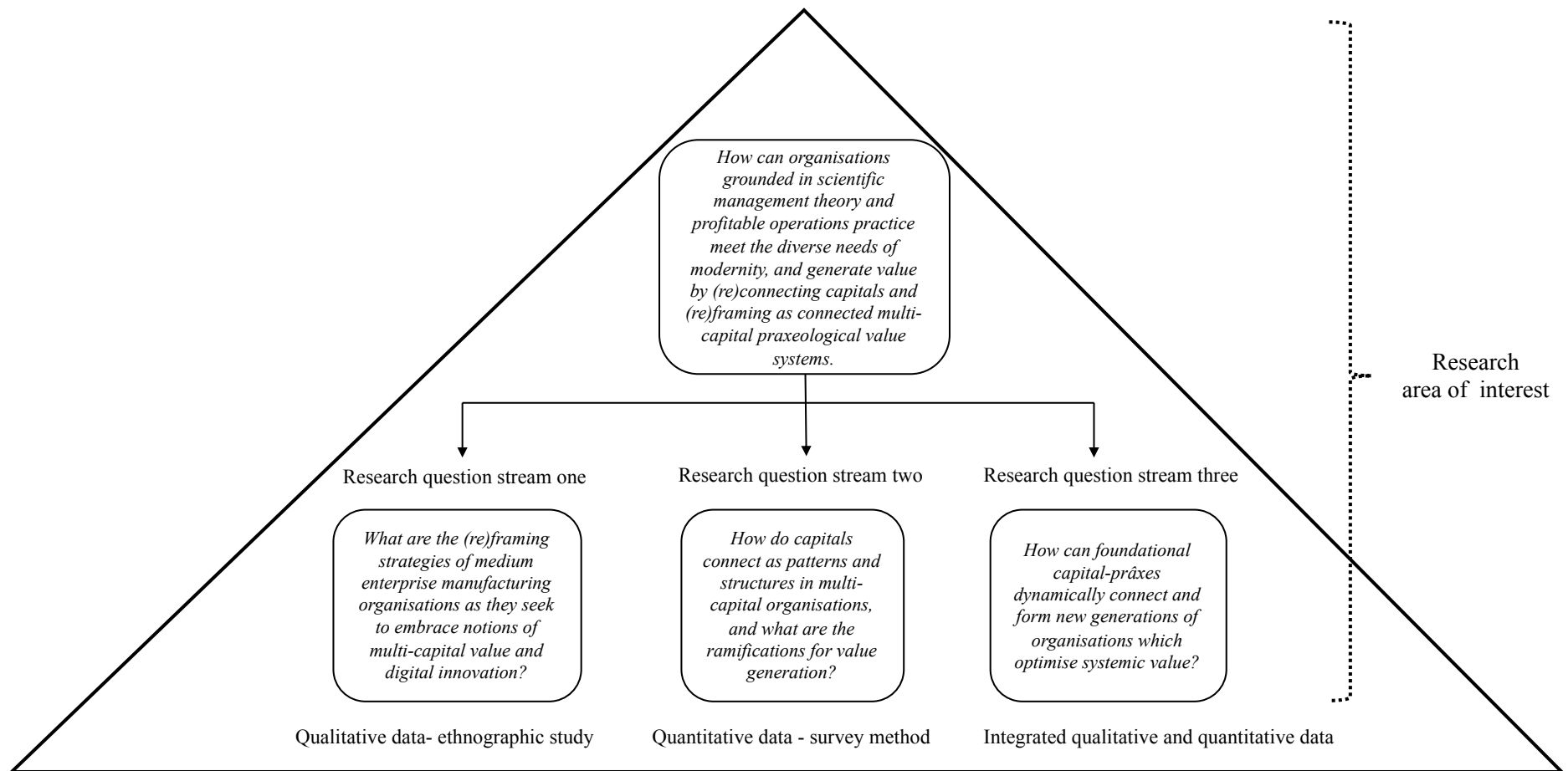


Figure 3.1: Research area of interest and related questions

This chapter presents the integrated methodological approach for the research (previously illustrated in Figure 2.1), which comprised two data collection, and three analysis streams within the overarching MSLP longitudinal case study. The research's setting supported a mixed methods approach, therefore the study leveraged both qualitative and quantitative methods which were combined in a third sense-making systems dynamics modelling stream. This chapter also examines the approach to theory production in each stream, namely theory generation, theory testing, and theory elaboration. Each of the three aforementioned theory production approaches has an associated way of reasoning and analysis method, namely: induction and grounded theory analysis (qualitative); deduction and structured equation modelling (quantitative); and abduction and systems dynamics modelling (qualitative). Bond and Fox (2001, p. 9) inform the limitations of discrete quantitative and qualitative measurement as 'admittedly, the summary of any complex human behaviour in exclusively quantitative terms makes the reductionism obvious to all but the hardened empiricist. The written summary of the same act in several sentences, or even paragraphs, also misses the mark in similar but perhaps less obvious ways'. Thus, the rationale behind a mixed methods approach is to: mitigate methodological reductionism; improve quality by leveraging complementary perspectives; and reduce researcher and methodological biases. Furthermore, Corley & Gioia (2004, p. 20) informed that:

'Adhering to some misguided sense that the protocol must be standardised so that there is consistency over the course of the project is one of the reasons why traditional research sometimes is not very good at uncovering new concepts to develop. Advances in knowledge that are too strongly rooted in what we already know delimit what we can know.'

Consequently, leveraging multiple methods will increase the likelihood of generating original knowledge through multiple ways of theory production. The epistemological and ontological implications of mixed methods research, and its strengths and limitations with respect to traditional mono-method knowledge production are also discussed. Finally, the research design components are presented as an integrated approach, together with the quality framework which governs the overall research lifecycle.

### 3.1 Overview of research design

This research's investigation followed a longitudinal case study which spanned the overall two-year MSLP programme lifecycle. The programme contained three cohorts of manufacturing medium enterprise organisations, each cohort supplying qualitative ethnographic data and quantitative data collected from the GDEA survey. Case study research is about making informed and justified choices, not rule following, (Ketokivi & Choi, 2014, p. 233) arguing that 'while a number of prescriptive guidelines can be formulated, case research is ultimately not formulaic'. However, case studies often 'lack details in how the study is framed and how the analysis is conducted (thus compromising) the basic scientific mode of inquiry that would call for' (Barratt, Choi, and Li, 2011, p. 339). Furthermore, the 'inability to see, and failure to acknowledge the implicit conceptual and theoretical dispositions is one of the most common pitfalls of case research' (Ketokivi & Choi, 2014, p. 237). To mitigate such pitfalls, the research comprises three different yet complementary methodological streams, each with an approach to theory production within case study research, namely theory generation, theory testing, and theory elaboration. All three seek formulation of theoretical insights that can be understood as 'the outcome of the interaction between a general theory that the extant literature offers and the empirical context at hand' (Ketokivi & Choi, 2014, p. 233). The three approaches differ chiefly in the relative emphases given to theory and empirics, and are illustrated in Figure 3.2 below, in which the arrow thickness denotes degree of emphasis: -

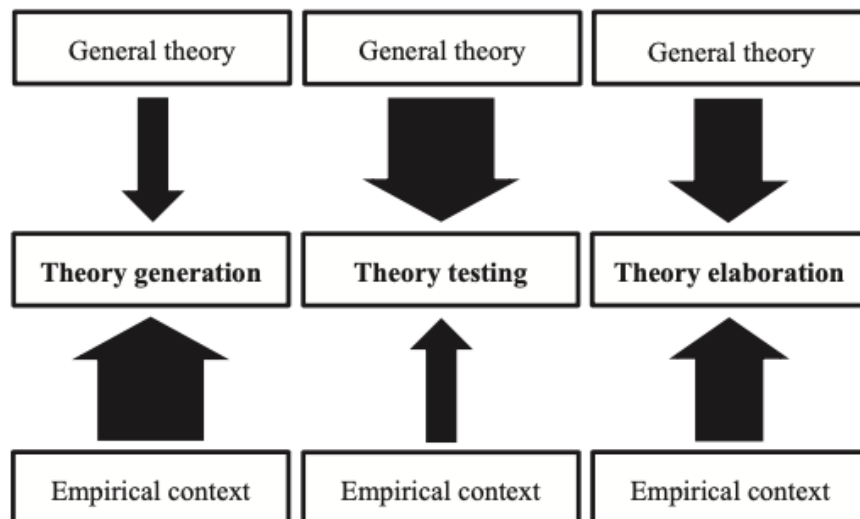


Figure 3.2: Three modes of conducting case research (Ketokivi & Choi, 2014, p. 233)

### **3.1.1 Data collection**

MSLP provided the data collection vehicle, and primary data was sourced from 37 manufacturing medium enterprise organisations containing 37 delegate participants, and 170 additional contributors across the participating organisations. Participant organisations are geographically spread across North West England, represent multiple sub-sectors within the manufacturing segment, and comprise a wide diversity of SME organisational culture including mature medium enterprises, organisations of entrepreneurial origin, and businesses which are family owned and governed. The average age of participants was 44.6 years, and their average number of years of experience was 8.9; while the average vintage of the organisations was 23.1 years, and the average number of employees was 43.5. Applicants and their organizations were selected based on criteria of being an established business (at least five years old), having a minimum number of employees (at least 25), and performing senior management roles as director/managers (having responsibility and capacity to influence change). Programme participants (organisational delegates) were directors and managers who had leadership responsibility for digitally enabling their organisations, while contributors represented diverse organisational roles, functions, and responsibility levels. Organisational demographic data consisted of industry sector code, turnover, vintage, and number of employees while demographic data on individuals captured age, gender, number of years of experience, role-in-survey (participant or contributor), function, and responsibility-level. To facilitate deeper analysis, additional indicators were added to the source data, namely: cohort number, Brexit status indicator, Covid-19 status indicator, and an actor-type for each of the 40 Good Dividends survey questions. The actor-type identified whether the question related to leaders, employees, the whole organisation, or customer perception.

### **3.1.2 Research streams**

The overall research comprised three streams, designed to provide a complementary and iterative (re)framing of multi-dimensional organisations. Prior to the MSLP residential induction, participants and five other colleagues (anonymously and confidentially) were asked to complete the Good Dividends Evaluation Audit (GDEA) which is based on Kempster, Maak, and Parry's (2019, p. 4) Good Dividends framework. The GDEA (Appendix A) posed five probing questions for each of eight initial constructs. While the GDEA is a Likert survey it served a dual purpose both as a measurement instrument on the

40 elements of interest, while also triggering deep reflection and discussion on the potential needs, challenges, and (re)framing priorities of participant organisations. The GDEA results were used in the immersive two-day induction workshop, and nudged participants to reflect on, and compare their personal perspectives with a representative sample of their organization's employees. In the context of the participants' (re)framing journeys a critical contribution was to stimulate pan-cohort dialogue, thus creating insights and comparatives on how participants' organizations actually function, their level of digital maturity, and the contemporary nature of business and value. The GDEA and the multi-capital dialogue it precipitated, provided an initial multi-capital frame which participants developed through the programme lifecycle, and thus facilitated the collection of stream one's deep rich qualitative data. The data collected from GDEA was further utilised in: stream two's quantitative structured equation modelling to surface the latent capital factors, their significant praxis-elements, and correlations and causal relations between capital factors; and stream three's systems dynamics modelling which produced a methodology to shape a dynamic and connected multi-capital organisational design.

**Stream one** ethnographically examined the sense-making journeys of SME directors-managers as they aspired to future proof their organisations through notions of multi-capital value and digital innovation. The ethnographic approach enabled the capture of participant data through in-situ observation, formal feedback channels, and informal engagement of the participants with their peers and the programme delivery team. Analysis of this qualitative data was conducted using grounded theory which broadly replicated Gioia, Corley, and Hamilton's (2012) method and deliverables. The analysis inductively generated: a static data ontology of first order concepts, second order themes, and third order aggregate dimensions; the dynamic relations between these data elements; and a set of theoretical propositions which provide insights for the design of organisations as connected praxeological multi-capital value systems. Further details are elaborated in sections 3.4.1, 3.5.1, and chapter four.

**Stream two** quantitatively analysed respondent scores from the GDEA. The instrument was constructed as a Likert survey which evaluated organisational praxes across eight constructs namely six capitals (financial, institutional, reputational, social (innovation), human, and natural), and two overarching constructs responsible leadership, and governance. Each of the above eight constructs contained five probing questions making

40 measurement items in total, and one of the five questions in each construct specifically assessed digital praxis. A balanced and objective review group comprising diverse faculty, programme delivery, and knowledge management perspectives completed multiple reviews of the draft survey, and thus ensured that the meaning of each question was unambiguous and made contextual sense for respondents. All GDEA items used a six-point measurement scale: 1 - Do not do this; 2 - Occasionally do this; 3 - Do this but do not measure the outcomes and infrequently take action; 4 - Do this, and have some measures (loosely linked to business objectives), and sometimes take action; 5 - Do this, have measures linked to business objectives and proactively pursue action; and 6 - As per (5) above and regularly undertake learning to continuously improve, and have evidence as being a highly respected responsible business. The advantage of using the above even-number of options, is that there is no neutral option as in a 1-5 scale, and the choices form a logical continuum. Each of the 40 measurement items represent a 'purposeful action', and the six-point measurement scale broadly incorporates the dual dimensions of frequency of execution, and quality of related action. Therefore, the collected data represents praxes, and arguably the measurement scale examines praxis maturity. Further details are elaborated in sections 3.4.2, 3.5.2, and chapter five.

The data (40 measurement items, demographic data, and analysis indicators) were quantitatively analysed through a sequence of: descriptive statistics; data quality, quantity, and fit-for-purpose assessments; exploratory factor analysis; confirmatory factor analysis; and multivariate regression analysis. The combination of confirmatory factor analysis and multivariate regression analysis is generally termed structured equation modelling. The exploratory analysis confirmed that the data was appropriate for full factor analysis. Subsequently, confirmatory factor analysis produced a validated measurement model (standardised correlations), and multivariate regression analysis produced a validated structural model (standardised causal estimates). Based on a set of theoretical hypotheses, the research examined the significant elements in, and relationships between the initial eight constructs as embodied in the Good Dividends framework (Kempster, Maak, and Parry, 2019), and confirmed the latent capital factors and their interconnections. This stream broadly concluded that: an organisation is a set of systemically connected capitals; such capitals are comprised of patterns (configurations) of significant praxis-elements; and that the connections between such capital factors can be quantified and are significant.



**Stream three** advanced understanding of multi-dimensional organisations through the complementary fusion of empirical ethnographic observations and quantitative measurements with sense-making systems dynamics theory. While systems theory shows significant potential in surfacing a connected organisational reality, Lane (1998, p. 936) cautioned ‘systems science is a heterogeneous and baroque collection of ideas which sometimes aspires to such abstract generality that it struggles to define its content at all’. To mitigate this risk, the research utilised the empirical foundations from streams’ one and two as the conceptual building blocks of stream three’s systems dynamics modelling.

This stream surfaced further empirical findings which were developed into a generalisable organisational design methodology utilising an iterative sensemaking approach. The methodology elaborates foundational inputs from the prâxis (re)framing, measurement, and structural models constructed during streams one and two, into a praxeological multi-capital value perspective of an organisation. The modelling method, and its primary output the organisational design blueprint are based on connecting core organisational fundamentals in the form of standardised correlations and causal estimates, with qualitative systems thinking concepts (capital factor feedback loops, their constituent prâxis-accumulators, and the dynamic interactions of such capital and accumulator structures). In this sense, the research investigates both the notion and flow of value across the organisation. However, contemporary organisational value is contingent upon meeting the needs of a diverse and connected community of stakeholders. In essence, value realisation, and indeed optimisation represent how successful an organisation is at orchestrating the interactions of its connected capitals. Further details are elaborated in sections 3.4.3, 3.5.3, and chapter six.

Thus, within the overarching MSLP case study, empirical insights provided robust and complementary foundations for the research’s theoretical conceptualisations and practical implications. The high-level structure and flow of the research is depicted in Figure 3.3 below: -

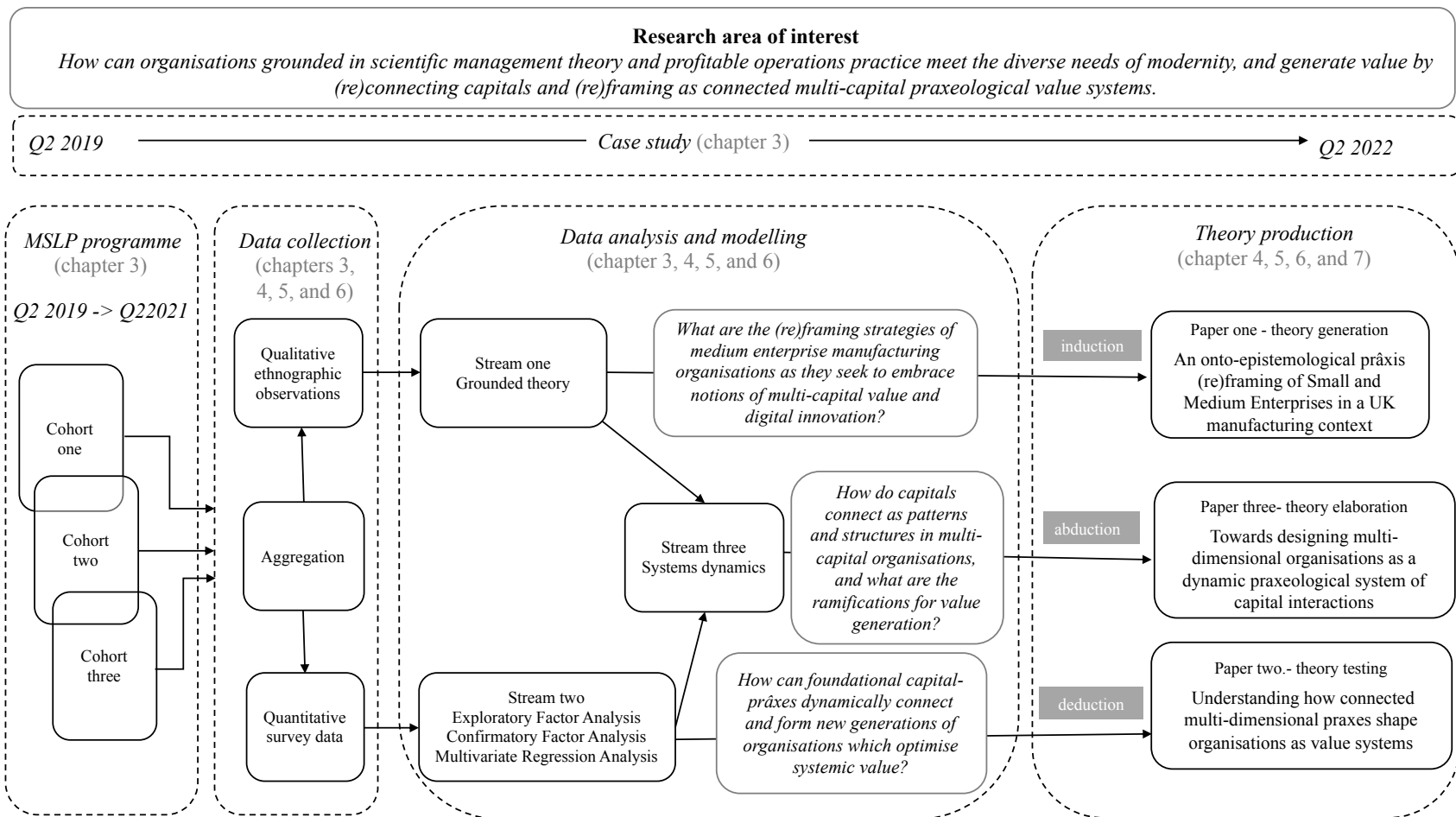


Figure 3.3: Structure and flow of the research

### **3.2 Research setting**

The World Bank (2015) highlighted that almost 90 percent of new jobs will require digital skills to some degree. These reframed roles will result in safer workplaces, with fewer accidents and less exposure to harsh environments, and lead to improved job satisfaction through the replacement of dull and repetitive tasks. Additional benefits will be realised by improving yield and quality through increased accuracy and repeatability, and lead to overall productivity improvements. As a result, the cost advantage of low-wage economies will be reduced and, when coupled with the ability to produce ever-more customised products, companies will be encouraged to re-shore activities and locate manufacturing closer to their primary markets (UK Government, 2017). Such a geodemographic shift will also have implications for the environment as transportation of both raw materials and finished products will be reduced in line with market and production locations.

The UK Government's (2017) industrialisation strategy Made Smarter emphasises that industrial digitalisation is a transformational opportunity for UK industry and the wider economy. To achieve this renaissance as a true nation of manufacturers, industry, academia, and government will need to work in partnership. Consequently, the UK government launched the Made Smarter Leadership Programme (MSLP) as a key component of the Made Smarter industrialisation strategy. MSLP is a university-led leadership development initiative for director/managers of manufacturing medium enterprise organisations who seek to future proof their businesses through notions of multi-capital value and digital innovation. MSLP exposed participant change leaders to impactful theory and practice delivered by faculty and leading industry practitioners, and the research broadly gathered two types of data. Firstly, ethnographic observations of participants were collected across a diverse set of touchpoints. These observations were sourced from formal and informal feedback, verbal and written sources, general ad-hoc programme engagement with peers and programme faculty, and specific deliverables such as individual Sprint Projects (Agile project deliveries). Secondly, quantitative survey data was sourced through the 40 GDEA measurement items and associated participant and organisational demographic data. The programme schedule for each cohort (approximately nine to ten months), and its constituent activities (residential induction, content-based modules and projects, exemplar digital site visits, and GDEA surveys) are depicted in Figure 3.4 below: -

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Made Smarter Leadership Programme structure

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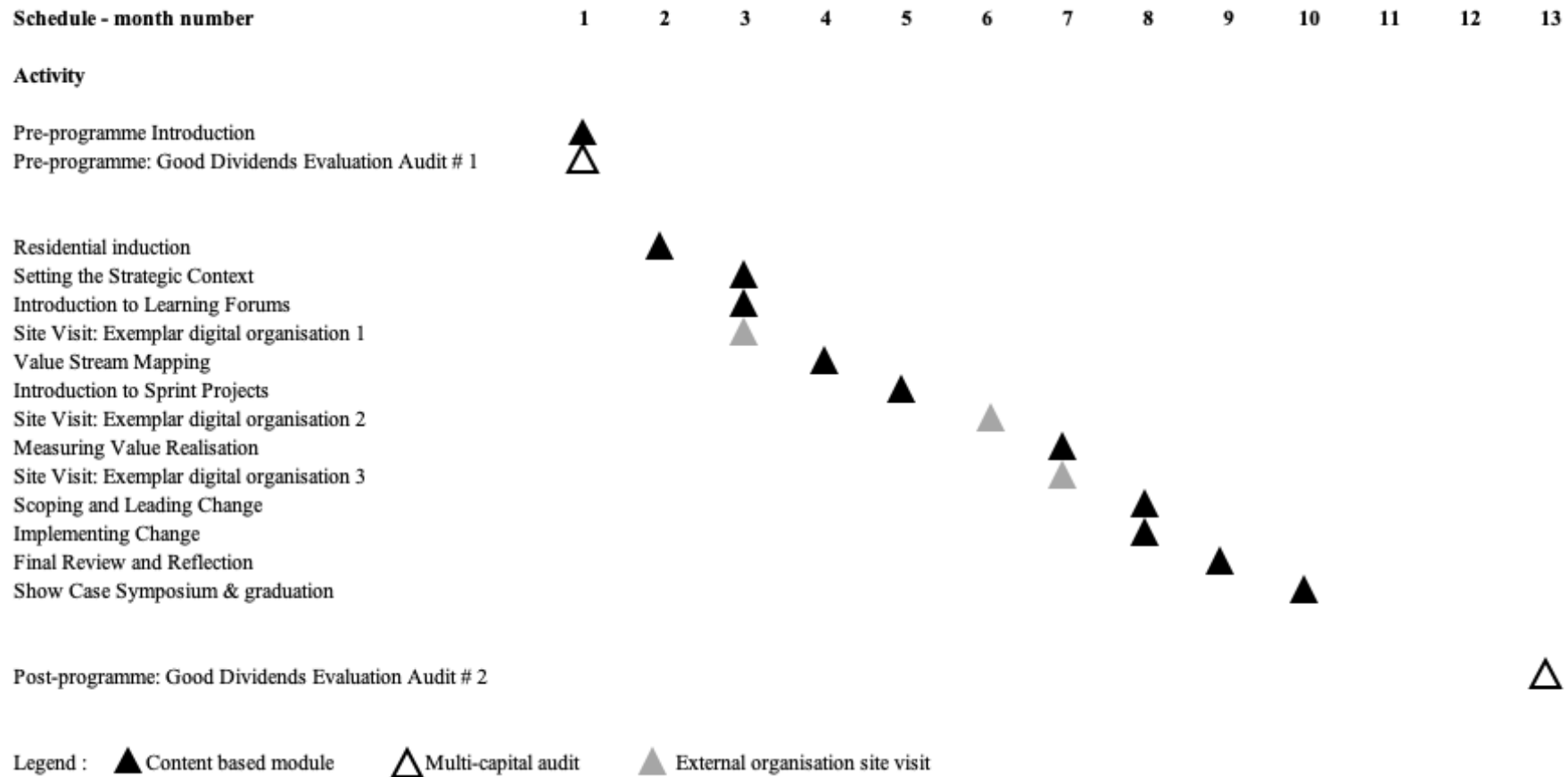


Figure 3.4: Made Smarter Leadership Programme schedule

### 3.3 Mixed methods research – An epistemological and ontological perspective

Guba and Lincoln (1994) suggested that questions of method are secondary to questions of paradigm, which they define as the basic belief system or worldview that guides the investigator, not only in choice of method but in ontologically and epistemologically fundamental ways. Of specific interest to this research context, western philosophy has shaped the disciplines of economics, management, and organisational theory, which in turn have affected managerial thinking about innovation and knowledge. Even within western epistemology there are two opposing yet complementary traditions, one is rationalism which says that knowledge can be obtained deductively by reasoning, and the other empiricism which says that knowledge can only be obtained inductively from particular sensory experiences (Nonaka and Takeuchi, 1995). This apparent dichotomy is most evident in the contrast between Plato and Aristotle, and with Descartes and Locke. At the heart of this partition lies the existence or not of a priori knowledge. A priori knowledge does not need to be justified by sensory experience, rather absolute truth is deduced from and grounded in axioms. Despite its long tenure as an item of debate there is general agreement in Western philosophy now that knowledge is ‘justified true belief’ (Nonaka and Takeuchi, 1995, p. 21). Descartes (1637) proposed general rules for rational thinking and also devised the method of doubt by which one could question all beliefs except the existence of the questioner, articulated in the famous maxim ‘I think, therefore I am’. Descartes’s epistemology argued that true knowledge about external things can be obtained by the mind, not by the senses. In Locke’s view things that existed in the real world are objective in nature. He compared the human mind to a *tabula rasa* which has no a priori ideas, and using this metaphor, he argued that only experience can provide the mind with ideas, and that there are two kinds of experience that is sensation and reflection (Nonaka and Takeuchi, 1995). Furthermore, in pragmatism an American philosophical tradition, James (1907) argued that if an idea works, it is true. Insofar as it makes a difference to life in terms of cash value, it is meaningful. Moreover, Dewey (1929) opposed the spectator theory of knowledge which separates theory and practice and knowledge and action, and maintained that ideas are worthless except as they pass into actions which rearrange and reconstruct in some way, be it little or large, the world in which we live.

Two common methods for actioning research in the world in which we live are qualitative and quantitative research. Qualitative research can be described as an approach that

‘examines concepts in terms of their meaning and interpretation in specific contexts of inquiry’, while ‘quantitative research examines concepts in terms of amount, intensity, or frequency’ (Ketokivi & Choi, 2014, p. 233). Qualitative research is often associated with new theory development, and quantitative research with theory testing. Consequently, quantitative research methods are usually deployed to address a specific hypothesis, while the more open-ended qualitative methods are designed to allow novel and unexpected findings to emerge (Bryman, 2012). For example, research on culture can utilise both approaches which represent ‘two rigorous, analytical, and empirical, but at the same time, profoundly different research approaches’ (Ketokivi & Choi, 2014, p. 234). Hofstede (1980) approached culture through quantifiable dimensions such as power distance or uncertainty avoidance. A key ingredient of his theory is the notion that different cultures exhibit different degrees of these quantities. Conversely, for qualitative researchers on culture, such as Geertz (1973) and other ethnographers, quantities, dimensionality, and measurement are irrelevant, rather understandable meaning is the key focus. To qualify as mixed methods, research should combine both qualitative and quantitative approaches within an integrated research design and not simply execute both sequentially, and present and discuss the findings separately.

Mixed methods research faces two key challenges, Bryman (2012, p. 629) informing that firstly, ‘research methods carry epistemological commitments, and both epistemological positions constitute irreconcilable views about how social reality should be studied’. Secondly, that ‘quantitative and qualitative research are separate paradigms in which epistemological assumptions, values, and methods are inextricably intertwined and are incompatible between paradigms as suggested by Guba (1985) and Morgan (1998b)’ (Bryman, 2012, p. 629). According to Bryman (1988a, p. 4), a paradigm is ‘a cluster of beliefs and dictates for scientists in a particular discipline what should be studied, how research should be done, and how results should be interpreted’. Disciplines in which ‘no paradigm has emerged as pre-eminent, such as the social sciences, are deemed pre-paradigmatic, in that they feature competing paradigms’ (Bryman, 2012, p. 630). While the epistemological position of mixed methods suggests an incompatibility between principles, the technical position suggests that the strengths of both data-collection and data-analysis techniques are capable of being fused. Harkness, Bruce, and Lumley (2006, p. 78) espouse that ‘the combination of methods helps to reduce biases and therefore improve understanding’. Lockyer (2006) further elaborates that the complex objects of

social scientific analysis, such as humour, require a variety of research tools to arrive at a comprehensive understanding. Important for this research, quantitative research tends to bring out a static picture of social life, while qualitative research is more processual. Two further considerations for mixed methods research are firstly, the priority, that is, is there a principal data-gathering tool or do they have equal weight? and secondly the sequence, does one method precede the other or are both methods concurrent? (Bryman, 2012).

A further perspective suggests that epistemological and ontological commitments may be associated with certain research methods—such as ‘between a natural science epistemology (in particular, positivism) and social survey research, or between an interpretivist epistemology (for example, phenomenology) and qualitative interviewing’ (Bryman, 2012, p. 614). Research methods often characterize the natural sciences as inherently positivist in orientation, however, Bryman (2012, p. 615) contests this position: ‘there is no agreement on the epistemological basis of the natural sciences; scientists describe their work practices differently to how they articulate them in articles (Gilbert and Mulkay, 1984); and we need to be circumspect about terms like positivist, as they are often used in a polemical way’. Furthermore, qualitative research frequently exhibits features that one would associate with a natural science model namely ‘empiricist overtones; a specific problem focus; hypothesis- and theory-testing; and realism’ (Bryman, 2012, pp. 615-616). In summary, epistemological and ontological commitments do not have a predetermined connection with specific research strategies.

A key distinction in research is often made between a focus on behaviour and a focus on meanings. Qualitative research would seem to have a monopoly of the ability to study meaning, while quantitative researchers frequently address behaviours. According to Bryman (2012, p. 617) ‘the widespread inclusion of questions about attitudes in social surveys suggests that quantitative researchers are interested in matters of meaning’. Furthermore, attitudinal questions in quantitative analysis may be better able to gain access to meaning, and therefore play a significant role in relation to a constructionist stance (Bryman, 2012). Ironically, many of the quantitative research techniques, most notably ‘questionnaires, have been shown to relate poorly to people’s actual behaviour’ (Bryman, 2012, p. 620), while qualitative research frequently, if not invariably, entails the examination of behaviour in context. Qualitative researchers often want to interpret people’s behaviour in terms of the norms, values, and culture of the group or community

in question. In other words, quantitative and qualitative researchers are typically interested in both what people do and what they think, but go about the investigation of these areas in different ways. Therefore, the ‘degree to which the behaviour versus meaning contrast coincides with quantitative and qualitative research, should not be overstated’ (Bryman, 2012, p. 620).

Framing quantitative research as solely an exercise in testing preformulated ideas that is true only up to a point, and fails to: recognize the creative work that goes into the analysis of quantitative data and into the interpretation of findings; and appreciate the degree to which findings frequently suggest new departures and theoretical contributions (Bryman, 2012). As Davis (1964, p. 232) suggests ‘there are so many questions which might be asked, so many correlations which can be run, so many ways in which the findings can be organized, and so few rules or precedents for making these choices that a thousand different studies could come out of the same data. Equally, qualitative research can be used in relation to the testing of theories.’ Silverman (1984, 1985) further clarified that some quantification of findings from qualitative research can often help to uncover the generality of the phenomena being described, and qualitative researchers often engage in quasi-quantification through the use of terms such as many, often, and some. Furthermore, qualitative research publications are often anecdotal, and risk that a particularly striking statement by someone may have more significance attached to it than might be warranted in terms of its frequency.

The insights in this section, and specifically the challenges to the extant qualitative and quantitative research dichotomy, encourage the use of mixed methods. Most importantly, they surface the imperfect assumptions in existing research mental models which impact the overall quality of research execution. The quality framework used to govern this mixed methods research is further discussed in section 3.7.

### **3.4 Theory production within case study research**

A case study empirically examines a phenomenon of interest in a real-world context. The essence of case research can be expressed as ‘the duality of being situationally grounded, but at the same time, seeking a sense of generality’ (Ketokivi and Choi, 2014, p. 234). As highlighted in Figure 3.2 previously, central to understanding this duality are the roles of theory, empirical analysis, and their balance. Being situationally grounded means, one remains empirically disciplined and considers contextual idiosyncrasies already in the



data. The question of generality is not whether the results generalize to other empirical contexts or to other observational units. The question is rather about ‘the extent to which a sense of generality can be found in terms of theory’ (Ketokivi and Choi, 2014, p. 234). Elaborating on Figure 3.2, Ketokivi & Choi (2014) created a decision tree for theory production as part of case research. Applying this decision tree to the research identified the theory production approach for each stream, and these relationships are highlighted in Figure 3.5 below: -

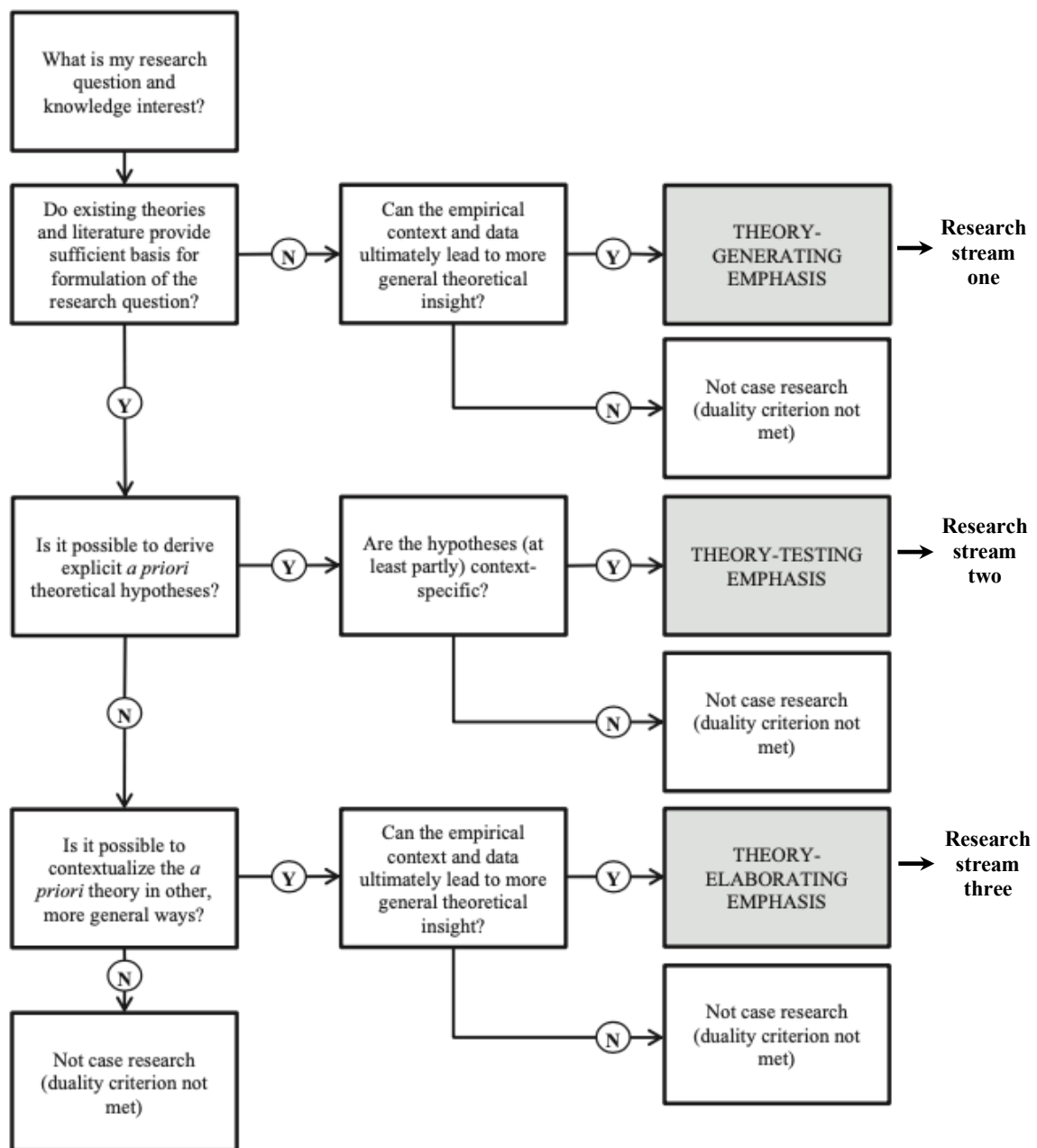


Figure 3.5: Case research decision tree (Ketokivi & Choi, 2014, p. 238)

### 3.4.1 Theory generation – induction

Case research that generates theory through empirical analysis according to Eisenhardt (1989) can be termed an inductive case study. This premise raises several questions: ‘how to determine whether theory exists? how often do researchers really face research situations where there is no applicable theory? is it possible to frame a research question without being at least somewhat theoretical?’ (Ketokivi and Choi, 2014, p. 234).

According to Martin and Eisenhardt (2010), the question in theory-generating case research is not whether a priori theories exist, the researcher’s concern is that when the research context is novel and unfamiliar, selecting an a priori theory through which the question is examined may create undue bias toward being theoretically conservative and directing attention to empirical observations that can be couched in the pre-selected theory. Therefore, the premise in theory-generating case research is that ‘in the context of the specific research question and empirical setting, explanation (theory) derives from exploration (analysis)’ (Ketokivi and Choi, 2014, p. 234). Ketokivi and Choi (2014) further inform that central to this reasoning is induction, more specifically: Bacon’s ([1620] 1901) method of eliminative induction; Mill’s ([1843] 1882) method of agreement and difference; and contemporary methodological contributions such as Glaser and Strauss’s (1967) formulation of grounded theory research. Such methods are all grounded in empirical observations.

Essential features of grounded theory’s theoretical insights are its contextual emergence and the idea that theory remains comparatively close to the data. The amount of abstraction remains comparatively low in comparison with the other two theory production approaches, testing and elaboration. This emergence gives primacy to empirical regularities obtained through observation and analysis of data. Establishing generality is less straightforward, because the theory-generation process hinges so fundamentally on situational groundedness. According to Glaser and Strauss (1967), the end result of grounded theory research is not to be taken as speculative, pending confirmation of the hypothetico-deductive test. The criterion of generality is thus not whether or not the grounded theory lends itself to future testing in other contexts. The ‘emergent grounded theory has already been tested by virtue of being grounded in empirical observation and analysis’ (Ketokivi and Choi, 2014, pp. 234-235).

From a contingency theory perspective, achieving both internal and external fit for a work system is a key consideration, particularly in situations with multiple conflicting environmental demands, internal design configuration trade-offs, and diverse performance expectations. In these situations, ‘it becomes difficult, if not impossible, to conceptually deduce or model a theoretical solution, and the empirical approach of discovering an inductive solution by observing a sample of work systems appears more feasible’ (Sinha and Van de Ven, 2005, p. 400).

### **3.4.2 Theory testing - deduction**

There is nothing in the fundamental idea of case research that prevents a researcher from putting a theory to a test. The ‘data is simply approached differently compared to theory generation, with more a priori theoretical discipline’ (Ketokivi and Choi, 2014, p. 235). The driving force in conventional theory testing is deduction, that is, explicit derivation of hypotheses from an a priori selected underlying theory. In theory-testing research, the general theory provides the basic logic for the propositions to be tested. In the context of case research, this ‘general logic is augmented (not challenged) by contextual considerations and ultimately tested using data from the empirical context’ (Ketokivi and Choi, 2014, p. 235). As illustration, Lane & Smart (1996, p. 103) examined the epistemological implications of a hypothesis ‘In one view, the “hypothesis” is a scientific theory to be tested and verified’. An alternative view, based on a proposal by Lane (1994a), is that the hypothesis is similar to Max Weber's ideal types. These may be viewed as thinking aids, drawn from real phenomena, with which a situation is compared in order to understand its significant components and so generate explanatory value. In either case, verification of the hypothesis proceeds by testing the various assumptions in the generic structure for their equivalents in the problem situation.

While the process of deriving propositions from theory is deductive, data analysis and drawing of empirical conclusions can exhibit inductive and abductive characteristics. In other words, theory-testing is driven by theoretical deduction, but not exclusively limited to it. For instance, if statistical inference is used, reasoning is enumerative (as opposed to eliminative) induction (Hawthorne, 2012). In theory-testing case research, the researcher explicitly contextualizes the general theory before subjecting it to an empirical test. Propositions thus become situationally grounded, because the theoretically essential features of the empirical context become part of the theory. In other words, ‘the

propositions come situationally grounded already in the theory stream of research’ (Ketokivi and Choi, 2014, p. 235).

### **3.4.3 Theory elaboration - abduction**

In this approach, the researcher does not seek to test logic, but rather, to elaborate it. While the researcher may be able to apply an existing general theory, it may be the case that the context is not known well enough to obtain sufficiently detailed premises that could be used in conjunction with the general theory to deduce testable hypotheses (Ketokivi and Choi, 2014). Also, the researcher may wish to explore the empirical context with more latitude and serendipity, therefore, empirical data is used not only to test a theory but also to challenge it. Theory elaborating case research also differs from theory generating case research in that ‘the researcher has identified a general theory that can be used to approach the empirical context’ (Ketokivi and Choi, 2014, p. 236). Whetten (1989) further informed that there are many ways in which theories can be elaborated: one can introduce new concepts, conduct an in-depth investigation of the relationships among concepts, or examine boundary conditions.

One can think of theory elaboration as disciplined iteration between general theory and the empirical data, and efforts at elaboration emphasize abductive reasoning (Niiniluoto, 1999; Peirce, 1878). In case research, abductive reasoning involves ‘modifying the logic of the general theory in order to reconcile it with contextual idiosyncrasies, and this approach stands in contrast with the more familiar iteration between emergent theory and empirical data in theory-generating case research’ (Ketokivi and Choi, 2014, p. 236). Theory elaboration seeks situational groundedness using a similar logic as grounded theory, with the exception that it engages in more theoretical abstraction that can involve the combination of several theories, or introduction of concepts from another theory. In contrast to generation and testing, successful theory elaboration hinges on the researcher’s ability to investigate the general theory and the context simultaneously, in a balanced manner. Therefore, ‘the aim of theory elaboration could be described as reconciliation of the general with the particular’ (Ketokivi and Choi, 2014, p. 236).

#### **3.4.4 Theory production within the thesis**

As highlighted in Figure 3.4, the research design encompassed three streams each having an appropriate method of theory production. In stream one, which collected a significant amount of unstructured qualitative data, an inductive theory generation approach was adopted. Conversely, stream two was designed around quantitative multi-construct (capital) data, hence a theory testing approach was enacted through a set of hypotheses, which were deduced from the research goals. Finally, stream three elaborated systems dynamics theory and its core concepts and tools into a methodology with which to design connected praxeological multi-capital value organisations.

In order to answer the broad research question and surface original conceptualisations of organisations, this research examined the intersection of multiple theoretical concepts, and identified common themes across different genres of theory. This approach optimised both the application of, and elaboration of extant genres of theory. Building on these selected theory production approaches, the analysis methods of the three streams are now discussed in detail.

### **3.5 Analysis methods**

In fitting with the aims of each research question, and the method of theory production, the three streams employed a specific and appropriate method of analysis.

#### **3.5.1 Stream one - grounded theory analysis**

There is a dominant narrative in organisational studies that much of the world is essentially socially constructed (Gioia, Corley, and Hamilton, 2012; Berger, Luckmann, and Luckmann, 1966; Schutz, 1967; Weick, 1969; Webb and Weick, 1979). Significant to this research, Gioia, Corley, and Hamilton (2012, p. 18) suggest that the ‘people constructing these organisational realities are “knowledgeable agents” namely, that people in organisations know what they are trying to do and can explain their thoughts, intentions, and actions.’ However, in his structuration model, Giddens (1984) informs that knowledgeable agents largely exhibit practical consciousness, or what they know about their own actions, beliefs and motivations, and their reflexive discursive consciousness (the ability to put things into words) is partial.

Gioia, Corley, and Hamilton (2012) also believed that focusing too much on refining our existing constructs too often amounts to sharpening the wrong tools for gaining bona fide understandings. Instead, what was really needed are some new tools. An additional concern with qualitative research is that it is creative theorising on the basis of rather thin evidence, and often lacks scholarly rigor. Consequently, Gioia, Corley, and Hamilton's (2012) systematic approach in grounded theory is designed to bring rigor to the conduct and presentation of inductive research, and encourages research findings which demonstrate the connections among data, the emerging concepts, and the resulting theory that is grounded in the data.

In a grounded theory approach the process of theoretical abstraction from data does not privilege any one theory (Holton, 2007). This abstraction to a conceptual level theoretically explains rather than describes behaviour that occurs conceptually and generally in many diverse groups with a common concern (Glaser, 2003). Classic grounded theory methodology uses data of all types and media, and accommodates a range of epistemological and ontological perspectives without having to espouse any one perspective; in essence, the methodology 'is epistemologically and ontologically neutral'. (Holton, 2007, p. 268).

Grounded theory is pragmatic and iterative. Pragmatic, firstly in that the theoretical narrative is expected to change in significant ways. Secondly, grounded theory enacts a balance of generating original insights through participant sense making without imposed and preordained understandings, while concurrently accessing literature as a valuable source of existing knowledge. Such an approach ensures that analysis is not influenced by prior hypothesis bias. Grounded theory is also an iterative process, in that parallel with data collection and the initial stages of analysis, it also cycles between emergent data, themes, concepts, dimensions, and the relevant literature, to see if new concepts or precedents exist. Grounded theories aim to provide the simplest possible definitions to explain complex phenomenon, by converting them into abstract constructs and hypothesising their relationships. Although the constructs in grounded theory are appropriately abstract, they are context-specific, detailed, and are usually ecologically valid in that they represent real-world findings derived from the data in which they were established. In summary, grounded theory is genuine research as engagement (Morgan, 1983). It is also engaging research for both the informants and researchers, and such

engagement will tell both an intellectually and emotionally compelling story on the basis of transparent evidence (Gioia, Corley, and Hamilton, 2012). The flow of the research's grounded theory analysis is detailed in Figure 3.6 below, and illustrates the broad sequence of research design, data collection, data analysis, and theory generation. While the research broadly followed a structured approach as enacted by Corley and Gioia in published empirical studies and methodological articles (See Corley and Gioia, 2004; Corley and Gioia, 2011; Gioia, Corley and Hamilton, 2012), the analysis has also been influenced by thought leaders such as Bryman, Glaser, Strauss, and Corbin. Most importantly, while the visualisation suggests a linear sequence for ease of understanding, as previously outlined the nature of grounded theory demands a continuous re-cycling between data, literature, and ongoing modelling to facilitate theory generation.

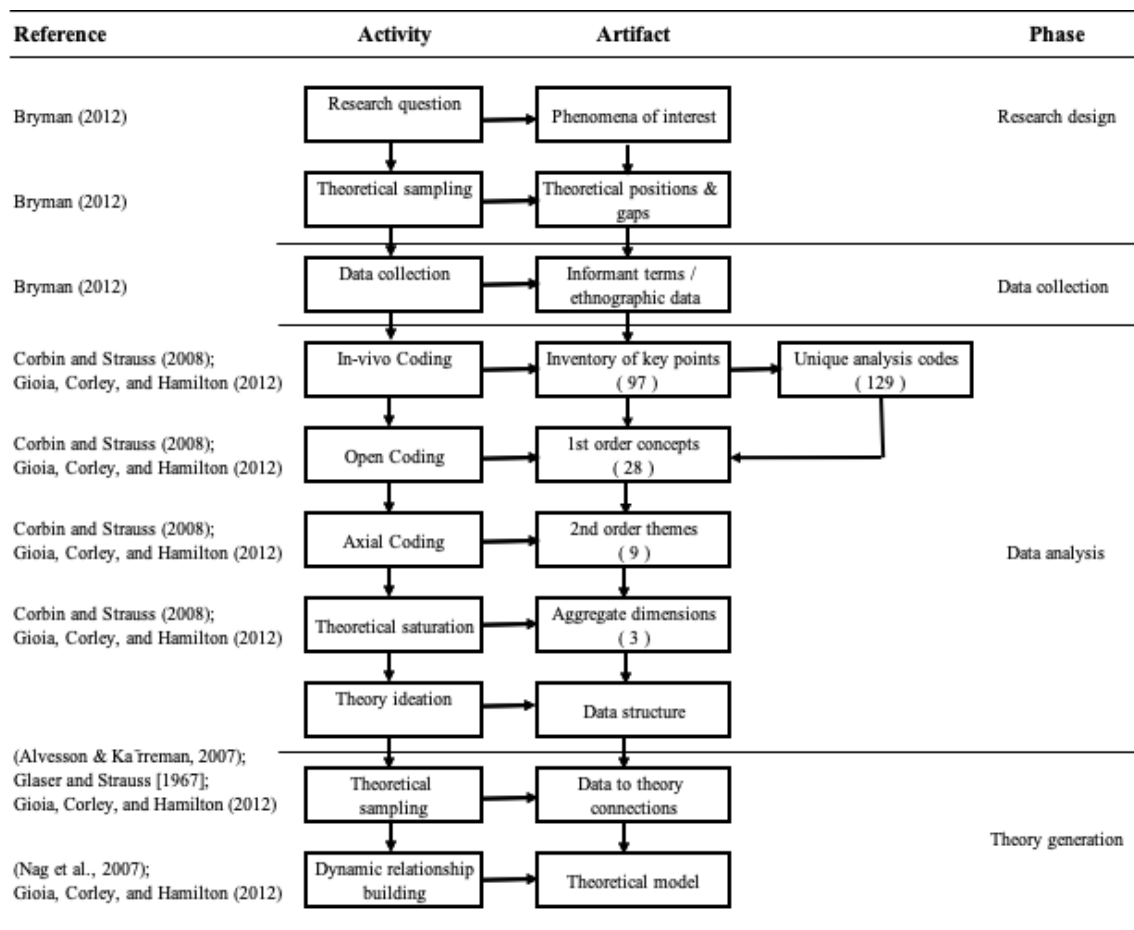


Figure 3.6: Grounded theory analysis

### 3.5.2 Stream two – Quantitative modelling

The lack of attention to fundamental measurement in psychology has hampered its development as a science during the 20th century (Michell, 1999). In this research setting, fundamental measurement items of interest are correlations and causal estimates, reflective and formative constructs, direct and mediated effects, leading and lagging indicators, and technical and adaptive dimensions. Formative indicators cause creation or change in a latent construct, while reflective indicators are caused by the latent construct. Direct effects, as the name implies, deal with the direct impact of one indicator on another while indirect (or mediated) effects can be defined as the impact of one indicator on another as mediated or transmitted by a third indicator. Leading indicators are typically predictive and input oriented, can enable monitoring and control, and influence change. Conversely, lagging indicators are typically output oriented, are reactive, and record what actually happened. Important to this research, two key dimensions of real-world structures are technical and adaptive considerations, the former being concerned with tangibles such as machines, processes, technology, and infrastructure, and the latter on more intangible concepts often related to human behaviour such as mental models, behaviours, beliefs, and relationships.

This plurality of dimensions creates challenges for credible and insightful measurement. One pervasive issue, model misspecification, exists when ‘a latent construct is proposed to have reflective measures when indeed it should be formative, and vice-versa’ (Park et al, 2017, p. 92). Park et al (2017, p. 92) elaborate on the extent and significance of model misspecification in major studies, informing that

‘about a third of all major marketing studies were subject to measurement model misspecification (Diamantopoulos, Riefler, and Zeugner-Roth, 2008; Jarvis, MacKenzie, and Podsakoff, 2003), 62 percent of constructs published in the major strategic management journals suffered from inappropriate modelling (Diamantopoulos, Riefler, and Zeugner-Roth, 2008; Podsakoff, Shen, and Podsakoff, 2006) and 47 percent are mis-specified in leadership research (Podsakoff et al., 2003)’.

Model specification is clearly an important consideration for this research, therefore Jarvis, MacKenzie, and Podsakoff’s (2003) criteria to assess for formative indicators have been applied in the research, namely: (a) the indicators are viewed as defining characteristics of



the construct; (b) changes in the indicators are expected to cause changes in the construct; (c) changes in the construct are not expected to cause changes in the indicators; (d) the indicators do not necessarily share a common theme; (e) eliminating an indicator may alter the conceptual domain of the construct; (f) a change in the value of one of the indicators is not necessarily expected to be associated with a change in all of the other indicators; and (g) the indicators are not expected to have the same antecedents and consequences.

Applying these criteria in this research's context broadly indicated that the data should be modelled as reflective constructs, and this reflects the fundamental nature of capitals. Additionally, Bryant, Jones, and Widener's (2004) research proposed that, a model in which all possible relationships between one perspective and the remaining ones better explains and better fits the available data than that of a simpler model that only considers the linear relationships from one perspective to the next, seems to be the best fit for a multi-capital model. This proposal is in line with the principles of structural equation modelling which models the relationships between all constructs and their elements, covaries all constructs together, and also experiments with different relationships. It is also synergetic with the principles of systems dynamics theory which also considers the totality of non-linear relationships in analysing and explaining complex real-world phenomena.

### **3.5.2.1 Modelling roadmap**

It is beyond the scope of this section to comprehensively discuss the quantitative methods used to transform participant data into the final measurement and structural models, and describe in detail all parameters required to produce and validate such models. These details are discussed in chapter five, which presents stream two's quantitative modelling paper. However, the section explains the overall modelling journey, and its sequence of phases which iteratively produced a credible set of organisational models.

In the **discovery phase** the aggregated respondent data is examined and validated as being suitable to meet the study's modelling aims, which in essence are the investigation of capitals, their structures, and connections. This phase assesses that the data has acceptable quality, quantity, and distribution. It also surfaces any anomalies such as data communality errors (overly correlated data elements) or interesting features within the data.

In **exploratory factor analysis**, participant data is modelled as an initial set of latent factors, each factor comprising a pattern of related elements that load onto that factor. This

activity provides confidence that: GDEA respondent data elements form a valid set of latent capital factors; such factors have sufficient scale reliability which measures how closely related a set of elements are as a group; and that the hypotheses are testable. In essence, this phase provides confidence that there are a set of underlying (latent) factors that explain a significant amount of the variance in the data. Acceptable results from the discovery and exploratory phases are a rite of passage to proceed into full confirmatory factor and multi-variate regression analysis.

In **confirmatory factor analysis**, the initial set of GDEA constructs and their data elements are systemically co-varied with each other ultimately forming an overall measurement model. To construct a viable measurement model, the initial data is reduced into a set of capital factors, their significant elements, and the correlations between them. Data elements which do not contribute to the model are discarded. This measurement model is then assessed against an industry standard set of quality and model goodness-of-fit parameters that broadly assess how accurately the model fits the underlying data. The model must meet or exceed all key parameters to be deemed credible, and also publishable in a peer-reviewed academic journal. Model fit can only be improved by: removing data elements; applying relationships between error terms as specified in the modification indices; or re-modelling the structure of first and second order factors where such restructuring makes sense in the context of the data and research.

In **multi-variate regression analysis**, the set of retained capital factors and their significant elements as confirmed in the measurement model are used as the foundations with which to develop a causal (structural) model. The causal relationships are modelled to test the stream's a priori theoretical hypotheses. This structural model is again assessed against a standard set of quality assessments and goodness-of-fit parameters that must be met for the model to be deemed credible and publishable. The model fit can only be changed by: adding, amending, or deleting causal relations between pairs of factors; changing the direction of causality between factors.

As a 'pocket guide', I now illustrate the modelling journey and its phases, as a set of questions which can be applied for any research project (Figures 3.7 to 3.10 below):

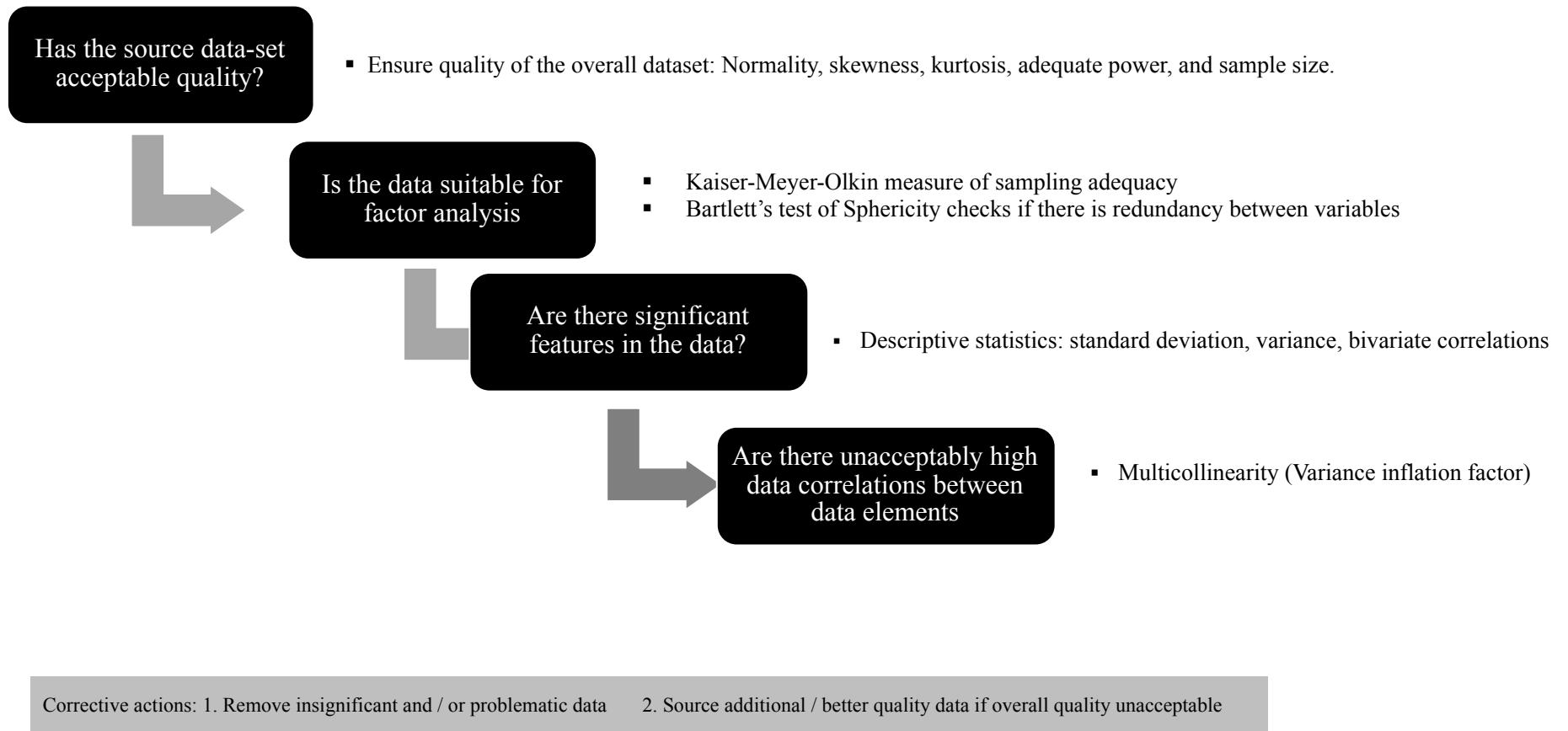


Figure 3.7: Data discovery phase

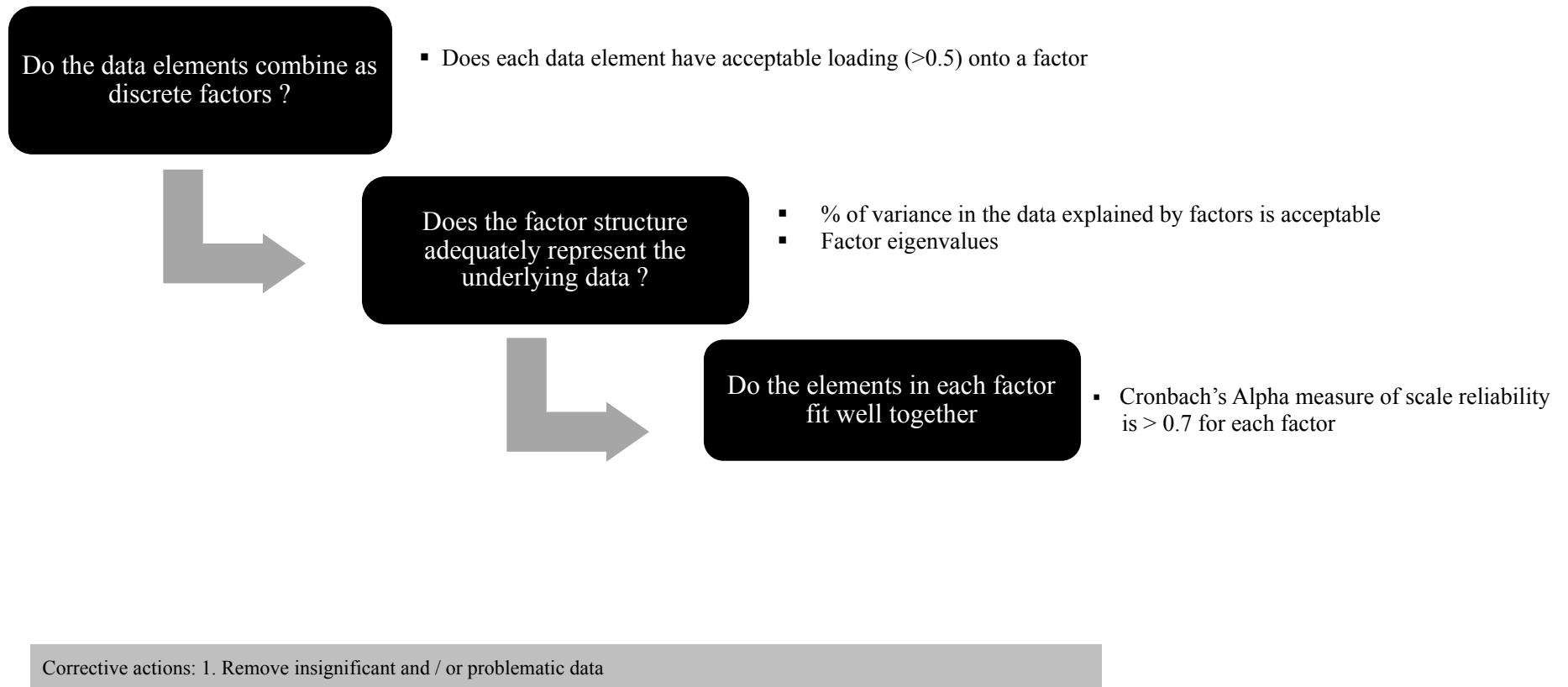


Figure 3.8: Exploratory factor analysis

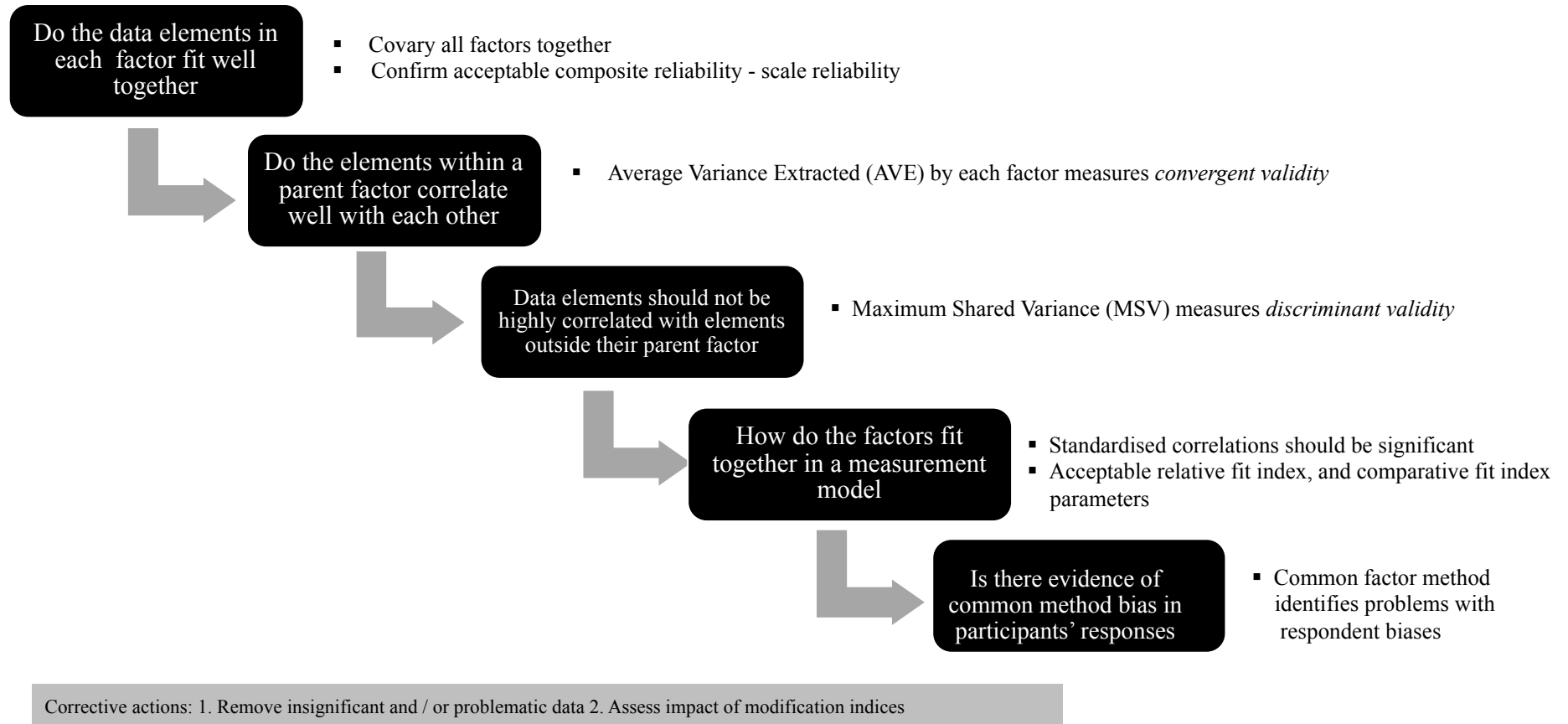
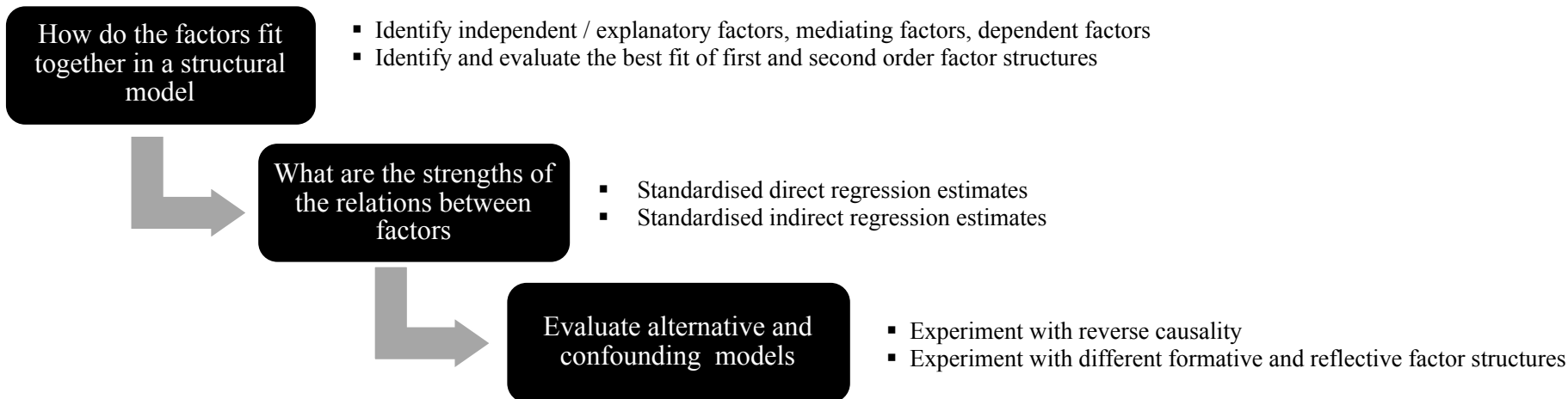


Figure 3.9: Confirmatory factor analysis



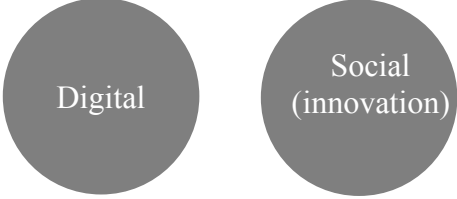

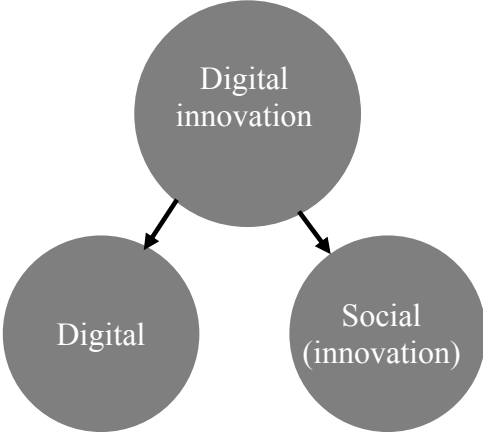
Corrective actions: 1. Assess impact of modification indices

Figure 3.10: Multi-variate regression analysis

### 3.5.2.2 Key modelling decisions

Based on insights from literature, and an understanding of the GDEA (Kempster, Maak, and Parry, 2019, p. 4) constructs and their constituent elements, this research has modelled the data as first order reflective constructs (capital factors). In structured equation modelling the order depicts the degree of abstraction of the factor from the data, hence a second order factor has a higher degree of abstraction than a first order factor. The digital innovation factor was a configuration of the initial social (innovation) construct's elements, and the digital prâxis elements which were embedded in the eight constructs (each of the eight constructs contained a relevant digital prâxis question). Structured equation modelling theory (Byrne, 2010); Raykov and Marcoulides, 2006) suggests that there are three modelling options for such a hybrid factor, these options are presented in Table 3.1: -

Table 3.1: Digital Innovation modelling options

Option	Description
	Two discrete reflective first order factors, Digital and social (innovation).
	One combined single reflective first order factor, digital innovation.
	A reflective single second order factor digital innovation with two reflective first order factors, namely Digital and social (innovation).

The third option returned the best model fit characteristics, and made both practical and theoretical sense implying that both social (innovation) and digital have wider purpose, yet in the study's context they combined as a core mediating engine.

### **3.5.3 Stream three - systems dynamics modelling**

Systems dynamics theory evolved as a means to explain complex patterns of often bewildering organisational behaviour. The theory is applied in two ways, firstly as generic tools to model a domain area, and, secondly as archetypes which describe and explain a set of commonly observed organisational phenomena or common stories. This research utilises five fundamental building blocks of systems dynamics theory namely accumulators, flows, re-enforcing loops, balancing loops, and temporal delays. An accumulator is 'anything that builds up or dwindles' (Kim, 1999, p. 19), and represents 'system states that are either physical stocks such as inventory, or nonmaterial items such as self-confidence or degree of trust' (Meadows, 2008, p. 4). In this research context, prâxis-accumulators are the dynamic reframing of the significant prâxis-elements surfaced and retained during stream two's quantitative modelling. A flow represents entities that make stocks (accumulators) increase or decrease (Aronson and Angelakis, 2021). The concept of feedback recognises that 'as well as one cause (A) leading to an effect (B), B will also affect A in various ways, this circular causality is called a "feedback loop"' (Open University, 2021). Re-enforcing loops compound change in one direction with even more change in that direction (Kim, 1999). Balancing loops seek equilibrium and continually try to keep a system at some desired state (Kim, 1999), and maintain performance through an intrinsic goal. A temporal delay represents the 'amount of time between an event happening and awareness of that event' (Kim, 1999, p. 11).

Two key systems dynamics concepts of interest to this research are causal loop diagrams (CLD) and systems archetypes. CLDs are constructed from the previously mentioned building blocks and in essence tell the story of the phenomenon of interest. A simple description might be enough to stimulate dialogue and provide a new way to see such a phenomenon. In other situations, full CLDs are necessary to clarify the interactions and accurately portray the story. If CLDs are a depiction of a story of interest then archetypes represent the common stories. Therefore, systems archetypes are 'dynamic phenomena that occur repeatedly in diverse settings' (Kim, 1992, p. 2), and 'represent generic structures - patterns of structure that recur again and again' (Senge, 2006, p. 93). According to



Helkkula et al (2018, p. 288), ‘the systemic archetype is informed by a holistic belief that the whole is more than the sum of the parts (Sheth et al.1988) and that something is lost when focusing on separate parts’.

Of specific relevance to this study is the notion of separate organisational parts which are responsible for ‘the “silo” mentality often observed in organisations, power and influence in organisations, and boundary management problems’ (Wolstenholme, 2004, p. 344). Wolstenholme further suggests superimposing ‘organisational boundaries’ onto archetypes to improve the distinction between intended and unintended consequences of actions therefore linking structure to outcomes, and thus value. In this research context, capital factors form feedback loops, and are comprised of prâxis-accumulators. Flows are in essence prâxes, and temporal delays, however small are inherent in all interactions and interfaces. Most importantly, boundaries between capital factor feedback loops take the form of interfaces which are formed from the interactions of multiple prâxis-accumulators. This organisational design topology is illustrated in Figure 3.11 below, and consists of one reinforcing (R1) and one balancing loop (B1) that interface via prâxis-accumulator B: -

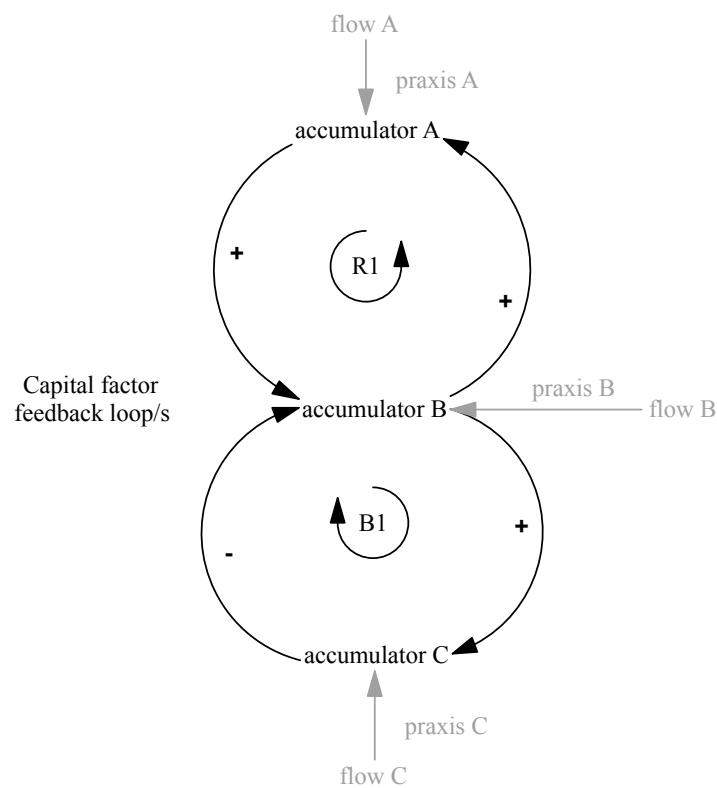


Figure 3.11: Organisational design topology

As systems archetypes can make underlying structures explicit, they can be used as: diagnostic tools to make sense of a situation and understand the contributing forces; proactive planning tools which rather than simple diagnosis can identify the consequences of proposed actions; and theory building tools which can create generalisable theory from a system's behaviours and precipitate a fundamental rethink of an organisation's structure, role, and purpose (Kim, 1994).

In summary, the methodology in stream three connects the five fundamental building blocks of systems theory namely accumulators, flows, re-enforcing loops, balancing loops, and temporal delays to create an organisational design blueprint. This blueprint combines the praxis (re)framing strategies and multi-capital value insights from stream one, with the quantified correlations and causal estimates from stream two, to form of a set of capital factor feedback loops, whose dynamic interactions connect as an organisation. Furthermore, the reflective sense-making journey required to create the organisational design blueprint requires practitioners to methodologically (re)frame organisational value fundamentals, and most importantly, to consider the pan-organisational implications of (re)connecting multiple capitals.

### **3.6 Overall research framework**

Prior sections have explained the various research perspectives, epistemological and ontological considerations, approaches to theory production within a case study, data collection methods, and qualitative and quantitative analysis methods. However, Layder (1993) informed that the distinction between qualitative and quantitative research is no longer useful and is a false dichotomy. For example the distinction that quantitative research employs measurement and qualitative does not, is suspect in that section 3.3 identified that qualitative research invariably uses quasi-quantification. Moreover, standardised definitions of epistemological and ontological positions; inductive, deductive, and abductive logic; and theory generation, testing, and elaboration are difficult to pin down in that they are used differently in different contexts (Bryman, 2012). Consequently, Bryman (2012, pp. 614-615) challenges that 'epistemological and ontological commitments are associated with certain research methods', informing for example that it is 'a mistake to treat positivism as synonymous with science and the scientific method' (Bryman, 2012, p 28).

Due to its inherent pluralistic nature, Houghton (2009) argues that systemic epistemology should reveal multiple perspectives, conflicting realities and various other contexts. Furthermore, Holton, (2007, p. 268) informs that grounded theory analysis accommodates a range of epistemological and ontological perspectives and is therefore ‘epistemologically and ontologically neutral’. This is unsurprising, given grounded theory developed within a positivist/postpositivist perspective and that a needed move toward a constructivist perspective was ultimately incorporated (Charmaz, 2006; Mills, Bonner, and Francis, 2006).

The unit of analysis for this research is the organisation. This position is based on two empirical observations, firstly, GDEA data comprised responses from both programme participants and contributors across a diverse representation of organisational functions, roles, and responsibility levels. Secondly, the ethnographic narrative strongly represented a wider organisational perspective rather than the specific lenses of leaders or change agents. While it could be argued that organisations and their culture comprise the interactions of multiple social actors, they both have a reality that is external to the individual actors that constitute them (Bryman, 2012). Significant to this research, profitable operations practice underpinned by scientific management theory is the dominant manufacturing organisational and cultural narrative. In this context, the organisation represents a social order which influences individuals to conform to the organisation’s needs. Likewise, culture is a set of shared values, beliefs, and behavioural norms that ‘persists and antedates the participation of particular people’ (Becker, 1982, p. 521). Becker (1982) elaborates that culture is not only an inert objective reality, but is always in the process of being formed. Therefore, both organisation and culture come across as external to the actor and having an almost tangible reality of their own (Bryman, 2012).

In summary, pragmatic judgement is needed when applying dogmatic epistemological and ontological frames to social research, the nature of such framing ‘is just as complex as conducting real world research’ (Bryman, 2012, p. 36). Within this section’s, and indeed the overall chapter’s challenges to the legacy dogmas and dichotomies of social research, a broad positioning in the form of a closest fit of the overall research methods is now presented in Table 3.2 below :-

**Table 3.2: Overview of research method**

<b>Stream</b>	<b>One</b>	<b>Two</b>	<b>Three</b>
<b>Approach</b>	Qualitative	Quantitative	Qualitative
<b>Unit of Analysis</b>	Organisation	Organisation	Organisation
<b>Unit of observation<sup>1,2</sup></b>	Organisation	Organisation	Organisation
<b>Epistemology</b>	Interpretivist	Positivist	Interpretivist
<b>Ontology<sup>3</sup></b>	<b>Objectivist</b> -Constructionist	Objectivist	<b>Objectivist</b> -Constructionist
<b>Theory production</b>	Generation Induction	Testing Deduction	Elaboration Abduction

**Notes:**

1. It could be argued that the unit of observation in stream one is the programme participants plus innumerable indirect contributors across their organisations. However, as previously articulated, because of the: dominant profitable operations practice culture, and its associated organisational structure; and a focus on organisational phenomena within the ethnographic narrative, this research has adopted the organisation as a unit of observation.

2. The GDEA survey provided the input quantitative data for stream two. This aggregated data, in essence represents a pan-organisational set of roles, functions, and responsibility levels. Most importantly, none of these elements proved significant in the construction of capitals, therefore, the unit of observation is the organisation.

3. Based on the discussion in section 3.6, stream one and three could have an objectivist ontology (unit of analysis is organisation) or constructionist (unit of analysis is actors, that is participants, leaders, employees, all organisational people). Again, the research takes an objectivist position based on an organisation as a unit of analysis.

Having considered the ongoing discourse on social research strategies and methods, and noted the considerable evidence that undermines rigid followership of legacy methodological constructs, this research has nevertheless presented a closest fit in Table 3.2. The next section will discuss the quality framework that the research employed to ensure the methods produced credible findings and acceptable quality. To ensure that this

quality framework is fit-for-purpose, appropriate objective studies on research quality have been analysed to advocate a framework that is: empirically derived rather than theoretically prescribed; thematic rather than individually parameterised; and evaluates an integrated position across the overall research life-cycle rather than disconnected measures of quality.

### 3.7 Research quality framework

Lincoln and Guba (1985) proposed that trustworthiness is a good overall criterion of how good a qualitative study is. They suggested four key aspects of trustworthiness are important, namely credibility, transferability, dependability, and conformability. Each of these has an equivalent in quantitative research criteria (Bryman, 2012), namely internal validity, external validity, reliability, and objectivity, and this mapping is illustrated in Table 3.3 below: -

**Table 3.3: Key quality parameters**

	<b>Traditional qualitative (Lincoln &amp; Guba, 1985)</b>	<b>Traditional quantitative (Bryman, 2012)</b>
How believable are the findings (truth)	Credibility	Internal validity
Do the findings apply to other contexts (applicability)	Transferability	External validity
Are the findings likely to apply at other times (consistency, repeatability)	Dependability	Reliability
Has the researcher allowed his or her values and biases to intrude (neutrality)	Confirmability	Objectivity

However, Lincoln and Guba’s criteria are ‘by no means universally accepted as appropriate quality criteria for qualitative research’ (Bryman, Becker, and Sempik, 2008, p. 266). Furthermore, there is a proliferation of various schemes for appraising and/or thinking about quality criteria for qualitative research, many are similar criteria to those produced by Spencer et al. (2003, see p. 90). Bryman, Becker, and Sempik’s (2008) study of social policy researchers produced a further set of common measures, namely validity, generalisability, replicability, and reliability. Moreover, their research found that the idea of checklists of quality criteria was generally regarded rather negatively by such researchers. Findings also indicated that for the common measures (across both qualitative

and quantitative), there is a low level of endorsement of two of the four quality criteria for qualitative research, namely replicability and generalisability, while for quantitative research there is a low level of endorsement for replicability. Thus, it will be necessary ‘to look elsewhere than the Lincoln and Guba criteria when appraising the qualitative component of a mixed methods study’ (Bryman, Becker, and Sempik, 2008, p. 275).

An alternative perspective by Angell et al. (2008) indicates that the three most common concerns about research quality were: the data sample; the choice of methods; and concerns about the research question. Furthermore, Bryman, Becker, and Sempik (2008, p. 269) elaborated that for mixed methods research ‘in terms of frequency of mention, the four most important are: relevance to research questions; transparency; the need for integration of mixed methods findings; and a rationale for using mixed methods research’. In essence, the ‘assessment of research quality is an issue that relates to all phases of the research process, but the quality of the data-collection procedures is a key concern’ (Bryman, 2012, p. 13). Consequently, this research adopted a quality framework that is effective for a mixed methods study, and as advised by seminal thought leaders, focuses on the overall research life-cycle rather than disconnected assessments. Based on a set of diverse quality frameworks (Lincoln & Guba, 1985; Spencer et al., 2003; Bryman, Becker, and Sempik, 2008; and Bryman, 2012) this research defined a set of key questions that provided effective guidance for quality governance.

### **3.7.1 Does the research have sufficient impact?**

To avoid research that exists in a vacuum of its own devising, relevance should be a key quality concern (Bryman, Becker, and Sempik, 2008; Hodgkinson & Starkey 2011). Moreover, relevant research should be interesting and significant, and most importantly impactful (Tracy, 2010). Establishing relevance is ‘not confined to an ex-post activity but, instead, must pervade the entire research design’ (Ketokivi & Choi, 2014, p. 239). Relevance also implies involvement of users, and understood by a wide constituency of people (Bryman, Becker, and Sempik, 2008). A related issue is that the criteria employed in the identification of research themes are often unclear. Bryman and Burgess (1994b, p. 224) suggest that ‘one approach involves the frequency of the occurrence of certain incidents, words, phrases, and so on that denote a theme’. In other words, a kind of implicit quantification may be in operation that influences the identification of themes and the elevation of some themes over others (Bryman, 2012).

This research focuses on understanding the concept of an organisation as a connected praxeological multi-capital value system, and novel opportunities for value realisation and optimisation. Specifically, the purpose of creating next generation organisations is to address the grand challenges that face humanity, the UN Sustainable Development Goals (United Nations, 2017) being one representation of these extensive needs, and numerous other multi-capital frameworks also embody similar principles of connected value. Conceptualising an organisation as a praxeological multi-capital value system can mitigate extant profitable operations practice and its embedded scientific management principles, thus enabling the operationalisation of connected multi-capital value journeys. This is indeed a relevant and impactful research purpose which aspires to shape a generation of organisations that better meets the current and future needs of humanity.

Tracy (2010) further suggests that significant impact manifests through theory, practice, and morality. As discussed, the purpose of this research is to contribute to humanity through enriched prâxis-based organisations. Thus, based on the definitions of prâxis and its relationship with phrônêsis discussed in chapter two, the research intrinsically addresses a sense of morality. For each stream and the overall thesis, empirical findings, theoretical contributions, and abstracted practical implications have been identified. Combining these complementary findings, with the fact that prâxis as the synthesis of theory and practice is a core tenet of the research thus meets Tracy's (2010) additional criteria of contributing to theory and practice.

### **3.7.2 How believable are the findings?**

The validity of findings is a critical assessment (Bryman, Becker, and Sempik, 2008), and is a traditional quality criterion common to both qualitative (Lincoln & Guba, 1985) and quantitative frameworks (Bryman, 2012). In case research, transparency is key and must be demonstrated by the details of what one has done, not by a simple declaration that a formalized process was followed (Tracy, 2010). Furthermore, Platt (1998, p. 275) suggests that 'in many cases general theoretical / methodological stances are just stances in the form of slogans, hopes, aspirations, rather than guidelines with clear implications that are followed in practice.' Examining the language used in persuading audiences about the validity of research, McCartney (1970) and John (1992) both suggest the use of statistics can be regarded as a rhetorical device meaning that social research can bestow upon itself the appearance of a natural science. Another significant issue impacting credibility is that

research methods involving theory may reflect intellectual bricolage or post hoc justifications rather than the consistent working through of carefully chosen fundamental assumptions.

In this research, each model has been produced by embracing both the theory and the ‘best practice’ of a credible and industry-standard method: stream one applied methodological details of Gioia & Corley’s grounded theory analysis (2012); stream two followed proven structured equation modelling methods, the theoretical and practical transparency to enact such modelling was provided by acknowledged industry experts such as Byrne (2010), Raykov and Marcoulides (2006), and Gaskin (2019; 2020); stream three followed systems dynamics theory and practice as detailed in a) [www.thesystemsthinker.com](http://www.thesystemsthinker.com), b) the insights of seminal practitioners such as (Meadows (2008); Kim, 1999; Senge 1990, 1994, 2006), and c) empirically evidenced and peer reviewed journal papers such as Nguyen and Bosch (2013).

Most importantly, the transparent workings of how such models were produced, and how appropriate theory underpinned the study’s findings are documented in detail in the three papers in chapters four, five, and six. Furthermore, all models which form the basis of the findings are grounded in the participants’ data which is fully auditable back to participant and respondents source data. Bryman (2012) suggests that implementing practices such as thick descriptions can help with validity. Thick descriptions are: ‘a researcher’s task of both describing and interpreting observed social action (or behaviour) within its particular context’ (Ponterotto, 2006, p. 543); exploring ‘the underlying meanings of cultural members’ (Holloway, 1997, p. 154); and presenting ‘detail, context, emotion, and the webs of social relationships that join persons to one another’ (Denzin, 1989, p. 83). In all streams, this research has explored underlying meanings, and most importantly the connections between observable phenomena and underlying constructs.

A further concern is the potential impact of taking participants away from normal activities, artificial situations such as interviews, and the researcher being a source of interference. Such influences render the research situation and its findings less natural, and thus less likely to be believable. To mitigate this risk, the researcher’s role was part of an integrated ‘one programme team’ of participants, programme delivery, and faculty. This lack of artificial boundaries created a healthy and transparent engagement with participants as they navigated the programme’s many activities. Consequently, there were no



artificially constructed research activities such as interviews, and the majority of the data was collected in-vivo by the as part of the ongoing programme execution and not a distraction.

### **3.7.3 The rationale for using mixed methods research**

According to Bryman, Becker, and Sempik (2008), the rationale for choosing research methods is an important consideration in determining research quality. Section 3.3 highlighted that key benefits of complementary mixed methods is the enhanced understanding of the research domain that such a framework provides, and the mitigation of research biases that reinforce methodological, ontological, and epistemological stances. Harkness, Bruce, and Lumley (2006, p. 78) concur that ‘the combination of methods helps to reduce biases and therefore improve understanding’. Enriched understanding is facilitated by instances where findings in one method can generate deeper insights in the other method. As a result, multiple methods provide greater epistemological and ontological neutrality, and neutralise strong researcher mental-models and biases. A further justification is that findings from a mixed methods framework will have ‘greater practical benefits and be able...to resonate to multiple audiences such as practitioners and policy makers’ (Bryman, 2012, p. 646). Tracy (2010) also elaborates that meaningful coherence is important in that the research addresses what it claims to address, uses appropriate methods, and links research questions, literature, findings and interpretations. In this sense, Tracy positions appropriate research methods at the core of the research structure.

### **3.7.4 Integration of mixed methods findings**

One assumption about mixed methods is that they complement each other and produce a more comprehensive outcome. However, ‘sometimes the two sorts of evidence give you really such radically different pictures that it’s difficult really to integrate them, and they don’t help each other’ (Bryman, Becker, and Sempik, 2008, p. 273). Critical to this research, the integration of complementary (expected) findings was planned as part of the initial research design with the goal of creating both empirically derived findings, and ultimately a generalisable methodology. To deliver such a goal, tools such as the iceberg model, causal loop diagrams, and systems archetypes were pre-identified as suitable integration frameworks. Stream one’s qualitative findings in the form of prâxis (re)framing strategies, key events, mental models, and instances of pan-organisational value journeys,

and stream two's quantified multi-capital factor connections are purposely combined in stream three. The research's design included the integration of the findings from stream one and stream two to produce stream three's specific findings, rather than simply juxtaposing them. Therefore, the overall findings in chapter seven reflect this complementary approach by presenting contributions both at individual stream level, and within an integrated thematical framework.

### **3.7.5 Has the researcher allowed his or her values to intrude**

One of the most significant concerns with research is the reliability and replicability of the findings. While the methods followed in the research are transparent, auditable, and repeatable, Tracy (2010) advises sincerity is paramount, that is, where the researcher is reflexive about their values and biases. Mental models and values are intrinsic to individuals, organisations, cultures, and societies. Biases and fallacies are also pervasive with the potential to significantly influence research, specific examples being the confirmation fallacy and information availability bias. Applying reflexivity in a study will ensure that researchers have critically and explicitly reflected upon the methodological limitations of the research and the competing interpretations that could be extracted from the data. While it is difficult to surface our intrinsic biases, defining unambiguous research goals and questions, following both the principles and the processes of appropriate research methods without injecting any personal mental models, and being consciously agnostic about any analysis outputs and findings have ensured that this research has produced objective and repeatable findings. Most importantly, the research has not started from a position of preferred theories, rather has applied a tabula rasa approach to learn from the extensive organisational theory literature. Consequently, this approach has identified diverse, yet relevant and connectable theories, and objectively generated novel theoretical positions by surfacing common themes across disparate theories, and also unique perspectives at the intersections of multiple theories.

### **3.7.6 Are there concerns with the data sample or data collection process**

Complete, consistent, and understandable data, is a common building block of quality and impacts most of the assessment criteria in this section. To ensure quality, Tracy (2010) stipulates rich rigour—rich data supplied in abundance and appropriately, while Bryman, Becker, and Sempik (2008, p. 270) advise to 'trust in the data'. Qualitative data was

itemised at module and activity level, and by participant organisation thus ensuring granularity, transparency, and the production of robust analytics. It was also aggregated into a single source of data which enabled the analysis of pan-programme perspectives. The data was sourced from a comprehensive set of data collection activities, artefacts, and researcher-participant touch points thus mitigating the risk that the insights were overly influenced by contextual factors. Quantitative data was standardised and thus comparable, that is the data capture process had common definitions, measurement scales, and prescribed response-selection options. Again, the data was aggregated into a single dataset which facilitated data analysis by multiple industry-standard modelling platforms.

Stream one's qualitative data comprised 30,000 plus words of field notes captured from diverse informal sources (observations, participant narratives, and participant presentations), and formal feedback (application forms, overall programme evaluation forms, module/activity evaluation forms, and participant's project initiatives). Informal data was recorded in situ, and triangulated where appropriate with video recordings. Formal feedback data was extracted from authentic participant artefacts and responses. For example, the application form contained a question 'purpose of attending the course?' which produced insightful patterns of reasons such as 'future proof the business' and 'embrace digitalisation'. Such empirical insights from participants provided clarity on key aspects of the research, and helped shape the detailed research questions.

Stream two's quantitative data comprised 207 responses to a survey which contained eight constructs each containing five measurement items, and ten demographic variables. In addition, numerous analytic indicators were added to the source data, namely cohort number, Brexit flag, Covid-19 flag, and actor-type. This aggregated data provided approximately 10,500 data points. The data survey was constructed such that all fields were mandatory, each measurement item had a common scale of 1-6 with clear explanations, and drop-down menus mandated that a valid value was selected for each required data element. Similarly, for the individual and organisational demographic data, data items had drop-down selection menus where feasible to ensure valid responses. Most importantly, the source data used in constructing the models and their associated findings is fully transparent and can be audited back to individual participant artefacts, narratives, and respondent responses.

### **3.7.7 Do the findings apply to other contexts**

Transferability, according to Lincoln & Guba (1985) is concerned with the question of whether the results of a study can be generalized beyond the specific research context. To achieve this goal ‘generality must transcend the empirical context and seek broader theoretical understanding’ (Ketokivi and Choi, 2014, p. 234). As discussed in sections 3.1, 3.3, and 3.4 multiple research methods and means of theory production were utilised to deliver the research goals. Most importantly, as highlighted in 3.1 and 3.7.6, all research analysis was grounded in the empirical context, and this empirical data auditable back to original data sources. Findings were constructed in two phases. Firstly, for each stream, transparent industry-standard analysis produced findings grounded in the research’s empirical data, and thus both the input data and analysis are re-creatable in any research context. Secondly, primary findings were translated into theoretical contributions, and such contributions were often abstracted with injections of theory to produce further insightful propositions. Stream three, for example produced both empirical findings and a generalisable methodology as primary findings, and these were further abstracted into a set of generalisable implications for organisational design in the form of value archetypes. Most importantly, findings for all streams were itemised into empirical observations, theoretical contributions, and practical implications. This transparency helps assess the specific relevance to other contexts. Most importantly, as will be discussed in Chapter Seven the integrated findings, the relevance of these contributions were mapped to specific stakeholders, thus providing granular reference points for generalisable insights.

### **3.7.8 Are the findings consistent and could be repeated**

Dependability (Lincoln & Guba, 1985), reliability (Bryman, 2012), and replicability (Bryman, Becker, and Sempik, 2008) are common indications of how consistent and repeatable findings are. In this mixed methods study repeatability is primarily dependent upon the integrity and transparency of the methodological execution, and the transparency of the data utilisation within such methods. Data quality has been addressed in 3.7.6, thus the additional consideration is the integrity of the overall research analysis. This requires a level of subject matter expertise and execution skills in the researcher, and as discussed in 3.7.2 and 3.7.5 transparency, integrity, and reflexivity are important dimensions in mitigating mis-appropriation of such complex methods. Stream one’s grounded theory analysis followed Gioia, Corley, and Hamilton’s (2012) method, the benefit of this method

is that there are both examples of its empirical execution, and discussions of the detailed methodology published as papers in high ranking peer-reviewed journals. These empirical practitioner insights complement the broad theoretical perspectives of thought leaders such as Glaser, Corbin, Strauss, and Charmaz and provide a level of confidence in the integrity of the method's execution. Stream two's structured equation modelling followed standard industry practice both in its execution, and also the quality thresholds that determine if a model generated by the research is credible and publishable. Two aspects of the research ensure that all quantitative modelling is repeatable. Firstly, theoretical direction was provided by Byrne (2010) and Raykov and Marcoulides (2006). These thought leaders have seminal reference publications which guide practitioners through this complex field. Furthermore, Gaskin (2019; 2020) provided an ongoing source of practitioner expertise on the many individual structured equation modelling tasks, and how they integrate in the overall modelling lifecycle. In a structured equation modelling context, both the individual tasks and their sequencing need to be precisely executed to produce valid models.

Secondly, modelling utilised IBM's SPSS (exploratory factor analysis), and AMOS (confirmatory factor analysis and multi-variate regression analysis) platforms to analyse the data, and construct models. These platforms: are mature and widely used academic standards; provide the full set of quality assessment parameters for model validation; are transparent with regard to the underlying axiomatic principles utilised in each modelling technique and parameter calculation; and provide clarity on any problems encountered in the model construction process or the output models. Therefore, given any set of input data, this research can easily be repeated by following the method sections of the papers detailed in chapters four, five, and six, and using the aforementioned or similar platforms.

### **3.8 Summary**

This chapter outlines the thinking and methods around how the research was designed and executed. To mitigate the general impact of bias, the research has leveraged a comprehensive and indeed complementary approach to knowledge production, specifically: qualitative and quantitative analysis methods; theory generation, testing, and elaboration; and inductive, deductive, and abductive reasoning. Each analysis stream was grounded in data collected from participants, thus the integrated findings are an overall representation of the totality of the collected data and the empirical context. Most importantly, the findings from streams' one and two were combined as input to stream

three thus: meeting the primary criterion for mixed methods research; optimising understanding through the application of multiple perspectives; and mitigating the risk of researcher and methodological biases.

Chapters one, two, and three have discussed the broad contextual, theoretical, and methodological dimensions of the research. Furthermore, the purpose and method of the three research streams has been described within the overall research area of interest, and the specific research goals of the three streams. As the overall thesis followed the alternative PhD format, each of the research streams produced a corresponding paper suitable for publication in leading peer-reviewed journals. The analysis and findings of each stream are now presented in chapters four, five, and six, in the form of publishable papers, while the overall research findings and contribution follow in chapter seven.

## Chapter Four - An onto-epistemological prâxis (re)framing of Small and Medium Enterprises in a UK manufacturing context

This chapter is adapted from an initial development paper accepted at BAM 2020 conference, and subsequently reviewed at a joint PhD research conference involving Lancaster University, Toulouse School of Management (TSM) France, and WHU – Otto Beisheim School of Management Germany. Following these reviews, this manuscript is authored by Eamon Mulligan, Stephen Eldridge, Steve Kempster, and Robyn Remke. The study’s design, analysis, and findings were enacted by the first author, based upon the insights generated from the university-led Made Smarter Leadership Programme. Stephen, Steve, Robyn, and Robert Demir provided ongoing reviews and subject matter expertise, and contributed to manuscript preparation and submission. Adjustments have been made to the original paper (such as the numbering of sections, figures, and tables) to improve the integration within this overall manuscript. The paper’s distribution history is as follows: -

Journal/conference	Submission date	Outcome	Action
1. BAM 2020 conference	29/02/2020	Development paper submitted and reviewed	Comments addressed
	02/09/2020	Resubmitted full paper for 2nd September 2020 BAM conference	
2. Joint research conference between LUMS, Toulouse School of Management, and Otto Beisheim School of Management	15/03/2021	Presented full paper for 24 March 2021 conference	Received and applied comments from allocated reviewer and general forum discussion

#### **4.1 Abstract**

This paper proposes a prâxis (re)framing and onto-epistemological model for manufacturing medium enterprise organisations who seek to future proof their businesses through notions of multi-capital value and digital innovation. The dominant manufacturing meta-narrative frames organisations in traditional engineering and scientific management principles, and reinforces a theory practice dualism. This paradigm creates an uncomfortable juxtaposition of profitable operations practice (mono-capitalism and neo-liberal assumptions) with ever-emergent multi-capital stakeholder needs, and generates a significant challenge for reframing and (re)connecting practices in a multi-capital frame. Ethnographic research conducted on a university-led leadership development programme, suggests an alternative complementary onto-epistemological model of an organisation, in which (re)framing provides the ontological, prâxis the epistemological dimension, and prâxis maturity and (re)framing maturity provide a novel perspective on organisational maturity. Thus, the study surfaces the micro-foundational relations between praxeology and (re)framing and conceptualises these onto-epistemological virtuous circles to new one-organisation and multi-capital forms of organisations.

**Keywords:** organisational design, multi-capital, digital innovation, (re)framing, praxeology, onto-epistemology



## 4.2 Introduction

The extant manufacturing profitable operations value frame is determined by neo-liberal capitalism which in an economic context is simply the ‘free forces of the market’ (Wadgyamar, 1994, p. 296), and operationalised through legacy scientific management principles (Taylor, 1911). The UK Government’s (2017) industrial strategy envisages triggering a UK manufacturing renaissance. Made Smarter, the digital transformation programme of this industrial strategy has been recently launched as a response to the emerging importance of industry 4.0 for manufacturing, and provides the context for this study. To achieve such a challenging renaissance, government, academia, and industry need to collaborate (UK Government, 2017). Given their contribution to the UK value chain, small and medium enterprises (SMEs) are seen as core to this renewal. Consequently, this research is grounded in the university-led Made Smarter Leadership Programme (MSLP) for manufacturing medium enterprises who aspire to future proof their organisations through notions of multi-capital value and digital innovation.

According to UK Government (2017), in a reframed manufacturing paradigm, factories are potentially able to use other factories’ waste as an input material creating a virtuous resource cycle, and augmented reality can enable engineers to identify energy, water, and waste flows in real-time. Virtual and augmented reality can also be used in upskilling and training existing and future workforces more efficiently and safely. Moreover, digital modelling and rapid prototyping technologies improve the effectiveness and efficacy of product and process development. These reframed roles will result in safer workplaces with fewer accidents, less exposure to harsh environments, and lead to improved job satisfaction through the replacement of dull and repetitive tasks. Such scenarios suggest multi-capital reframing is required to fulfil a more complex set of stakeholder needs enabled by digital innovation, which thus demands more connected and cognitively engaged organisations.

Prior industrial revolutions framed technology adoption through the misconception of massive job losses. Conversely, Schwab (2017) reframed such eras as liberating humankind from animal power, making mass production possible, and bringing connective digital capabilities to billions of people. Early genres of digital technology translated analogue value frames into digital equivalents thus unconsciously propagating legacy profitable operations practice, its embedded theory, and extant organisational models.

Industry 3.0 (i3.0) as a disruptive internet-based technology dissolved physical boundaries, disintermediated business communities, commoditised information, and thus reconnected a much wider set of people, organisations, and ecosystems. The Fourth Industrial Revolution or industry 4.0 (4IR) is, however, fundamentally different, characterised by a range of new technologies that are fusing the physical, digital, and biological domains and affecting all disciplines, economies, and industries, and even challenging ideas about what it means to be human (Schwab, 2017).

This study reveals that praxeology, and specifically prâxis is significant for SME organisations to advance beyond legacy profitable operations practice. Praxeology, etymologically derives from the Greek word prâxis (‘purposeful action’) and logos (‘word’ or ‘thought’ or ‘principle of knowledge’), and can be understood as ‘a theory of practical knowing, knowledge in this sense in the service of human betterment, what we might now term fulfilment or wellbeing’ (Rigg, 2014, p. 651). The dominant manufacturing meta-frame positions organisations as profitable operations practice. In this context, practice (Praktik) is ‘a routinized type of behaviour which consists of several elements, interconnected to one other thus providing a way of (cooking, consuming, working etc.)’ Reckwitz (2002, p. 249), with routinized being the critical modifier. Conversely, prâxis can be defined as purposeful and value-driven actions enabled by a synthesis of theory and practice (Freire, 1985; Nicolini, 2013; Rigg, 2014).

According to Kaplan (2008, pp. 729-730) frames are the means by which ‘managers make sense of ambiguous information and varied signals from their environments...sort through these ambiguities...and shape how actors recognize what is going on’. Kaplan (2008) further elaborates that ‘framing is "an active processual phenomenon that implies agency and contention at the level of reality construction" (Benford and Snow 2000, p. 613).’ Cognitive psychology has also demonstrated that ‘human perception becomes linked to what is within our cognitive frame’ (Nicholas, Ledwith, and Bessant, 2013, p. 27), Kaplan (2008, p. 731) concurring that ‘cognitive frames direct managerial attention’. Reframing requires ‘an ability to think about situations in more than one way, which lets you develop alternative diagnoses and strategies’ (Bolman and Deal, 2013, p. 5). Significant to this study, reframing helps people to ‘become mindful of the frame they have been using to make sense of and intervene in the world, as well as what is left out of this frame’ (Ramirez and Wilkinson, 2016, p. 4).

In a manufacturing SME context, the core organisational frame is a predictable and repeatable practice grounded in traditional scientific and engineering principles. Conversely, digital is an umbrella term for a rapidly emerging and prâxis-centric discipline that creates a praxeological paradox with extant profitable operations practice. Digital prâxis can be categorised into digitisation (data), digitalisation (function), and digital transformation (organisational models). Digitisation can be defined as the conversion of analogue data into digital form. Similarly, digitalisation automates manual functions into autonomous or semi-autonomous form. Finally, digital transformation, fundamentally changes how an organisation works through reframing new organisational models. Digital maturity in an organisational context represents the interaction and inter-connectedness of these three prâxis components. The pivotal foundation of digital maturity is the production and consumption of digital data which: is more transparent, accessible, and timelier than its analogue variant; dynamically connects a wider set of practitioners and functions; and enables entire new ways of organising in the service of value realisation and optimisation. However, increased capability also increases stakeholder expectations. This symbiotic relationship is illustrated by current transportation industry imperatives which are to: comply with more demanding human, legal, regulatory, and environmental requirements; become quieter, be more efficient, produce fewer emissions; and be more productive and cost effective. Such goals are illustrative of the multi-capital stakeholder needs of modernity and demand alternative organisational models. Alternative organisations are different to the traditional for-profit model (Cruz, Alves, and Delbridge, 2017), reaching beyond profitable operations practice and mono-capital optimisation to enable multi-capital organisational connectivity and transparency.

Gioia, Corley, and Hamilton (2012) believed that focusing too much on refining our existing constructs too often amounts to sharpening the wrong tools, instead, what is really needed are some new tools. Consequently, this research examines an onto-epistemological model of an organisation, in which (re)framing as the ontological, and prâxis as the epistemological foundations provide an original complementary perspective. Therefore, the study seeks to understand the (re)framing priorities, and indeed strategies of participant MSLP organisations through the following questions: -

- What meaning did organisations generate from their current organisational frames and what alternative (re)framing strategies did they develop?

- What theoretical and practical dimensions did these organisations suggest as priorities in (re)framing their organisations?
- How could such dimensions contribute to new organisational models?

This paper is structured as follows: firstly, the key theoretical underpinnings of praxeology, (re)framing, and organisational maturity are explored. Secondly, the ethnographic research approach and grounded theory analysis method used to inductively develop the findings are described. Thirdly, the empirical observations are conceptualised into a set of prâxis (re)framing strategies. Fourthly, a novel onto-epistemological model of an organisation is developed through the significant organisational foundations of prâxis and (re)framing. These onto-epistemological conceptualisations are further refined into a framework of propositions and practical tools which can be used to develop new forms of organisation. Finally, the summarised contribution, the research's limitations, and opportunities for future research are presented.

### **4.3 Theoretical context**

This study seeks to generate theory on alternative forms of organisation, and specifically organizational design which Foss, (2021, p. 270) defines as ‘an organization’s optimal levels of differentiation and integration given relevant internal and external contingencies’. In this study’s context, organisations aspire to more complex forms of multi-capital value and systemic integration. These aspirations require greater maturity, and consequently, ‘theoretical complexity is needed to account for organizational complexity, therefore theory development rather than simplifying complex organizational phenomena, should aim at complexifying theories’ Tsoukas (2017, p. 132). Ghoshal (2005, p. 86) concurs that ‘typically, no theory...explains a “phenomenon of organized complexity” fully’.

Tsoukas further proposes that ‘complex theorizing is conjunctive: it seeks to make connections between diverse elements of human experience through making those analytical distinctions that will enable the joining up of concepts normally used in a compartmentalized manner.’ Such a ‘complex “system of picturing” consists of an open-world ontology, a performative epistemology, and a poetic praxeology’ (Tsoukas, 2017, p. 132). In Tsoukas’ conjunctive theorizing, an open-world ontology assumes that the world is always in a process of becoming. A performative epistemology assumes that knowing is action. A poetic praxeology sees the practitioner as reflexively undertaking purposive action and changing practice. Tsoukas (2017, p. 149) concludes that ‘a dynamic ontology goes hand in hand with a dynamic epistemology’.

To solve this complexity conundrum, this study evaluates a novel onto-epistemological duality through (re)framing as the ontological dimension, and prâxis as the epistemological dimension. For clarity, within this paper (re)framing signifies a contextual interaction of both framing and reframing, and (re)connecting represents a connected outcome by either connecting for the first time, or reconnecting previously disconnected objects.

#### **4.3.1 Praxeological basis of (re)framing strategies - epistemological considerations**

Participant MSLP organisations aspire to future-proof their businesses, by implication needing to (re)frame their strategy. In a strategy context, Vaara and Whittington (2012, p. 3) position prâxis ‘as the actual activity such as strategic planning meetings involved in

strategy-making i.e. the concrete, situated doing of strategy’, while practice refers to ‘the various tools, norms, and procedures of strategy work i.e. the routinized types of behaviour drawn upon in the concrete doing of strategy.’ Johnson, Melin, and Whittington (2003) further suggest that strategy is an organizational phenomenon requiring micro strategizing, rather than a macro problem detached from the internal dynamics of the organization. This perspective dismantles the content – process dichotomy where content instead is regarded as an inherent and indissoluble part of ongoing processes.

Praxeology, which is a ‘theory of practical knowing or knowledge gained through action’ (Rigg, 2014, p. 651) provides an alternative organisational perspective to extant profitable operations practice and the theory practice dualism. In *Nicomachean Ethics*, Aristotle distinguishes between three kinds of knowledge, namely episteme, phrónêsis, and téchnê: ‘episteme as “scientific knowledge”, is the apprehension of universal principles and essences arrived at through use of analytic rationality; phrónêsis, usually translated as practical wisdom; and téchnê, close to our modern notion of art or skill’ (Eikeland, 2014, p. 654). In a manufacturing context, episteme and téchnê provide the dominant disposition of the intellect, conversely, the aim of phrónêsis as a state of mind or intellectual virtue is to produce prâxis.

Reckwitz (2002) suggests that routinized practice as a way of working, of investigating, etc., forms so to speak a ‘block’ whose existence necessarily depends on the existence and specific interconnectedness of multiple elements, and which cannot be reduced to any one of these single elements. Social practices are sets of routinized bodily performances, but they are at the same time sets of mental activities which are necessarily connected with certain know-how, particular ways of interpretation, certain aims, and emotional levels. Conversely, prâxis is ‘purposeful action’ (Rigg, 2014, p. 651), which Nicolini (2013, p. 26) elaborated as ‘action informed by knowledgeable value-driven deliberations’, and Freire (1985) further clarified that prâxis encapsulates the synthesis of theory and practice in which each informs the other.

Heidegger (1962, p. 99) also dismisses the dualism between theory and practice ‘action must employ theoretical cognition if it is not to remain blind’ further elaborating that ‘theoretical behaviour is just looking, without circumspection. But the fact that this looking is non-circumspective does that mean that it follows no rules: it constructs a canon

for itself in the form of method'. Although Heidegger did not explicitly state it, 'scientific theories, models and formulae used in various human ways of being can be seen as particular intellectual tools' (Sandberg and Pinnington, 2009, p. 1146). In this research's theoretical frame, method and tools are artefacts of practice, thus Heidegger highlights the interaction of theory and practice. Both concepts also connect within an organisation, which as 'the system of arrangements and procedures for doing work...bridges the gap between organisational theory and practice' (Sinha and Van de Ven, 2005, p. 389).

Research on professional work practices 'reveal a kind of knowing which does not stem from a prior intellectual operation' (Schön, 1983, p. 51), 'rather, it is inherent to the action itself' (Sandberg and Pinnington, 2009, p. 1141). Marx elaborated that *prâxis* 'implies or presupposes a special form of theoretical understanding in practitioners...that bring forth unrealized, immanent human potentials for shaping and reshaping both themselves and their surroundings' (Eikeland, 2014, p. 654). Thus, 'practice represents the "espoused theories" that guide this activity, such as shared routines of behaviour, norms, and procedures that can be altered according to the activity in which they are used (Orlikowski, 1996; Seidl, 2007). *Prâxis* refers to actual activities or, "theories-in-use" (Argyris and Schon, 1974) that constitute the fabric of innovation' (Crossan and Apaydin, 2010, p. 1178). By unpacking the espoused theories (Argyris, 2004) that reinforce the primacy of financial capital, organisations can 'begin redefining our use of the term "practical" in such a way that nature and human relationships with nature take precedence over economic and traditional managerialist objectives' (Prasad and Elmes, 2005, p. 864). Practitioners, be they leaders, managers, or outside agents are those who actually perform *prâxis* (Crossan and Apaydin, 2010). In this sense, *prâxis* is practioner, and leadership-followership agnostic, and as the synthesis of theory and practice mitigates the theory practice dualism.

In a strategic context, Tsoukas (2010) connects *prâxis* and sensemaking (drawing from Heidegger) where strategy is a second-order label attributed retrospectively to patterns of actions and practices. In this view, the bulk of strategy-making is based on organisational actions and practices that are not made sense of or given sense to as strategic as they are happening in *prâxis*, noting only occasionally do actors pause to engage in deliberate strategising. Many aspects of organisational life pass by unnoticed as organisations develop rigid practice routines and systematic patterns of behaviour, Golsorkhi (2010, p.

123) informing that the ‘analysis of strategic conduct will tend to show that strategies are typically improvised and reinterpreted in particular moments of prâxis’. By observing participant strategy-making activities, Regner (2003) revealed how strategies often inductively emerge from activities in the organisational periphery, by contrast to the deductive planning of the corporate centre. In essence, strategies emerge from prâxis rather than routinised practice, and a critical ramification therefore is that strategising-as-prâxis is in essence ‘retrospective reframing’ (Golsorkhi, 2010, p. 55).

In its simplest form, theory is abstracted practice, and practice is applied theory, thus implying a virtuous circle. Reckwitz (2002, p. 253) elaborates that ‘in practice theory things also appear as always-already-interpreted’ and this study proposes that this effect is due to practice being pre-constructed in virtuous circles of prâxis (re)framing. In an empirical organisation, only the output of prâxis (re)framing is likely to be evidenced, and such output operationalised as routinized practice. In this operational void, the underlying theory is unnoticed and therefore not understood, and this phenomenon effectively reinforces the practice-theory dualism. Consequently, prâxis can be framed as the interdependence and integration of theory and practice in a meaningful way within a social context, where informal theories are part of prâxis as they are always already written into practice (Zuber-Skerritt, 2001). Narayanan and Fahey (2005, p. 210) further suggest ‘an epistemological methodology to structure the arguments constituting a frame’, consequently, to connect multiple capitals within new forms of organisation, an epistemological prâxis frame is required.

#### **4.3.2 Theoretically framing (re)framing strategies – ontological considerations**

Frames can define what is at stake and the introduction of new frames is a means to transform interests through a collective effort of meaning making (Bourdieu and Wacquant, 1992). By using his well-known time and motion studies for analysing competence in efficient work performance, Taylor showed how ‘managers can recruit, develop, retain, and evaluate people in a way that leads to increased effectiveness in organizations’ (1911, p. 1138). This profitable operations frame determined the dominant manufacturing paradigm and an inherited definition of organisational success. However, people can have multiple frames from which they can draw in any one moment (Goffman, 1986). Kaplan (2008) defines this plurality as frame repertoires, such repertoires grounded



in cognitive predispositions, functional backgrounds and experiences, and knowledge accumulation making it possible for different frames to be salient.

Snihur, Thomas, and Burgelman (2018) position framing as a dynamic strategic process that helps stakeholders to focus on relevant dimensions, reduce uncertainty, and shape new ecosystems through business model innovation. Specifically, they position framing as the ‘process of constructing meaning that focuses audience attention on salient features (Cornelissen and Werner, 2014; Giorgi, 2017), can help articulate specific versions of reality and secure stakeholder support for the new ecosystem (Ansari, Garud, and Kumaraswamy, 2016; Gurses and Ozcan, 2015)’ (Snihur, Thomas, and Burgelman, 2018, p. 1283). Kaplan elaborates that framing is not a set of symbolic actions distinct from substantive outcomes, but instead a process by which these outcomes are constructed in virtuous circles ‘interests shaped ideas, but frames also created contexts for action, contexts that then reciprocally shaped the interests that participants came to have’ (Kaplan, 2008, p. 747).

Reframing can be defined as ‘identifying and then changing the way situations, experiences, events, ideas, and/or emotions are viewed’ (Robson Jr and Troutman-Jordan, 2014, p. 2), which leads to the discovery of alternative plausible realities (Ramirez and Wilkinson, 2016). Reframing adaptation, therefore, occurs not at the organisational level, but rather in the day-to-day, often conflictual interactions, where practitioners are both constrained and enabled by their historically derived frame repertoires (Kaplan, 2008). Consequently, practitioners should integrate insights from the micro foundations of strategy with cognitive framing insights in order to adopt new forms of business models (Bigelow and Barney, 2021).

Fundamental to this research, a key value (re)framing strategy examines exploitation and exploration, and indeed the tension between them. March (1991, p. 71) highlighted that ‘this relationship is a central concern of organisations as adaptive systems’. Exploitation is the maximisation of payoff from existing knowledge (March, 1991; Martin, 2009), and as ‘the administration of business creates reliability in the form of consistent, predictable outcomes’ (Martin, 2009, p. 19). Exploration as the search for new knowledge is ‘the invention of business, and creates validity and outcomes that meet a desired objective’ (Martin, 2009, p. 19). Exploitation includes such actions as ‘refinement, production,

efficiency, and execution’, while exploration includes for example ‘search, risk taking, experimentation, flexibility, and innovation’ (March, 1991, p. 71). Martin (2009) further proposes that companies are more comfortable with analysing and exploiting existing knowledge, rather than the uncertainty and randomness of intuitive thinking associated with exploration. This key mental model reinforces the extant dominant profitable operations practice and the theory practice dualism. Conversely, organisational ambidexterity is the dynamic capability of an organization to simultaneously explore and exploit, and can be unpacked into two dimensions, firstly ‘the balance between exploitation and exploration and, secondly the combined effect of both’ (Cao, Gedajlovic, and Zhang, 2009, p. 781).

Nicholas, Ledwith, and Bessant (2013) investigated the innovation search strategies that firms use to escape their existing mental models and explore new cognitive frames by applying Bessant and von Stamm’s (2007) commonly used set of 12 search strategy clusters. While all 12 were used to explore new cognitive frames for discontinuous innovation ideas, five strategies: using the web, working with active users, deep diving, probe and learn, and mobilising the mainstream could also be appropriate for exploitive search within the established frame. Most importantly, Nicholas, Ledwith, and Bessant’s (2013) study also compared smaller and larger companies suggesting that variation in innovation success is related to the degree that framing strategies are employed rather than the availability of greater resources.

Consequently, the application of (re)framing strategies has significant ramifications for this research, in that extant manufacturing profitable operations can be framed as primarily an exploitation practice, while multi-capital exploration necessitates praxis (re)framing strategies. In summary, innovative (re)framing is a dynamic process of meaning construction which is dependent upon the effective application of (re)framing strategies, and requires an injection of alternative praxis frames. Significant for this study, (re)framing is a means of establishing the ontological dimension of an organisation, creating a sense of reality, envisioning alternative plausible realities (Ramirez and Wilkinson, 2016), and understanding potential relations between frames.

### **4.3.3 Prâxis (re)framing as an onto-epistemological duality**

Contemporary profitable operations organisations exhibit dualisms: epistemologically between theory and practice; and ontologically between the dominant bounded frame and potential future frames, and their inter-frame relations. Such bounded dichotomies limit the scope and impact of purposeful actions. An alternative framing of organizations suggests that duality is an intrinsic dimension, in which: ontologically it can be seen as both an entity and a process (Langley et al., 2013); epistemologically, it may be known through identifying patterns of relations and may also be known through enacting patterns of relations (Tsoukas, 2017); and praxeologically, organisations may be acted upon instrumentally (as if they were intentional objects) and they may provide the contexts for non-deliberate action (Tsoukas, 2017).

Bateson suggests that a self-fulfilling prophecy is based on the partial production of epistemological and ontological premises that are connected and self-validating ‘beliefs about what sort of world it is, will determine how he sees it and acts within it, and his ways of perceiving and acting will determine his beliefs about its nature’ (1972, cited in Weick 2020, p. 1423). In essence, a self-fulfilling prophecy is an onto-epistemological duality. Tsoukas (2017, p. 137) further elaborates that ‘since “to know is to represent accurately what is outside the mind” (Rorty, 1989, p. 3), the more accurately we represent the world, the better chances we have to improve our action in it’. These observations suggest that an onto-epistemological capability is a key building-block of organisations, in knowing and fulfilling multi-capital stakeholder needs, and thus actioning new forms of organisation.

### **4.3.4 (Re)framing journeys and onto-epistemological maturities**

Maturity can be defined as ‘the state of perfection, fullness, or readiness which evolved from an initial (embryonic) to an advanced stage’ (Serenko, Bontis, and Hull, 2016, p. 340). Therefore, in its fundamental form, maturity forms an ongoing continuum, leading to the elusive concept of perfection. Maturity models are a topical conceptualisation of an incremental maturity approach where ‘each entity develops through stages of maturity over time until it reaches the highest level’ (Hsieh et al, 2009, p. 4087). In one framing of a maturity model, Maslow (1943) suggests that there is a hierarchy of human needs that progresses through physiological, safety / security, social, esteem, and self-actualising.

Morgan (2006, p. 36) suggested that organisations could satisfy employee's needs at these five layers and thus 'integrate the human and technical aspects of work', and reframed organisations as 'sociotechnical systems'. Another common technology model is the Capability Maturity Model (Paulk et al, 1993) which connects a framework of goals, processes, and maturity levels to govern the delivery of software systems. According to Klimko (2001, p. 402), in a maturity model 'the entity progresses consecutively from one level to another without omitting any level'. Moreover, maturity models, 'descriptively, reveal the dimensions which need to be designed, and prescriptively, enable companies to define courses of action or capabilities needed to reach the desired stage of maturity' (Berghaus and Back, 2016, p. 3).

Maturity as an innate property of all organisations makes perfect sense, however, maturity models have theoretical and practical challenges. Firstly, progression through prescribed, sequential, and incremental levels does not take account of exogenous shocks such as digital innovation which make it feasible, and often essential to concurrently advance across multiple levels. Secondly, an organisation is a connected whole in which success is dependent upon interactions of multiple and synergetic dimensions and elements (frames and prâxes in this research context). In this scenario, the maturity of an organisation is a function of the total configuration of organisational elements, in which related elements will potentially be at different levels of maturity. In an alternative maturity continuum frame, each element of interest could be allocated 'a maturity assessment and a maturity weighting that represents the importance of the item of interest to the overall maturity' (Hsieh et al, 2009, p. 4095). Therefore, elemental level maturity could provide granular assessments at an ontological ((re)framing) level, an epistemological (prâxis) level, and their complementary interaction thus indicates an overarching onto-epistemological (organisation) assessment.

#### **4.4 Research design and methodology**

This ethnographic study of the university-led, and UK government sponsored MSLP initiative examines the (re)framing journeys of manufacturing medium enterprises as they seek to future proof their business through notions of multi-capital value and digital enablers. The research follows an inductive grounded theory analysis, whose purpose Gioia, Corley, and Hamilton (2012, p. 19) espouse as ‘to obtain both retrospective and real-time accounts by those people experiencing the phenomenon of theoretical interest’. The broad research flow comprised research design, data collection, data analysis, and inductive theory generation.

##### **4.4.1 Research setting and sample**

The research followed a longitudinal case study approach over the MSLP lifecycle of approximately two years, and evaluated three MSLP cohorts (each cohort had a life-cycle of approximately nine months). The programme comprised participants from 37 medium enterprise manufacturing organisations (organisational delegates and primary contributors), with additional contributions from 170 organisational employees. Applicants and their organisations were selected based on criteria of being an established business (at least five years old), having a minimum number of employees (at least 25), and performing senior management roles as director/managers (having responsibility and capacity to influence organisational change).

The organisations were geographically spread across North West England, represented comprehensive manufacturing sub-sectors, and comprised a wide diversity of SME culture including mature companies, organisations of entrepreneurial origin, and family owned and governed businesses. The participants were primarily directors and senior managers, core assumptions being that: by attending the programme, participants are “knowledgeable agents”, namely, that people in organizations know what they are trying to do and can explain their thoughts, intentions, and actions’ (Gioia, Corley, and Hamilton, 2012, p. 17); and their organisations are receptive to change. Contributing employees represented a diverse set of organisational functions and responsibility levels. Participant and organisation profiles are detailed in Appendix C.

#### 4.4.3 Data collection

MSLP provided rich ethnographic data across a diverse set of researcher-participant touchpoints: eight content-based modules, the first being a two-day residential induction; three exemplar digital company site-visits; four participant self-organised and self-facilitated leaning forums; and a graduation symposium in which participants presented the outcomes from projects initiated on the programme. Prior to the MSLP residential induction, participants and five other colleagues (anonymously and confidentially) were asked to complete the Good Dividends Evaluation Audit (Kempster, Maak, and Parry, 2019). The Audit posed five probing questions for each of eight initial constructs, six capitals (human, natural, reputational, social (innovation), financial, and institutional) and two overarching constructs, namely governance and responsible leadership. The questions focused on ‘purposeful actions’ (Rigg, 2014, p. 651) or *prâxes*. The questionnaire served a dual purpose, firstly, as a reflective tool, and secondly to provide quantitative comparatives between the eight constructs. Consequently, participant organisations reflected on, and evaluated their multi-capital *prâxes*, triggering pan-programme discussion on their potential needs, challenges, and (re)framing priorities.

Demographic data regarding the applicants and their organisations, and applicants’ reasons for attending the programme were acquired during the on-boarding process. Deep immersion across all activities and touchpoints yielded ethnographic observations from the engagement of participants with their peers and the programme delivery team, and provided in-situ data. Additional data sources were: application forms; formal evaluation forms on each module and programme activity; an overall post-programme evaluation; and informal participant feedback. These additional data sources utilised open questions thus mitigating the impact of deterministic reflexivity as Gioia, Corley, and Hamilton (2012, p. 17) espoused ‘if we had designed our interview protocol around existing theory and terminology, we would have missed a key aspect of their sensemaking by imposing our preordained understandings on their experience’. Data was aggregated across all activities and participant touchpoints, and formal and informal sources into a single source totalling greater than 30,000 words.

## **Data analysis**

The data analysis broadly followed the Gioia, Corley, and Hamilton (2012) grounded theory approach. Through iterative cycles of constant comparison and theoretical sampling (Glaser and Strauss, 1967), common patterns in the data were surfaced. Further analysis of these patterns yielded 97 key points and their associated in-vivo codes (Corbin and Strauss, 2008), and this set of codes was deduplicated into 129 unique in-vivo codes. The 97 key points and their respective in-vivo codes provided the baseline data schema, and were further refined into 28 more granular first order concepts. For example, codes and key points that included the term digital could be used as a grouping criterion for a first-order concept. The same process was used to further refine the first order concepts into nine second order, theory-centric themes. At each stage, epistemic relativism was applied to establish contextual thematic demarcations. As illustration, a first order concept that relates to analogue value creation could fit into either a value behaviour or digital (as a gap) second order theme, thus important judgements were made throughout the analysis. Finally, by examining the relationships between the first order concepts and second order themes, three aggregated dimensions were constructed broadly representing clusters of prâxes that formed a meta-level (re)framing journey. These were designated as Surfacing the latent organisation, (Re)connecting the foundations, and Realising new value scenarios. Applying a dynamic lens transformed the static data structure and relationships into a dynamic prâxis (re)framing onto-epistemological model of an organisation, and facilitated the development of inductive theory. The relations between 28 first order concepts; nine second order, theory-centric themes; and three aggregated dimensions are visualised in Figure 4.1: -

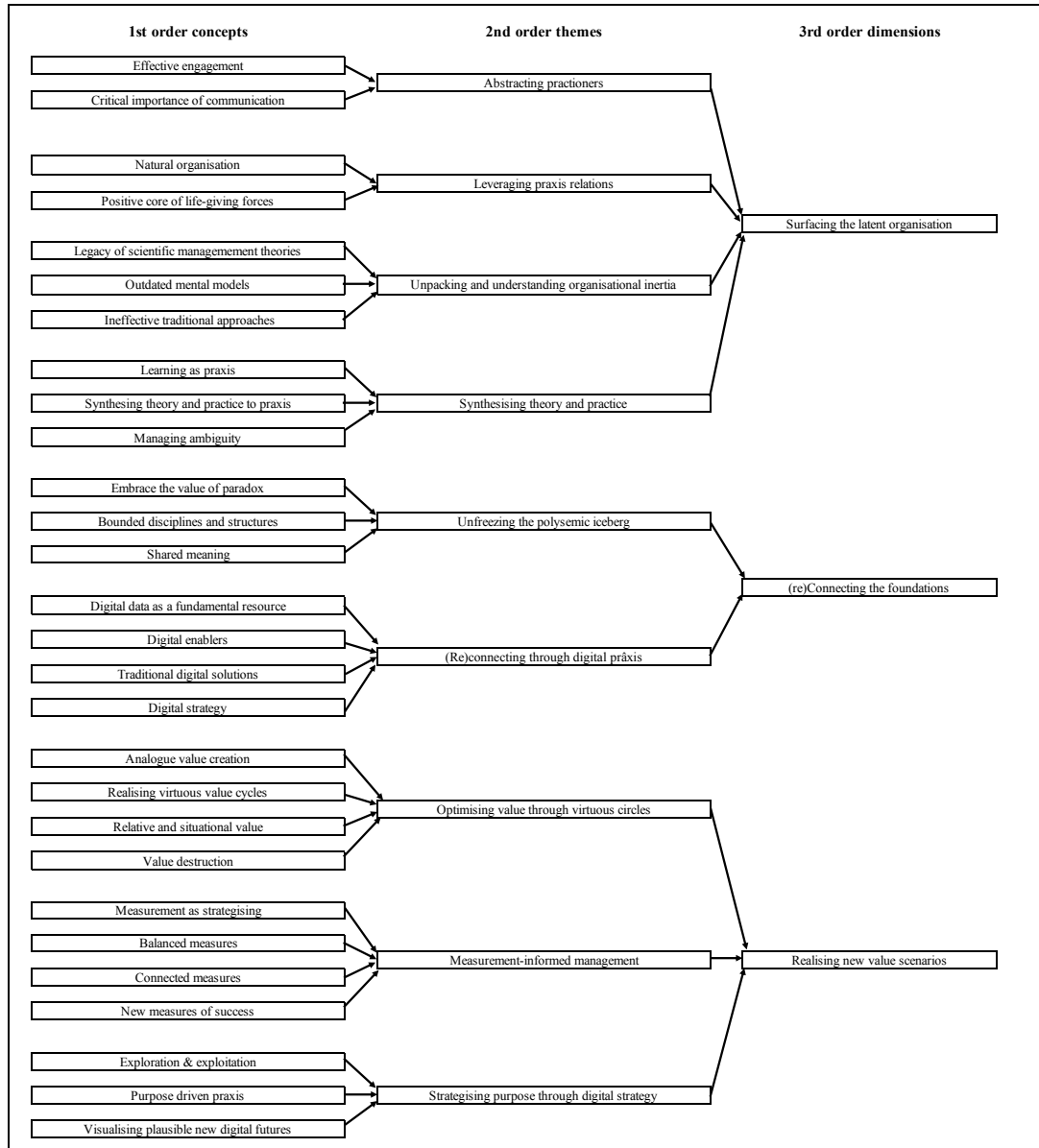


Figure 4.1: Static data structure



## 4.5 Findings

This section presents and analyses the findings surfaced through grounded theory analysis. While Figure 4.1 suggests a static ontology of bounded and discrete relationships, further analysis suggests an organisation can be conceptualised as a dynamic, relational, and onto-epistemological continuum. This onto-epistemological phenomenon manifests at a meta-level where prâxis (re)framing strategies follow a framing – (re)framing context – reframing journey. Specifically, Surfacing the latent organisation is focused on framing, (Re)connecting the foundations establishes the (re)framing context, and Realising new value scenarios enables new reframed value opportunities. This journey is visualised in Figure 4.2 where the width of the solid arrows depicts the relative contribution of framing and reframing to each of the three aggregate dimensions. At a micro foundation level, prâxes complement frames and form clusters of prâxis (re)framing strategies.

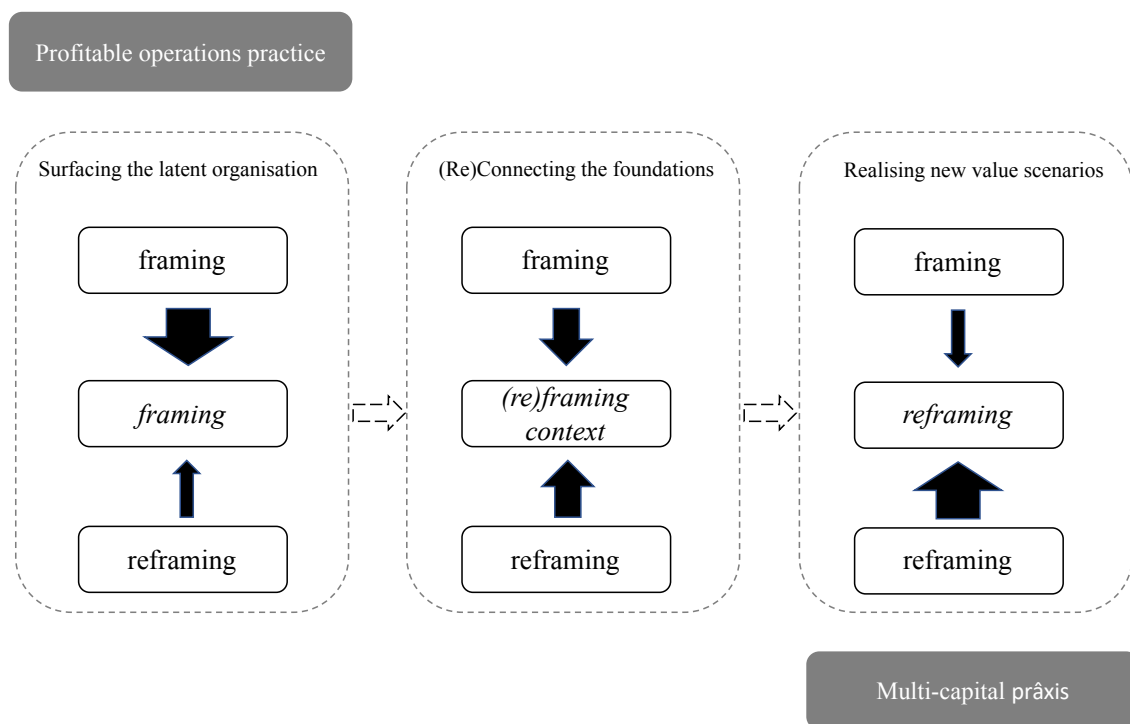


Figure 4.2: Meta-level reframing journey – towards realising a multi-capital organisation

The implications for organisations are now developed using the grounded theory analysis structure (Figure 4.1) and illustrated using empirical observations. In the following discussion, *italicised text* within single quotation marks represent original participant-speak.

#### 4.5.1 Surfacing the latent organisation

*Abstracting practitioners:* Participants aspired to convert programme content into ‘*positive and informed actions*’, yet highlighted that existing engagement is shaped by operational imperatives, and this frame propagates ‘*assumptions of understanding and mis-interpretations*’. Grint (2010) suggests leaders should reframe the roles of leadership and followership around open dialogue and negotiation. As the programme unfolded participants acknowledged the importance of pan-organisational alignment ‘*give everyone a reason to engage*’ and ‘*stop assuming people know*’. Critically, during visits to exemplar digital organisations, participants observed that ‘*employee engagement is a core part of achieving digital excellence*’. These visits also created confidence that observed digital capabilities were viable solutions thus inspiring participants to engage their organisations in wider exploratory dialogue. Consequently, engaging practitioners in sense-making will abstract from bounded practice-based ambiguity and towards more meaningful prâxis-based clarity of purpose.

*Leveraging prâxis relations:* While SME organisations have many known limitations, they also embody significant and often unnoticed value generating properties, ‘*success and resilience generate confidence*’. A tension between suboptimal practice norms and pervasive pockets of prâxis excellence was observed which justified the MSLP ethos ‘the answer is in the room’. One such tension between ‘*people need a reason and motivation to self-manage and take ownership of their own tasks*’ and ‘*the willing few*’ illustrated this dichotomy. Life-giving forces (Cooperrider, Whitney, and Stavros, 2008), natural organisation (Verity, 2012), and positive deviance (Pascale et al, 2010) are potential manifestations of prâxis outliers. The study surfaced prâxis outliers in diverse areas such as innovatively connecting digital components, advocating a purposeful business, and implementing adaptive concepts such as wellbeing and meaningful work. Findings further suggest that the relationship between an organisation’s prâxis outliers and practice norms is significant, therefore (re)framing should interpret the meaning of this diversity and envision new positive praxeological end-states of these foundations.

*Unpacking and understanding prâxis inertia:* Participants consistently surfaced a plethora of cultural and governance insights such as ‘*founder’s syndrome*’, ‘*family businesses with inherited and outdated governance*’, and ‘*old school worldviews*’. A profitable operations frame reinforces the value of technical practice in the service of capability exploitation,

and shapes: roles which participants described as *'repetitive and requiring no thought or context'*; resources that are *'finite and not fungible between areas'*; gaps in *'lack of formal business training and key deliverables'*; and ineffective mental models *'we agree to actions in order to please but don't achieve the outcome'*. Traditional change norms while ineffective still prevail, symptomatic in *'projects that don't deliver'*, and *'projects lack discipline and structure, and become fragmented'*. Organisational behaviours in the form of *'micro-managing'* and *'hierarchical control'* were common, and surprisingly, in this digital era *'technophobia impacts a wide set of people'*. Extant organisational frames could be categorised as recursive practice exploitation, and therefore organisations should unpack their embedded theories and underlying management principles to create transparency on sources of prâxis inertia.

*Synthesising theory and practice:* The ongoing programme discourse yielded deep insights into existing knowledge frames *'knowledge is the opposite of risk'*, *'we see risks not opportunities'*, and *'it's not a mistake so long as you don't do it again'*. Participants became increasingly aware of the demands and limitations of their current knowledge frames *'need precise clarity on many complex and often ambiguous information requirements'*. Realising the perfectionist nature of extant manufacturing practice, participants suggested an agile approach *'it is difficult to define all the objectives required, so stop holding projects to perfection, release many and often, and regularly review decisions'*. Participants also orchestrated the relationship between theory and practice to enable learning in daily prâxes such as exploratory application of measurement theory, making mistakes, and experimenting with prototypes and proof-of-concepts. Relational scenarios between theory and practice are important considerations in prâxis (re)framing specific observations being: examination of existing practice surfaces embedded theories; new practice both enriches current practice and can surface and challenge extant embedded theory; and new theory provides new frames with which to reframe current practice. Consequently, organisations should identify the significant relational theory-practice scenarios, and operationalise this epistemological ambidexterity in prâxis frames.

#### 4.5.2 (Re)connecting the foundations

*Unfreezing the polysemic iceberg:* Manufacturing organisations are grounded in dualisms which necessitate trade-offs in tightly bounded and sequenced practices, yet unconnected prâxes. Participants confirmed that *'we break things up into small units and silos'*, and *'legacy systems have rich and embedded knowledge and data, and are difficult to replace'*. Paradoxically, this bounded simplicity makes existing organisational models extremely complex, and creates a pluralistic structure of stakeholders, such stakeholders having polysemic: conceptualisations of success; practice frameworks; and parochial sets of unconnected measures. Paradox was a common source of ambiguity, participants evidenced many empirical tensions *'being too lean means that you can become less agile'*, *'focusing resources to improve one silo can have negative impacts in other areas'*, and *'working backwards from the end goal of a project makes perfect sense but we don't use that approach'*. Organisations are often modelled as icebergs (Hall, 1976); Senge, 2006) comprising four sequential layers, starting at the top with seen events, through unseen patterns, followed by structures, and finally mental models. Iceberg layers get more intangible yet more influential from the visible top (events) to the submerged bottom (mental models), yet form a connected dynamic network. Gergen (2009) further informed that while communities of like-minded people are essential to generate knowledge, such bounded disciplines create barriers between knowledge making communities and the outside world. In this research context, bounded simplicity paradoxically creates plurality, complexity, and unpredictability, therefore organisations should unfreeze existing practice and (re)connect as a one-organisation system of prâxes.

*(Re)connecting through digital prâxis:* Analysis surfaced a tension between the meta-narrative of adopting 4IR technologies and the pragmatic reality of expediting value through analogue means. This conundrum evident in participants' digital imponderables: *'we are doing all this digitalisation for?'*; *'the value of digitalisation in differentiating my business'*; and *'can specific types of technology help generate specific capitals?'*. New generations of cost-effective module-based software are challenging traditional solution panaceas and demonstrate *'how a business can grow and develop by technical advancement'*. Consequently, generating and consuming digital data was identified as critical to *'remove data deserts and harness previously inaccessible areas'*, *'automate simple though time consuming tasks'*, and address critical gaps *'the transfer of information is a common hotspot and impacts so many areas across my business'*. While expediting

value in analogue mode generates quick wins and potentially precipitates digital exploration, digital strategy should synthesise digital data with innovative technical and adaptive prâxis.

#### 4.5.3 Realising new value scenarios

*Optimising value through virtuous circles:* Participants' insights reframed the concept of waste from an operational yardstick to a pervasive organisational phenomenon, highlighting often unnoticed areas such as '*over-engineering is a common form of waste*', '*human creativity and ingenuity are some of the opportunity costs of waste*', and '*freeing up peoples' time to create higher order value*'. According to Eikeland (2014, p. 656) 'to count as virtuous, acts must be done with a right reason or justification'. Participants realised that routine events could be reframed as virtuous circles of connected value and capital interactions '*employee job enrichment also creates reputational value*', and '*digital creates opportunities not just to reduce costs but to meet greater needs and enrich lives*'. The critical paradigm shift being from executing bounded profitable operations transactions to realising that connecting organisational capitals also connects value. This shift also mitigates the organisational fallacy of value and causal dead-ends. Participants espoused multiple instances of empirical value (re)framing, examples being: introducing a digital health and safety device onto the shop floor; delivering a community project; and investing in an Enterprise Resource Planning platform. Superficially, these scenarios could be perceived as bounded transactions, that is: an operational enhancement; a non-core project; and a technology platform implementation. However, participants reported realising wider multi-capital value: a key behavioural change that '*significantly reduced injuries, equipment damage, and production outages*', while improving employees' sense of worth; '*more engaged and positively motivated employees*' who realised a greater sense of identity with the organisation; and '*freeing up capable people's time from mindless and repetitive tasks to creating higher order value*'. Therefore, to optimise organisational value, bounded practice transactions and causal dead-ends should be (re)framed as pan-organisational and virtuous multi-capital circles.

*Measurement-informed management:* Many SMEs achieve success through simply '*an understanding of what needs to be done*'. Yet, measurement ambiguity was a common challenge in that current measures are not effective in: '*facilitating goal delivery*;

*understanding the behaviour our measures are actually driving; and understanding how value is measured and utilised*, participants concluding that *'measures aren't always obvious and easy to allocate'*. Extant measurement practice: is primarily composed of lagging indicators; focuses on financial and operational capitals; and enacts a control and monitoring function. Ineffective measures also propagate behavioural mis-appropriation and lack of transparency, in that leaders often treat adaptive challenges as technical problems (Grint, 2010), *'we focus on technical measures yet need to see the whole and the unseen'*. Such framing avoids the discomfort of facing up to a set of deeper adaptive issues (Heifetz & Laurie, 1997; Heifetz & Linsky, 2002; Taleb, 2010).

Participants placed increasing significance on adaptive concepts such as relationships, wellbeing, and meaningful work, yet were unsure how to operationalise and measure the value of these concepts. New measurement frames cognitively freed participants to reframe measurement as a strategic capability which symbiotically explores new value contributions *'identifying value and its measures can help shape strategy'* and *'identify the measurements and structure them to deliver exactly what you need'*. Specifically, the task to create a dashboard of multi-capital measures nudged participants to consider and understand capital connections. For some participants multi-capital dashboard is *'where it all started to make sense'*. Thus, repositioning measurement from an operational yardstick to a strategic omni-capability will enable organisations to (re)connect organisational capitals within new value journeys.

*Strategising purpose through digital praxis*: Many SME organisations confirmed that they have neither a formal strategy nor a strategising process, yet acknowledged that *'fully understanding and articulating strategy is key to success'*. Rather than simply digitally enabling their current organisational model, participants envisaged their future direction through *'tangible objectives aligned to purpose.'* The digital reality observed in visits to exemplar digital manufacturing firms created confidence that participants' aspirations to *'future proof the business through digital'* were viable, and *'seeing digital platforms used in other organisations let us envisage a fully functioning smart factory'*. Evidencing how digital enables alternative organisational models, and the extraneous shock of Covid-19 incentivised participants to reframe their strategies *'new retail business model is something that we always wanted but were busy servicing wholesale trade'*, and *'we discovered new flexible manufacturing and delivery channel capabilities'*. Consequently, participants

explored areas of organisational ambiguity and value opportunities in digital experiments and agile projects which formed the antecedents of their digital roadmaps. Such empirical insights suggest that strategising purpose in digital praxis will help organisations to elaborate and operationalise their strategy.

The research's empirical observations suggest that praxes and frames form complementary building blocks as (re)framing strategies, and these praxis (re)framing foundations are summarised in Table 4.1 below: -

Table 4.1: Prâxis (re)framing foundations

Prâxis	Frame	Prâxis (re)framing strategy
<b><i>Surfacing the Latent Organisation</i></b>		
Abstracting practioners	Clarity of purpose	Engaging practitioners in sense-making will abstract from bounded practice-based ambiguity and towards more meaningful prâxis-based clarity of purpose.
Leveraging prâxis relations	Diversity	The relationship between an organisation’s prâxis outliers and practice norms is significant, therefore (re)framing should interpret the meaning of this diversity and envision new positive praxeological end-states of these foundations.
Unpacking and understanding organisational inertia	Effectiveness	Organisations should unpack their embedded theories and underlying management principles to create transparency on sources of prâxis inertia.
Synthesising theory and practice	Knowledge ambidexterity	Organisations should identify the significant relational theory-practice scenarios, and operationalise this epistemological ambidexterity in prâxis frames.
<b><i>(re)Connecting the Foundations</i></b>		
Unfreezing the polysemic iceberg	One-organisation	Bounded simplicity paradoxically creates plurality, complexity, and unpredictability, therefore organisations should unfreeze existing practice and (re)connect as a one-organisation system of prâxes.
(Re)connecting through digital prâxis	Digital maturity	While expediting value in analogue mode generates quick wins and potentially precipitates digital exploration, digital strategy should synthesise digital data with innovative technical and adaptive prâxis.
<b><i>Realising New Value Scenarios</i></b>		
Optimising value through virtuous circles	Success	To optimise organisational value, bounded practice transactions and causal dead-ends should be (re)framed as pan-organisational and virtuous multi-capital circles.
Measurement-informed management	Strategy	Repositioning measurement from an operational yardstick to a strategic omni-capability will enable organisations to (re)connect organisational capitals within new value journeys.
Strategising purpose through digital strategy	Purpose	Strategising purpose in digital prâxis will help organisations to elaborate and operationalise their strategy



In summary, Surfacing the latent organisation focuses on framing and enables a more detailed sense-making of existing, often latent, and generally unnoticed organisational frames, and creates a receptive mental model for the (re)framing journey. (Re)connecting the foundations generates an understanding of intrinsic connections, and how they can be (re)connected in a one-organisation structure. In Realising new value scenarios, the combination of digital maturity with innovative praxis (re)framing forms a new purpose-led, digitally enabled, and multi-capital value focused organisation.

## **4.6 Discussion**

This section presents the theoretical contributions and practical ramifications of the study in answer to the broad research goal, namely what (re)framing strategies did manufacturing medium enterprises suggest as important in future proofing their businesses.

### **4.6.1 Theoretical contributions**

The earlier argument outlined that theory and practice are not a dualism, therefore praxis as the synthesis of both, and the symbiotic interactions of framing and reframing suggest an alternative onto-epistemological organisational duality. This novel perspective advances ubiquitous bounded practice and transformation discourse and conceptualises an organisation as a dynamic and relational praxis (re)framing onto-epistemology.

Examination of the praxis (re)framing foundations yielded that praxes and frames form complementary pairs (Table 4.1). This interaction is advocated as praxis (re)framing in proposition one (P1): praxes and frames form a complementary praxis (re)framing duality which makes organisational strategies more transparent, granular, and connected. Analysis further suggests that framing is grounded in extant exploitative practice and its embedded theory, while reframing is an emergent and exploratory praxis. In a digital maturity context (data, function, model), Figure 4.3 illustrates the dynamic interactions between praxis (re)framing building blocks, these micro-foundations further connecting to form praxis (re)framing virtuous circles.

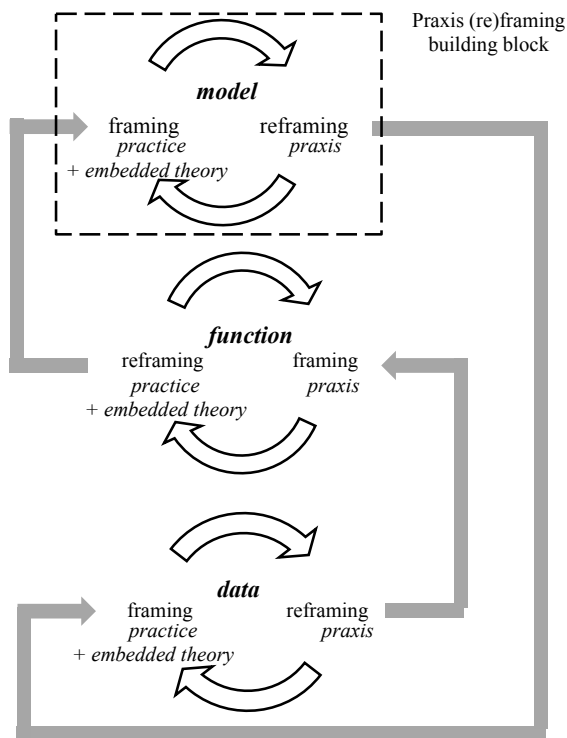


Figure 4.3: praxis (re)framing virtuous circles

Consequently, proposition two is offered (P2): practice, theory, framing, and reframing symbiotically connect and reinforce one another as praxis (re)framing virtuous circles. In this study, praxis maturity represents the degree of knowledge complexity, and the ability required to synthesis a theory and practice duality in shaping an intended and expected outcome. (Re)framing maturity represents the degree of capability required to frame and reframe the current and preferred target states of a phenomenon of interest. In this ontological conceptualisation, framing would primarily surface extant reality, and reframing shapes plausible needs-based futures. This study conceptualises that praxis maturity represents an epistemological perspective, while (re)framing maturity represents an ontological perspective. Thus, proposition three is added (P3): praxis maturity and (re)framing maturity are significant organisational dimensions and represent the epistemological and ontological maturity of an organisation.

Praxis (re)framing interactions can be further extended into a relational onto-epistemology consisting of a foundational praxis, a relational praxis, and a causal frame which represents the underlying phenomenon of interest. As illustration, the (Re)connecting the foundations aggregate dimension comprises two second order themes broadly representing digital

maturity and organisational interconnectedness. In the digitisation prâxis, framing will surface analogue data which underpins extant practice that has been shaped by embedded theory, while digital reframing will highlight opportunities for data creation which were previously: not technically feasible; not valued in the bounded analogue frame; or unnoticed in the existing modus operandi. This (re)framing will trigger sourcing and digitisation of new data items which induces further framing-reframing opportunities and thus creates a virtuous digitisation circle. As a foundational prâxis, digitisation makes extant data more accessible, timely, and transparent, while also enabling new data creation. However, a data item is in essence an abstracted measure of a phenomenon of interest. For example, yield in a manufacturing context measures the number of finished products that were delivered without rework or errors. In essence, it is a representation of production efficiency and quality. Therefore, as a generalisable concept, digitisation also enables a relational prâxis namely measurement. In this instance, the universe of organisational data constitutes the underlying causal frame.

Within the digitalisation prâxis, framing will surface current analogue practice such as standard operating procedures, yet also potentially capturing tacit prâxis outliers. Framing will also identify areas for improvement such as waste, disconnections, bounded functions, and unfulfilled needs. Digitalisation framing will also benefit from newly digitised data, creating further insights and opportunities. Reframing enables new value realisation in such areas as: automation; integration, rationalisation of intermediary processes and entities; and enriched functionality e.g. complex calculations which are not feasible in analogue mode. Digitalisation attends to function and fulfilling needs as expected and intended outcomes. Thus, digitalisation enables the relational prâxis of (re)connecting, in which data and actions on that data are (re)connected as multi-capital needs-based functions. Such functions will ultimately be executed in empirical practice and the causal frame therefore is the set of functions that constitute organisational success. Reframed digitised data and digitalised functions would then be used within the digital transformation prâxis, and this phase can be conceptualised as organisational modelling.

A model orchestrates data and function into a systemic structure which represents an entire domain such as production, customer engagement, or indeed the end-to-end business model. In the digital transformation prâxis, combinations of digital data, digital data flows, and digital functions systemically connect and collectively enable organisational

transformation. Framing in this prâxis identifies bounded structures, mental models, and disciplines grounded in embedded legacy theory, while the associated reframing prâxis envisions new structural forms and modi operandi. Furthermore, digital transformation also enables the relational prâxis of organising, and the causal frame therefore is the overall organisational model (business, operating, etc.) which in essence represents how the organisation fulfils the needs of the wider stakeholder community. Finally, the digitally (re)framed organisation will trigger another virtuous circle of digital (re)framing praxeology. Therefore, the theoretical framework is extended through proposition four (P4): prâxis and (re)framing form a relational onto-epistemology of (P4a): a causal frame that represents the underlying phenomena of interest; (P4b): a foundational prâxis grounded in empirical activities; and (P4c): a relational prâxis that abstracts empirical constructs into new organisational capabilities and structures.

The (re)connecting through digital innovation and digital maturity prâxis frame duality is visualised as a prâxis (re)framing onto-epistemology in Figure 4.4 below.

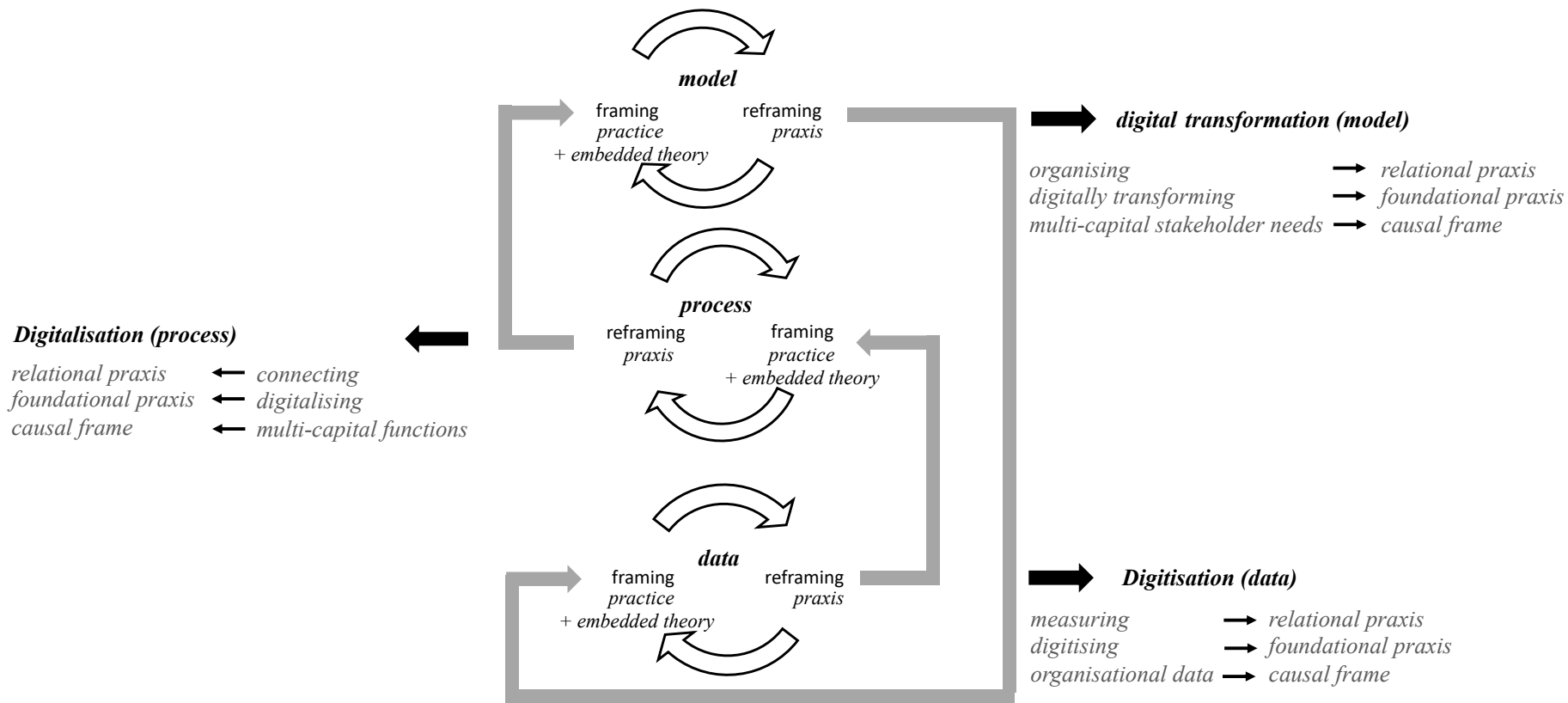


Figure 4.4: Prâxis (re)framing onto-epistemology of (re)connecting through digital prâxis (second order theme)

Previous conceptualisations in this manuscript have elaborated that the building blocks of prâxis (re)framing namely framing, reframing, theory, practice, and prâxis synthesise as virtuous circles. However, examining the initial prâxis (re)framing foundations in Table 4.1 indicates that Surfacing the latent organisation primarily focuses on framing, (Re)connecting the organisation would establish the (re)framing context, and Realising new value scenarios primarily attends to reframing. Therefore, proposition five is added (P5) that (re)framing will follow a meta-level journey in the form of framing - (re)framing context - reframing, P5a: initial framing will gravitate towards surfacing extant practice and its embedded theory; P5b: (re)framing establishes the organisational context by evaluating new prâxis against extant practice, gaps, and unfulfilled needs; and P5c: reframing will provide solutions to identified organisational gaps and unfulfilled needs, enabled by appropriate prâxis.

As prâxis maturity and (re)framing maturity both represent the concept of maturity, their product enables a complementary assessment of the level of maturity required to successfully execute the prâxis (re)framing strategy. Proposition six thus extends the concept of onto-epistemological maturity (P6): For each phenomenon of interest, the product of prâxis maturity and (re)framing maturity provides an indicator of organisational maturity, and indicates an overarching onto-epistemological perspective of organisational maturity.

As an organisational fundamental, maturity can be positioned as the degree to which (re)framing provides clarity of purpose, and prâxis enables delivery of purpose. In this sense, maturity represents an organisation progressing to a more connected set of multi-capital prâxes, enabled by clarity of purpose and the successful execution of this purpose. Therefore, proposition seven extends the concept of onto-epistemological maturity (P7): pan-organisational clarity of purpose is a function of (re)framing maturity, effectiveness of organisational purpose is a function of prâxis maturity, and thus organisational purpose maturity is dependent upon the onto-epistemological interaction of (re)framing and prâxis and influences organisational design.

This conceptual onto-epistemological framework for organisational prâxis (re)framing and its key propositions, are presented in Figure 4.5 below: -

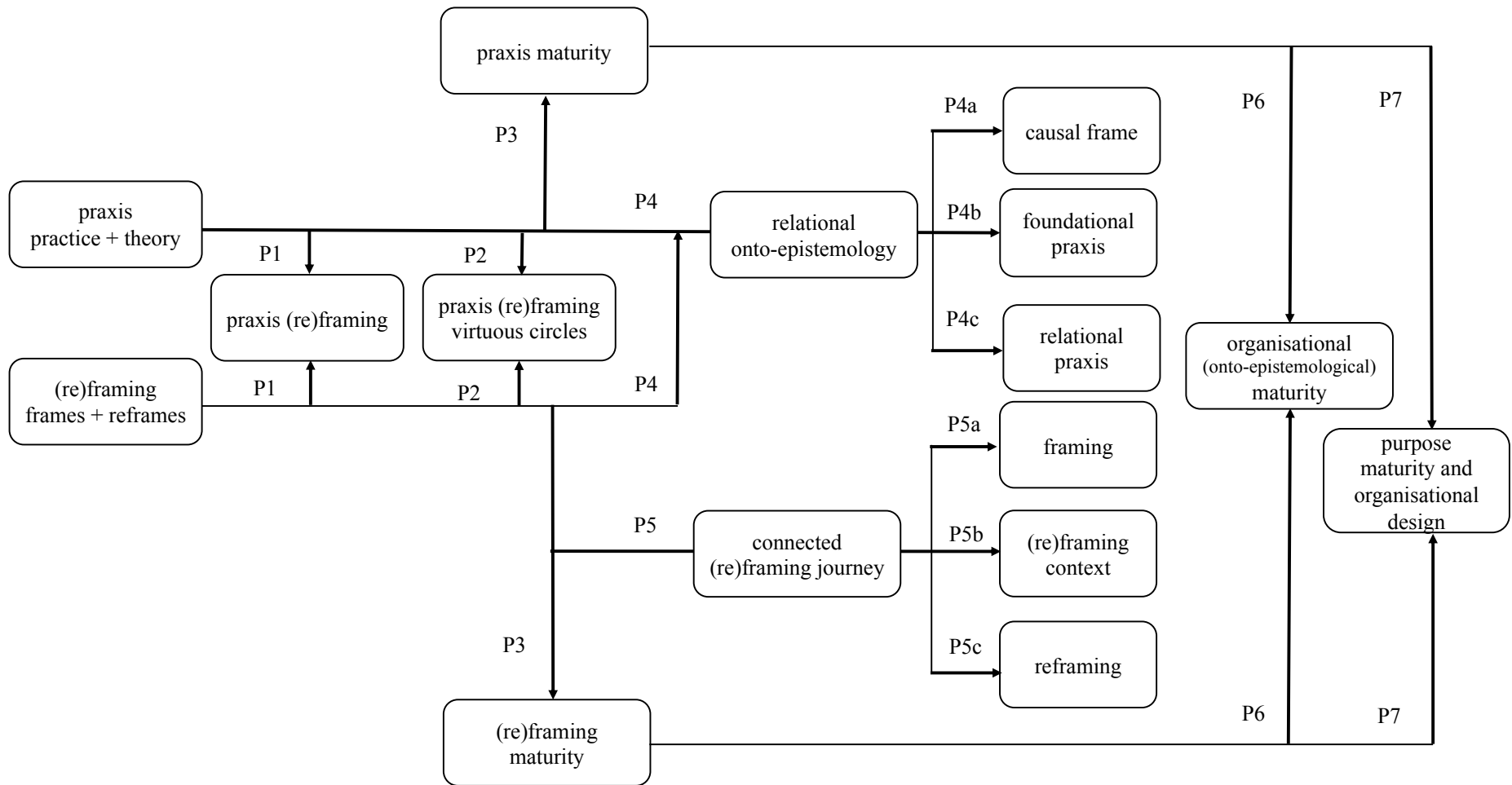


Figure 4.5: An onto-epistemological framework for organisational praxis (re)framing

#### 4.6.2 Practical implications

The theoretical framework developed in this paper creates opportunities to shape and operationalise new forms of organisation, in the form of reflective and quasi-quantitative instruments. Firstly, the prâxis (re)framing foundations in Table 4.1 could be transformed into an evaluation and/or engagement tool, which would trigger reflective discussion and create an understanding of an organisation's relative (re)framing priorities, and indeed help shape their (re)framing strategies.

Secondly, for each of the nine prâxis (re)framing items in Table 4.1, prâxis maturity and (re)framing maturity can be assigned rankings. For comparative and visualisation purposes, prâxis maturity could be allocated ordinal categories of very simple, simple, complex, and very complex to assess the knowledge capability level. Similarly, for (re)framing maturity, ordinal categories of very easy, easy, difficult, and very difficult can be allocated to assess the level of required ontological capability. In addition, a numeric value can be allocated to these ordinal categories such that very easy / very simple is rated one and very difficult / very complex is rated four. Additionally, the number of key points from the 97 initial key points (identified in grounded theory analysis) used in the construction of each prâxis (re)framing combination, provides a quasi-quantification of each item's relative priority. The three parameters, prâxis maturity, (re)framing maturity, and relative priority can be used to create organisational maturity comparatives (Table 4.2) and a prâxis maturity versus (re)framing maturity visualisation (Figure 4.6). In Figure 4.6, the diameter of the bubble represents the relative priority measure (item (c) in Table 4.2).



Table 4.2: Prâxis (re)framing relative parameters

Praxis	Frame	Praxis Maturity (a)	Reframing Maturity (b)	Relative priority (c)	Oganisational maturity (d) = (a * b)
<i>Surfacing the Latent Organisation</i>					
Abstracting practioners	Clarity of purpose	1.5	1.5	8	2.25
Leveraging prâxis relations	Variance	1.5	2.5	8	3.75
Unpacking and understanding organisational inertia	Effectiveness	1.7	2.7	14	4.59
Synthesising theory and practice	Knowledge ambedexterity	2.3	1.7	9	3.91
<i>(re)Connecting the Foundations</i>					
Unfreezing the polysemic iceberg	One-organisation	2.3	2.7	8	6.21
(Re)connecting through digital prâxis	Digital maturity	2.3	2.3	12	5.29
<i>Realising New Value Scenarios</i>					
Optimising value through virtuous circles	Success	2.0	2.3	10	4.60
Measurement-informed management	Strategy	2.8	2.8	16	7.84
Strategising purpose through digital strategy	Purpose	2.7	2.7	12	7.29

Dependent upon the organisation’s diagnostic needs, Table 4.2’s parameters could be extended or visualised in alternative formats. For example, an organisational maturity roadmap could be generated by charting the compound maturity ranking (Table 4.2 item (d)) against the relative priority (Table 4.2 item (c)) for each prâxis (re)framing item. In Table 4.2, prâxis maturity and (re)framing maturity have been applied to the nine second order themes, however, multi-capital stakeholder needs could be assessed at higher (third order aggregate dimensions) or lower levels (first order concepts). Furthermore, the analysis could be expanded to include current state versus target state comparatives.

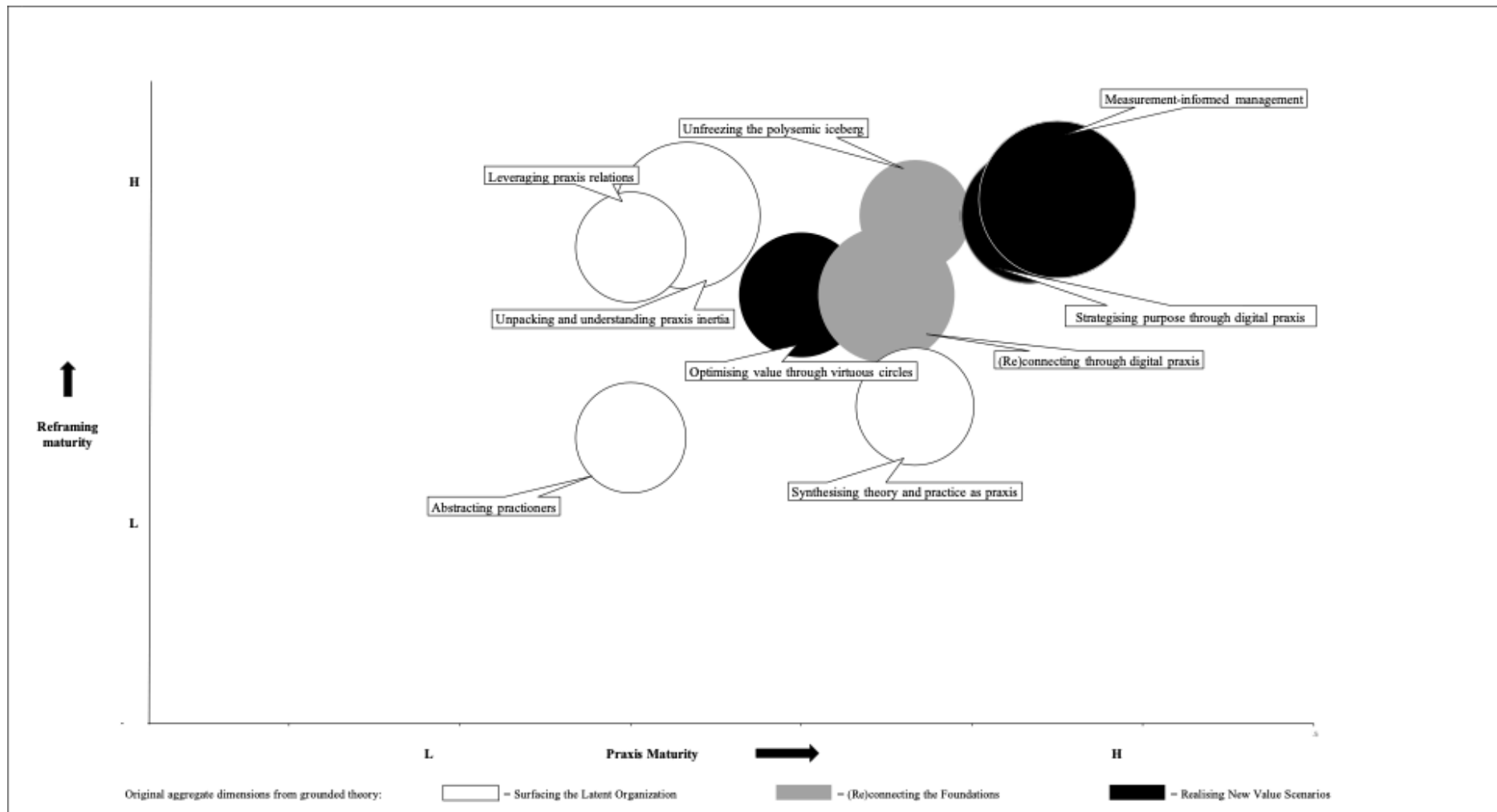


Figure 4.6: Prâxis (re)framing visualisation

Figures 4.5 and 4.6, and Table 4.2 illustrate how the theoretical framework can be configured to guide change agents on alternative organisational designs. Illustrative practical applications are to identify: extant and aspirational mental models; constraints such as inertia, waste; underutilised prâxis outliers; key events that connect as pan-organisational and multi-capital value journeys; self-assessment of maturity; and transformation roadmaps for new organisational models. Table 4.3 below extends the previous discussion on (re)connecting through digital prâxis (detailed in Figure 4.4) for all three organisational dimensions, and nine second order themes.

Table 4.3: Prâxis (re)framing onto-epistemology

	<i>Surfacing the latent organisation</i>				<i>(Re)connecting the organisation</i>		<i>Realising new value scenarios</i>		
	Abstracting practioners	Leveraging prâxis relations	Unpacking and understanding prâxis inertia	Synthesising theory and practice as prâxis	Unfreezing the polysemic iceberg	(Re)connecting through digital prâxis	Optimising value through virtuous cycles	Measurement-informed management	Strategising purpose through digital prâxis
	<i>framing</i> →				<i>(re)framing context</i>		→ <i>reframing</i>		
	Key theme: meaning making through leveraging praxeological diversity and inertia				Key theme: digitally (re)connecting the 'one organisation'		Key theme: exploring and operationalising multi-capital needs through virtuous value circles		
Frame	purpose	culture	multi-discipline variance	knowledge ecosystem	one organisation	digital maturity	multi-capital organisation	multi-capital needs	value
Relational prâxis	Meaning-making	understanding culture	optimising resources	learning through prâxis	standardising meaning	synthesising data and prâxis	(re)defining value	exploring and exploiting	operationalising value
Foundational prâxis	engaging practioners	surfacing inertia	surfacing outliers	(re)connecting theory & practice	unfreezing bounded practice	digitally innovating	(re)connecting transactions	measuring	strategising

Table 4.3 suggests a pan-organisational roadmap that can abstract and innovate extant practice into new forms of organisations through prâxis (re)framing and onto-epistemological principles.

#### **4.7 Conclusion**

This research examines the (re)framing journeys of director/managers of manufacturing medium enterprises who aspire to future proof their businesses through notions of multi-capital value and digital enablers. Findings yielded the (re)framing priorities which broadly clustered into three prâxis dimensions, and also revealed that prâxis-frame dualities form the foundations for prâxis (re)framing strategies. Analysis further suggests that prâxis maturity and (re)framing maturity are significant considerations for organisational design, and their complementary product provides an onto-epistemological assessment of organisational maturity. At a micro-foundation level prâxis (re)framing dualities form virtuous circles. Consequently, this study conceptualises an organisation as a relational onto-epistemology. From a practical perspective, this framework could underpin an organisational health-check, a reflective benchmarking instrument, and other organisational modelling methods and visualisation tools. In summary, this paper provides direction on the design of new forms of organisation, and facilitates strategising specifically in the context of shaping digital and multi-capital roadmaps around clarity of purpose. The practical contribution is to aid organisational leaders, strategists, designers, and change agents in shaping new generations of organisations.

##### **4.7.1 Limitations and future research opportunities**

There are approximately 270,000 manufacturing organisations in the UK, and excluding micro-businesses 247,000 SMEs (UK Parliament, 2021), thus the study represents a finite and homogenous sample of the wider UK manufacturing segment and SME populations. Consequently, further research needs to establish if the findings are generalisable to organisations of: different size, maturity, or purpose; non-manufacturing industry segments; and alternative geographies and demographics. The impact of exogenous disturbances such as Covid-19 and BREXIT are implicit in the research's lifecycle, however they could be specifically investigated. While the findings are empirically grounded, the long-term operationalisation of such organisational frameworks was not extensively studied, therefore future research could evaluate related areas such as: multi-

capital value realised from executing prâxis (re)framing strategies; patterns of strategy selection and operationalisation priorities; and whether the various components of the prâxis (re)framing framework fulfilled permanent or transient roles. While the concept of prâxis (re)framing is practitioner agnostic, and the study's unit of analysis is effectively the organisation, further research could examine the wider implications of multi-capital prâxis (re)framing for practitioners' roles and identities.

## **Chapter Five - Understanding how connected multi-capital prâxes shape organisations as value systems**

This manuscript is authored by Eamon Mulligan, Stephen Eldridge, Steve Kempster, and Robyn Remke. The study design, analysis, and findings were produced by the first author, based upon the insights provided by the university-led Made Smarter Leadership Programme. Stephen, Steve, and Robyn provided appropriate subject matter expertise, an ongoing review of the narrative, and contributed to manuscript preparation and submission. Adjustments have been made to the original format of the paper (such as in the numbering of sections, figures and tables) to improve the integration within this overall manuscript.

## **Abstract**

This research advances empirical and theoretical understanding of organisational interconnectedness by investigating the relations between multiple capitals and prâxes. Organisational design has historically pivoted around the dominant profitable operations practice, embodied scientific management principles, and measured success through the return on financial capital and maximising operational efficiency. While prior studies made progress on conceptualising descriptive multi-capital frameworks, this study re-evaluates the dominant organisational axioms and explores operationalising organisations as connected praxeological multi-capital value systems. Structured equation modelling was used to analyse pan-organisational survey data from 37 medium enterprise manufacturing firms whose change leaders were participating in a leadership development programme. By confirming the underlying capitals and their significant prâxis elements, and quantifying the systemic positive correlations and causal relationships between capitals, an organisation was reconceptualised as a connected praxeological multi-capital value system. The findings also identified a people-centric value model, in which digital innovation and value governance are mediating engines, and reputational, institutional, and natural capitals are tangible value outcomes. A key contribution of this multi-dimensional organisational model is to surface theoretical insights of an organisation's dynamic and systemic connections, and provide practical guidelines for organisational design.

## **Keywords**

Organization and management theory, organizing for innovation in the digital world, organisation design, organisational evolution and changes, organisational processes, practice, structural modelling.



## 5.1 Introduction

Organisation stands as one of humankind's greatest inventions, prevailing technical and sociological innovations of the era having shaped tranches of organisational theory which can be condensed into classical, scientific management, neo-classical, and modern.

Modernity however, has created an imperative for organisations to understand and fulfil the needs of a globally connected stakeholder community and by implication generate value across a diverse set of capitals. Thus, this research examines an organisation as a connected system of multi-capital prâxes, and provides an empirically derived alternative to the reductionist norm of measuring success through returns on financial capital and operational capability. Influenced by scientific management theory (Taylor, 1911), traditional organisations were designed to meet the demand for large volumes of standardized products under varying levels of uncertainty, and with the objective of providing stability and predictability (Weick, 2004). In a manufacturing context, Brusoni and Prencipe (2006, p. 182) observed that such a purpose leads to 'highly specialized and disconnected activities' and 'design and production processes are sequential operations.' However, such prescribed models have been rendered ineffective as 'communication technologies have revolutionized the ways organizations operate, globalization has changed organizational identities, workers' educational levels and quality-of-life expectations have continued to rise rapidly, and knowledge-based activities have become central to working life' (Dunbar and Starbuck, 2006, p. 171).

In an ever-increasing knowledge-based economy, organisations face 'unprecedented levels of complexity and dynamism from their environments, including their customers' (Yoo, Boland Jr, and Lyytinen, 2006, p. 215). The resulting fusions and emergent interactions have led to 'redrawn industry boundaries, revised industry rules, new organizational forms and structures, enhanced interorganizational reach and range, and powerful network externalities in business ecosystems' (El Sawy et al., 2010, p. 836). Reductionism also treats the anatomy of an organization as decomposable into independent elements that can be examined separately and assumes that knowledge gained on each element can be aggregated to understand the whole organizational system (Sinha and Van de Ven, 2005). Furthermore, a study of technical help desks also demonstrated that digitization induces workflows to be modularized by dividing them into tasks separable in terms of technical skills and interactivity (Orlikowski, 1996). Conversely, Holland (2006, p. 1) positions

organisations as complex adaptive systems or dynamic networks of interaction which are ‘systems that involve many components that adapt or learn as they interact’.

In this research context, one core element of interactive organisations is capital which can be defined as ‘accumulated labor’ (Bourdieu, 1986, p. 241), Bourdieu further elaborating that capital is sums of particular money or assets put to productive use. According to Kempster, Maak, and Parry (2019, p. 4), capital can be ‘financial, human, social (networks, relationships, communities), reputational (brand value), institutional (transforming capability) and natural (planetary), and all six capitals relate to all institutions—including but not limited to businesses, charities, NGOs, local and central governments’. Kempster, Maak, and Parry’s (2019, p. 44) Good Dividends framework is visualised in Figure 5.1.

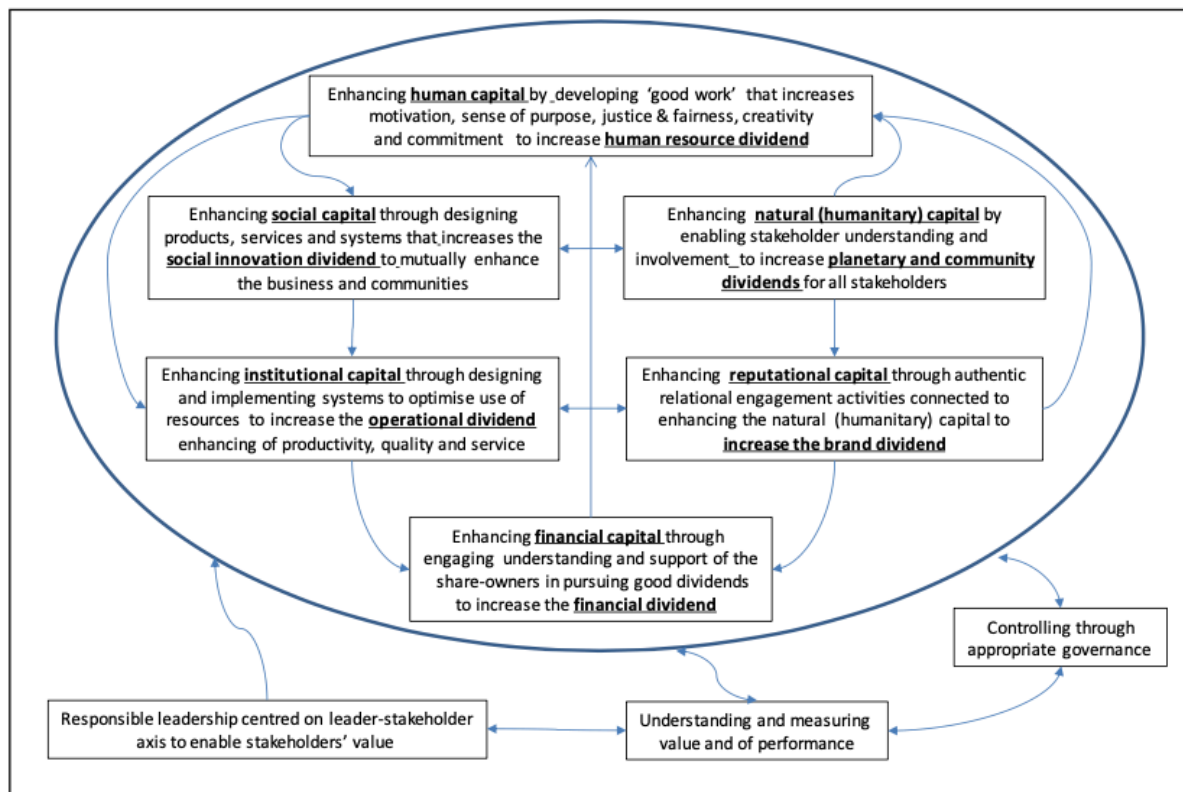


Figure 5.1: A System of Good Dividends (Kempster, Maak, and Parry, 2019, p. 44)

Many leaders are unsure how to operationalise the concept of organisation, specifically adaptive elements such as well-being, clarity of purpose, and meaningful work. Such concepts are often unnoticed in a routinised profitable operations practice. In this research context, practice is ‘a routinized type of behaviour’ (Reckwitz 2002, p. 250). Conversely,

prâxis is ‘purposeful action’ (Rigg 2014, p. 651), which Nicolini (2013, p. 26) elaborates as ‘action informed by knowledgeable value-driven deliberations’, and Freire (1985) defining it as the synthesis of theory and practice in which each informs the other. Prâxis is a critical concept in this study as it provides both the core organisational data collection elements, and also reflects the research context as medium enterprise manufacturing organisations embrace impactful theory and practice.

Made Smarter, the digital transformation programme of the UK Government’s industrial strategy, is a recent response to the emerging importance of Industry 4.0 for the manufacturing industry, and envisages triggering a UK manufacturing renaissance. Small and medium enterprises (SMEs) are seen as core to this renewal, and the study’s context is the university-led Made Smarter Leadership Programme (MSLP) for manufacturing medium enterprises who aspire to future proof their organisations through addressing the diverse needs of the stakeholder community and digital innovation. Made Smarter is not a simple technical upgrade however, rather a visionary sociomaterial ontology (Feldman and Orlikowski, 2011) which enables a safer, more meaningful, more innovative, and more productive workplace-of-the-future. Consequently, future organisations can be positioned as a system of connected capitals whose elements are grounded in prâxes, and that responsible leadership and governance as overarching dimensions will positively interact with an organisation’s capitals. Thus, the study examines organisations as connected multi-capital systems through the following research questions: -

- Which capitals are significant for organisations?
- What are the configurations of prâxis-elements that constitute such capitals?
- What is the nature, strength, and direction of the relationships between capitals?
- How do organisational capitals connect in creating value outcomes?

This paper is structured as follows: firstly, the key theoretical underpinnings of a connected praxeological multi-capital organisation are explored, and hypotheses appropriate to the research area of interest developed. Next, the structure of the survey instrument, the respondent population and associated data collection, and the structured equation modelling method used to analyse respondent and demographic data are described. Thirdly, the findings in the context of the initial hypotheses are presented. Fourthly, based on the empirical findings, a set of theoretical propositions which are

significant for organisational design are developed. Finally, the study's conclusion, limitations, and future opportunities are presented.

## **5.2 Theory and hypothesis development**

This research seeks to advance knowledge of organisations as connected multi-capital structures. Specifically, the study examines the interactions of multiple capitals and prâxes and their contribution to value realisation. Historically, scientific management theory has simplified the challenge of understanding and designing organisations through prescriptive profitable operations practice. However, to meet the ever-diversifying needs of modernity organisations need to connect a much wider set of capitals and embrace wider principles such as regeneration, circularity, and sustainability. Thus, a novel theoretical approach is required to mitigate this praxeological inertia inherited from long gone eras.

Critics have argued that 'organizational theories which "work" are obvious to practitioners; that is, the theories simply confirm relationships that are already well understood by experienced managers' (Priem and Rosenstein, 2000, p. 509). For example, research has suggested that business-level contingency theory while resonating with MBA students is not obvious to educated laypersons, nor to highly experienced practitioners as both groups would find that the theory disconfirms aspects of their causal expectations (Priem and Rosenstein, 2000). Researching within NASA, Carroll et al. (2006, p. 212) also discovered that organisational design is a somewhat unstructured and experiential focused activity, and 'performed by senior managers as a largely intuitive process, and informed primarily by past experience and often influenced by the external operating environment and interpersonal network'. They further posit that managerial intuition is only likely to be sufficient in situations where there are few elements with low interaction.

Organisations are generally framed around the technical challenge of organising work, an over-simplification given they embody greater purpose and wider adaptive meaning. Meyer and Rowan's (1977, p. 343) research challenged this misconception 'while formal organizations are endemic in modern societies, there is need for an explanation of their rise that is partially free from the assumption that, in practice, formal structures actually coordinate and control work.' Sinha and Van de Ven (2005, p. 396) compounded this ambiguity 'a focus on the characteristics of organization structure, strategy, and systems tended to overlook how work was actually done'.

Consequently, this research aspires to create a more structured and principle-based approach based on a deeper understanding of organisational elements and their connections, and this section examines how organisations can be (re)connected through pivotal structural theories.

### **5.2.1 Organisations as connected praxeological and epistemological structures**

In this digitally connected age, smart and connected machines, technologies, and systems interact across the physical, digital and biological domains and make the fourth industrial revolution fundamentally different from previous revolutions (Schwab, 2017). Widely available digital data is a critical enabler of this (re)framing, consequently, effective organisational design has to consider the underlying characteristics of the organisation's knowledge base. Evaluating whether firms are better off by using simple or complex representations of their task environment, Csasza and Ostler (2020) showed that the optimal representational complexity generally depends more on the firm's knowledge about the environment than it does on the environment's actual complexity. They also demonstrated that the relative advantage of heuristics vis-a`-vis more complex representations critically depends on an unstated assumption of informedness, that is, managers can know what are the most relevant elements to pay attention to. When this assumption does not hold, complex representations are usually better than simpler ones. Consequently, in this research context, identifying and indeed understanding the praxis elements significant to an organisation is a key epistemological factor in optimising organisational structure.

Contingency theory is often 'presented as a theory of fit, typically between environmental factors and organization design elements' (Parker and van Witteloostuijn, 2010, p. 542). Thus, framed in the fit-as-interaction tradition, 'a positive fit between two elements involves them interacting in a way that enhances performance, whereas a negative fit often referred to as "misfit" has the opposite impact' (Parker and van Witteloostuijn, 2010, p. 542). Zott and Amit (2007, p. 213) inform that 'theory, which is articulated in terms of misfits speaks more directly to managers than theory which is stated in fit terms; managers can use misfits as a mechanism in the design process; and misfits provide the bridge between practice and theory'. Misfits are not likely to all be of the same importance, either in practice or in theory, and theories are often not operationalized or tested with a focus on misfits (Carroll et al, 2006). They further argue that a misfit penalty is likely to exist for

organizations that deviate from the preferred configurational design, thus ‘evolution toward fit is a process of strengthening and restructuring connections among core elements’ (Brusoni and Prencipe, 2006, p. 179). Important to this research, prâxis contingencies (fits and misfits) enacted through connected capitals will provide future organisations with a novel epistemological core of theory practice interactions.

Knowledge frames are thus influential, and ‘designing organisations for efficiency enables better information flow among stakeholders and reduces information asymmetries among the parties, thus limiting the control over information that any stakeholder can have’ (Zott and Amit, 2007, p. 185). Therefore, some modules may have greater, lesser, or no influence on the required parameters of the organisational design as a result of their visibility (Albert, 2018). Organisations can be positioned as loosely coupled systems with many combinatorial possibilities, their members must make sense of them either by reducing their complexity (lowering the number of agents whose inputs influence their behaviour) or by absorbing it (adopting cognitive structures that simplify the inputs), thus information is more or less codified and more or less abstracted into an objectified structure (Boisot and Child, 1999). In a manufacturing context, robotized production necessitated an integrated (versus specialized) and articulated (versus tacit) knowledge base meaning legacy processes that were embodied in tacit problem-solving heuristics had to be articulated and codified for the new software-directed processes (Brusoni and Prencipe, 2006). Embracing robotization further highlighted that the adoption of modular design principles did not lead to a modular organization, rather, modularization at the product and plant levels led to a process of demodularization and integration at the organization level. Therefore, ‘the nonmodular manufacturing process became modular, while the modular organization became highly integrated. In other words, it is not products that design organizations. Knowledge does’ (Brusoni and Prencipe, 2006, p. 186).

Consequently, this research suggests that prâxis as purposeful and value-driven actions enabled by a dynamic synthesis of theory and practice in which each informs the other (Freire, 1985; Nicolini, 2013; Rigg, 2014) forms the elemental, epistemological, and connecting foundations of organisations.

### 5.2.2 Organisations as purposefully connected configurations

An organisation that comprises a connected system of multiple capitals, and their related prâxis elements, is a fundamental tenet of this study. However, a connected organisation is a somewhat heterogenous concept, and can be categorised by its components and their connections:

‘simple systems, such as the pendulum, have a small number of well-understood components; complicated systems, such as a Boeing jet, have many components that interact through predefined coordination rules (Perrow, 1999); and complex systems typically have many components that can autonomously interact through emergent rules’ (Amaral and Uzzi, 2007, p. 1033).

Regardless of their categorisation, all systems have a common connecting component, namely purpose, Kim (1999, p. 2) informing that an organisational system can be defined as ‘any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose’. Miller (1996, p. 509) concurred on this critical dimension of a common purpose, further suggesting that ‘configuration...can be defined as the degree to which an organization's elements are orchestrated and connected by a single theme’.

Rather than trying to explain how a work system is designed from its constituent components one element at a time, ‘a configuration perspective tends to focus on how a work system is designed from the interaction of its constituent elements taken together as a whole’ (Sinha and Van de Ven, 2005, p. 396). Configurations are patterns of design elements that commonly occur together because their interdependence makes them fall into patterns, hence they must be simultaneously understood as a holistic integrated pattern, which also overcomes the traditional reductionist problem (Meyer, Tsui, and Hinings, 1993). Significant for this study, configurations can also be positioned as: specific combinations of causal elements that generate an outcome of interest (Rihoux and Ragin, 2009), thus linking configurations of elements to value realisation; and ‘exhibit the property of nonlinearity in which small triggers can cause large effects’ (El Sawy et al., 2010, p. 844), again suggesting significance for value optimisation.

Elaborating on this property of non-linear value optimisation, Yoo, Boland Jr, and Lyytinen (2006, p. 215) highlight the complementarity aspect of configurations ‘the concept of gestalt as a pattern of elements, so unified as a generative force or an underlying “whole” that its /properties cannot be derived from a simple summation of its parts (Behrens 1984; More and Fitz 1993)’. A design gestalt can be positioned as a virtual structure that ‘combines ideas, values, resources, tools, and people into ensembles that can create and project remarkable artifacts, thus designing products and designing organizations cannot be and should not be separated as they both flow from a common set of capabilities’ (Yoo, Boland Jr, and Lyytinen, 2006, p. 228). In such an organisational system, Senge et al. (1994, p. 90) elaborate that structure further connects relationships and elements ‘structure in an organisational context has many forms, to some it's the organisation chart, others think it's the design of organisational work flow and processes, while in system thinking structure is the patterns of interrelationships among key components of the system’.

Systems are said to have a high degree of modularity when ‘their components can be disaggregated and recombined into new configurations, possibly with new components, with little loss of functionality, thus modularity bestows greater flexibility on a system enabling its components to be recombined in different ways and often to serve different functions’ (Schilling and Steensma, 2001, p. 1151). Organisational ‘divisionalisation increases with task complexity, suggesting that complex task systems encourage more division of managerial responsibilities. However, divisionalisation decreases as task systems become less decomposable’ (Zhou, 2013, p. 339). Meanwhile, organisational hierarchy increases with task complexity, or if task systems become less decomposable. As such, when the underlying tasks are not decomposable the feasibility and benefits of modularization in organizational design may be overstated, and hierarchy has a key role in coordinating complex task systems that are not fully decomposable (Zhou, 2013).

In summary, different organisational structures may be informed by different design rules, and yet still act as a coordinated system (Brusoni and Prencipe, 2006). In this study’s conceptualisation of an organisation, structures are comprised of capitals as configurations of prâxis-elements, which collectively form the working components and modules, yet also connect as an overall organisational configuration.



### 5.2.3 Organisations as connected value systems

According to Milgrom and Roberts (1995, p. 181), the notion of complementarity can be expressed as ‘doing more of one thing increases the returns to doing more of another’. They further elaborate that ‘changing only a few of the system elements at a time to their optimal values may not come at all close to achieving all the benefits that are available through a fully coordinated move, and may even have negative payoffs’. Intervention in any one sphere is sure to affect the other, whether managed or not, however, Bate, Khan, and Pye (2000, p. 197) inform that ‘the literature on change has seldom gone beyond a general appeal to change agents to think in holistic terms and somehow "make" changes in any one dimension reflect and reinforce changes being made in all the others’. This notion of connected and relational value outcomes is also consistent with contingency theory, Parker and van Witteloostuijn, (2010, p. 543) informing that ‘If two variables ‘x and y both produce a positive fit, their product term x times y will affect performance positively (and vice versa, in the case of a misfit)’. As illustration, if an owner's experience is more productive in a firm with a centralized decision-making structure, then one might expect productivity (and hence performance) to be positively related to the product of owner's experience and centralized decision-making structure.

To successfully navigate a technological transition, Taylor and Helfat (2009, p. 720) suggest firms often face ‘the ambidextrous challenge of “exploiting” existing complementary assets to support the new “exploratory” core technology’. Complementary assets are associated with specific organizational functions, such as manufacturing, marketing, and service, thus, the term encompasses not only physical and intangible assets, but also organizational capabilities to perform complementary activities to a core technology. In some situations, existing complementary assets retain little value and ambidextrous linking involving new core technology and complementary assets is inappropriate, and an unlinked structure may be preferable (Taylor and Helfat, 2009). In their study of organisational design with regard to performance frontiers, Van de Ven et al. (2011, p. 1070) concluded that many organisation design problems and relationships manifest themselves in different and contradictory ways at different organisational levels. This multiplicity also observed in a manufacturing context, in which Brusoni and Prencipe (2006) showed that task requirements set in motion cross-domain connections and rewiring of connections among domains, each organized according to its own design rules. As new connections are introduced, they allow new frames to emerge thus highlighting the

importance of within- and across- domain connections in order to introduce radical innovations. These connections are the mechanisms through which design rules develop that also become hidden in organizational routines and IT systems. Significant to this research, such observations confirm that connections are a foundational and unseen dynamic phenomenon which influence all levels and indeed the overall structure of the organisation, rather than vice versa.

The complexities of multiple conflicting environmental demands (contingencies), internal design configurations, and diverse performance expectations in most work systems (complementarities), suggest that it is difficult, if not impossible, to conceptually derive a useful theoretical model (Sinha and Van de Ven, 2005). Therefore, this research seeks to solve the theoretical puzzle, in which organisations need to manage its (mis)fit with multi-capital stakeholder needs, this (mis)fit enabled by configurations of capitals and their constituent praxis-elements that represent the organisation's epistemological foundations, and such foundations form connected and complementary value structures. To investigate this conundrum, the study will apply a theoretical stew of configuration, contingency, and complementary theories, and, most importantly examine the intersections of these structural theories to identify novel theoretical perspectives. This approach enables the development of the study's hypotheses which conceptualise an organisation as a set of connected multi-capital praxes, framing such interactions through the aforementioned lenses. Using the GDEA framework of eight praxis constructs (six capitals, responsible leadership, and governance) each comprising five elements, the praxeological multi-capital interactions of organisations in the form of associations (correlations) relations (causal paths) are evaluated through the following hypotheses (Table 5.1) :-

**Table 5.1: Theory / hypothesis matrix**

<b>Theory Component</b>	<b>Configuration Patterns of elements</b>	<b>Contingency Fit/misfit with needs</b>	<b>Complementarity Doing more of one thing generates more of another</b>	<b>Hypothesis</b>
<b>Element</b>	The set of retained elements are significant in representing the variance in the data	Retained elements fit and represent the variance in the data environment, discarded elements are misfits		H1: The organisation will be configured from, and have a close alignment with the set of praxis elements that comprise the initial eight constructs
<b>Capital factor (construct)</b>	Patterns of elements form capitals which collectively represent an underlying capital factor in the data	Patterns of elements that collectively represent an underlying capital factor fit with each other	Patterns of elements collectively represent an underlying capital factor thus each element complements the others in generating the capital factor	H2: Confirmed organisational capitals will be configured from patterns of praxis elements similar to the initial configurations of the eight GDEA constructs
<b>Organisation (model)</b>	Patterns of capital factors that connect through associations and/or causal influences represent the organisation	Patterns of capital factors that interact through associations and/or causal influences demonstrate fit which is essential for a functional organisation	Patterns of capital factors that interact in a systemic way demonstrate generative behaviour through inter-factor associations and/or causal influences. When all capital factors are correlated together and form part of causal paths then this enables value realisation and optimisation	<p>H3: Each confirmed capital will have positive connections with other related capitals</p> <p>H4: Each confirmed capital will have systemic positive connections with the wider set of capitals, forming an organisational configuration</p> <p>H5: Responsible Leadership will have positive relations with all constructs.</p> <p>H6: Responsible Leadership will have a stronger influence on the non-financial and non-institutional capitals</p> <p>H7: Governance will have positive relations with all constructs.</p>

Notes on table 5.1:

1. Elements represent prâxis elements (original GDEA measurement items).
2. Capital factors are expected underlying configurations (formed from original eight GDEA constructs).
3. In the Good Dividends framework, responsible leadership and governance are not designated as capitals, therefore in their hypotheses the broader term ‘constructs’ has been used. This allows for the scenarios where they have relationships with each other, and indeed merge with designated capitals.
4. The above hypotheses regarding the configurations and connections of organisations, capitals, and prâxis elements will be validated in measurement and structural models.

### **5.3 Research design and methodology**

*Data sample:* Quantitative survey data was collected from 37 manufacturing medium enterprise organisations providing 37 delegate participants and 170 anonymous pan-organisational contributors, making 207 respondents in total. The organisations are geographically spread across North West England, represent multiple manufacturing sub-sectors, and comprise a wide diversity of SME culture including mature medium enterprises, organisations of entrepreneurial origin, and businesses which are family owned and governed. The average age of participants was 42.6 years and their average number of years of experience was 9.2 years, while the organisations had an average vintage of 23.1 years and contained 43.5 employees. Applicants and their organizations were selected based on criteria of being an established business (at least five years old), having a minimum number of employees (at least 25), and performing senior management roles as director/managers (having responsibility and capacity to influence change). Programme participants were change leaders who had responsibility for digitally enabling their organisations, while contributors represented diverse organisational roles, functions, and responsibility levels. Organisational demographic data consisted of industry sector, turnover, vintage, and number of employees while individual demographics were age, gender, number of years of experience, role in survey (participant or contributor), function in organisation, and responsibility-level. The Made Smarter Leadership Programme (MSLP) comprised of three cohorts, each programme lifecycle lasted approximately nine months, with the total programme elapsed time (and research data collection) being

approximately two years. MSLP participant and organisation profiles are detailed in Appendix C.

### 5.3.1 Data collection

The primary data collection instrument, the Good Dividends Evaluation Audit (GDEA) was a Likert survey which evaluated organisational prâxes across eight constructs namely six capitals and two overarching concepts responsible leadership, and governance (Table 5.2). GDEA (Appendix A) is grounded in Kempster, Maak, and Parry’s (2019, p. 4) framework and was conducted several weeks prior to the programme’s initial module, the residential induction.

Table 5.2: GDEA survey structure

Organisation demographics (4)	Individual demographics (6)	Construct (8)	Measurement items (40)
Industry sector code	Age	Responsible Leadership	4 non-digitalisation questions and 1 digitalisation question
£ turnover	Gender	Governance	4 non-digitalisation questions and 1 digitalisation question
Vintage	Number of years of experience	Institutional Capital	4 non-digitalisation questions and 1 digitalisation question
Number of employees	Level of organisational responsibility	Financial Capital	4 non-digitalisation questions and 1 digitalisation question
	Function in organisation	Reputational Capital	4 non-digitalisation questions and 1 digitalisation question
	Survey role (MSLP participant or contributor)	Natural Capital	4 non-digitalisation questions and 1 digitalisation question
		Human Capital	4 non-digitalisation questions and 1 digitalisation question
		Social (Innovation) Capital	4 non-digitalisation questions and 1 digitalisation question

Each of the above eight constructs contained five probing questions making 40 measurement items in total, and one of the five questions in each construct specifically assessed digital prâxis. A balanced and objective review group completed multiple

iterations of the draft survey, thus ensuring that the questions were unambiguous and made contextual sense. All GDEA items used a six-point measurement scale: 1 - Do not do this; 2 - Occasionally do this; 3 - Do this but do not measure the outcomes and infrequently take action; 4 - Do this, and have some measures (loosely linked to business objectives), and sometimes take action; 5 - Do this, have measures linked to business objectives and proactively pursue action; and 6 - As per (5) above and regularly undertake learning to continuously improve, and have evidence as being a highly respected responsible business. Each of the 40 measurement items and associated scale represent a ‘purposeful action’, and the six-point measurement scale incorporates the dual dimensions of frequency of execution and quality of action. Therefore, the collected data represents prâxis, and the measurement scale inherently examines prâxis maturity.

### **5.3.2 Data Analysis and modelling overview**

To establish that the data was suitable for structured equation modelling, and confirm an initial set of capital factors, exploratory factor analysis (EFA) was performed using IBM SPSS Statistics software version 27. The Kaiser-Meyer-Olkin measure of sampling adequacy was computed to be 0.930 and Bartlett's test of sphericity indicated a significance level  $< 0.001$ , therefore the data was deemed suitable for detailed modelling. As exploratory modelling progressed, elements were removed, due to their having low factor loadings less than 0.5, or loading to multiple factors without having a greater than 0.2 difference between pairs of loadings. Given EFA provides important direction on the latent factors and significant variables, three different structures of the source data were compared: firstly, 50 individual data items (40 GDEA questions and 10 demographic variables); secondly, 18 data items (eight GDEA constructs, each aggregated across five questions, and 10 demographic variables); and finally, 11 data items (one aggregated score across all 40 GDEA questions, and ten demographic variables). This initial comparison highlighted that the first option, the most granular, comprising 50 data items, provided the most credible model of the underlying variance. Broadly, the eight GDEA construct's variables clustered onto corresponding latent capital factors, with some exceptions. Firstly, governance variables loaded across multiple factors, however two variables loaded strongly into the same factor as the Finance capital and this factor was named *value governance*. In addition, all variables from responsible leadership and human capital clustered together as a single people-centric factor and this was named *relational value*

*optimisation*. Interestingly, the eight digital questions (one embedded in each of the eight initial GDEA constructs) all clustered with social (innovation) into a single factor, so social (innovation) was reframed as *digital innovation*. The ten demographic variables either did not load into any factor, or loaded into low significance factors that represented an insignificant amount of the data variance, therefore they were later tested as control variables. Ultimately, 20 respondent measurement items out of 40, and two demographic control variables (age and vintage) out of ten contributed to the final models. Initial constructs, retained variables, and capital factor loadings are illustrated in (Table 5.3). For acceptable scale reliability each factor should have a Cronbach's alpha  $> 0.7$ , and the retained factors should explain more than 50% of the total variance in the source data (Fornell and Larcker, 1981). Both of these thresholds were achieved (Table 5.3), Cronbach's alpha ranging from 0.804 to 0.918, and the total variance extracted in the six retained capital factors represented approximately 57% of the total data.

Using these latent factors and their retained elements from EFA as directional input, structured equation modelling (SEM) was conducted using IBM AMOS software version 27. SEM was executed in two phases, firstly, confirmatory factor analysis (CFA) which covaried all factors together and created a measurement model comprising unstandardized covariance and standardised correlations. In terms of method, CFA repeated the analysis from a start position of eight constructs and 50 data elements, and this re-affirmed the EFA findings and quantified inter-factor associations. Modelling the digital innovation factor presented three options: two independent reflective first order factors Digital and Innovation; a combined single reflective first order factor digital innovation; and a reflective second order factor digital innovation with two reflective first order factors namely Digital and Innovation. As explanation, the order represents the degree of abstraction from the data so a second order factor is more abstracted than a first order factor. The third option returned the best model fit characteristics, and in this context made theoretical sense implying that both innovation and digital have wider ontological purpose, yet in the research context combined to form a core factor.

Table 5.3: Initial GDEA constructs, retained measurement items, and factors

Item #	Initial GDEA construct	GDEA measurement item	Measurement items elements/accumulator	Factor loading	Cronbach's $\alpha$	Capital Factor
1	Responsible leadership	Create an enjoyable and a rewarding working environment, where everyone takes responsibility for their personal contribution and the wider organisation's performance	connected responsibility	0.861	0.918	Relational value optimisation
2	Responsible leadership	Are highly respected and trusted for their responsibility, integrity, decision making and actions towards the stakeholder community (employees, customers, owners and partners)	stakeholder relationships	0.825		
3	Responsible leadership	Regularly communicate a clear sense of purpose (why the business exists) which generates passion, excitement and commitment and makes sense and meaning consistently throughout the organisation	clarity of purpose	0.786		
11	Human	Feel that their well-being is highly valued	well-being	0.675	0.909	Natural
12	Human	Are proud to be associated with the business for the valuable work we do	meaningful work	0.805		
14	Human	Value the work they do and feel responsible and accountable for it	value ownership	0.8		
8	Natural	Engage customers, suppliers and communities to understand our purpose	stakeholder engagement	0.706	0.909	Natural
9	Natural	Work with customers, suppliers and communities to deliver our purpose	collaborative value proposition	0.666		
10	Natural	Use digitalisation to responsibly utilise all resources ( materials, people and energy )	resource optimisation	0.713	0.876	Digital innovation
17	Social (innovation)	Take the lead in innovating and continuously improving our products, services and business processes	empowered creativity	0.764		
18	Social (innovation)	Actively engage with the wider community of stakeholders ( suppliers, partners, customers ) to enhance our products, services and business processes	needs based value	0.822		
20	Social (innovation)	Are enabled to apply digital technology in seeking to innovate	digital maturity	0.714		
21	Institutional (operations)	Actively seek to understand where value is generated and lost in our business processes and take action to enhance value	effectiveness	0.658	0.855	Institutional (operations)
22	Institutional (operations)	Evaluate and implement improvements to our products, services, and business activities to be more sustainable and responsible	multi-capital improvement	0.727		
28	Reputational (brand)	Actively promote us to other customers	customer advocacy	0.554	0.804	Reputational (brand)
29	Reputational (brand)	Are loyal to our products or services and to our business	customer loyalty	0.637		
31	Financial	Actively plan and measure our financial goals and Key Performance Indicators (e.g. Cash flow, P&L, gearing, debtors) with responsible financial systems and governance	multi-capital strategy	0.562	0.857	Value governance
33	Financial	Understand which products, services, and groups of customers are most profitable	value insights	0.522		
36	Governance	Provide transparency with regard to strategic execution and organisational performance	oversight	0.661		
37	Governance	Have necessary scrutiny and evaluation of board and management performance in pursuance of stated business purpose, objectives and values	compliant value creation	0.652		
		Demographic control variable: Age				
		Demographic control variable: Vintage				



Secondly, by utilising the measurement model's six confirmed factors and their prâxis elements together with the causal relationships implied by the hypotheses (H1 – H7), a structural model was constructed using multi-variate regression analysis (MVRA) to measure the total, direct, and mediated effects between factors in the form of standardised regression estimates. It is also important to note that multiple model configurations were tested including: different configurations of first and second order factors; variations in both the direction and existence of causal relationships between factors; if the factors were formative or reflective; and alternative structures which would confound the initial theories. For both models, maximum likelihood estimation was used, however this approach 'assumes the joint distribution of the variables is a multivariate normal distribution' (Schermelel-Engel, Moosbrugger, and Müller, 2003, p. 25), and thus can potentially create misleading results. In addition, the sample size (N=207) was finite, therefore bootstrapping which does not assume any underlying data distribution, was applied to resample the data (2000 iterations), thus increasing accuracy and confidence.

In addition to constructing credible measurement and structural models, additional checks were also performed for: normality, skewness, kurtosis, adequate power and sample size to ensure quality of source data; scale and factor reliability; convergent and discriminant validity; common method bias using the common latent factor method; multi-collinearity; and hetero-elasticity. To be deemed credible and publishable in leading peer-reviewed journals, the models need to meet a comprehensive set of industry standard goodness-of-fit and quality measures. All goodness-of-fit and quality checks returned no issues. The threshold and actual values for quality acceptance and goodness-of-fit measures across exploratory factor analysis, confirmatory factor analysis (measurement model) and multi-variate regression analysis (structural model) are presented in Table 5.4 below. All models displayed strong fit with the underlying data, and met the comprehensive acceptance criteria.

Table 5.4: Key quality and goodness-of-fit acceptance parameters across the modelling lifecycle

Acceptance criteria	Target value	EFA	CFA	MVRA	Reference
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	> 0.5	0.930			
Bartlett's test of sphericity (p value)	< 0.05	< 0.001			
Variance Inflation Factor (multicollinearity)	< 10	All < 10			
Variance explained (%)	> 50%	57%			Fornell and Larcker (1981)
Scale reliability (Cronbach's $\alpha$ )	> 0.7	0.839-0.949	0.804-0.918		
Scale reliability (Composite reliability)	> 0.7		0.780-0.915		Hair et al. (2010)
Convergent validity (Average Variance Extracted)	> 0.5		0.586-0.834		Hair et al. (2010)
Divergent validity (Maximum Shared Variance)	< all AVE		0.417-0.542		Hair et al. (2010)
Chi-square ( $\chi^2$ )			160.17	196.76	Lei and Wu (2007)
Degrees of freedom (DF)	High		141	177	Rigdon (1994a)
Relative chi-square ( $\chi^2/DF$ )	< 5.0		1.136	1.112	Lei and Wu (2007)
Overall model p-value	> 0.05		0.129	0.147	
Relative fit index (RFI)	> 0.9		0.930	0.918	Bollen (1989)
Goodness-of-fit (GFI)	> 0.9			0.924	Jöreskog and Sörbom (1984)
Adjusted Goodness-of-fit (GFI)	> 0.85			0.892	Jöreskog and Sörbom (1989)
Comparative fit index (CFI)	> 0.95		0.993	0.993	Bentler (1990)
Tucker-Lewis coefficient (TLI)	> 0.95		0.991	0.991	Bentler and Bonett (1980)
Parsimonious Comparative fit index (PCFI)	> 0.7		0.737	0.761	James, Mulaik and Brett (1982)
Root-mean-square error of approximation (RMSEA)	< 0.05		0.026	0.023	Browne and Cudeck (1993)
Standardized root mean square residual (SRMR)	< 0.07		0.0342	0.0364	Bentler (1995)
Close fit p value for null hypotheses on RMSE (PCLOSE)	> 0.05		0.992	0.998	Browne and Cudeck (1993)

Table 5.5: Means, standard deviations, reliability, validity, and standardised correlation matrix

Factor / variable name	Mean	Std. dev.	CR	AVE	MSV	Value Governance	Reputational	Digital Innovation	Institutional	Natural	Relational Value Optimisation
<i>Target value</i>			>0.7	>0.5							
Value Governance	4.030	1.300	0.860	0.607	0.492	<u>0.779</u>					
Reputational	3.889	1.253	0.812	0.685	0.417	0.564***	<u>0.828</u>				
Digital Innovation	3.471	1.259	0.780	0.586	0.542	0.702***	0.611***	<u>0.765</u>			
- Digital (first-order)	3.420	1.269	0.567	0.518	0.489						
- Innovation (first-order)	3.522	1.215	0.713	0.653	0.487						
Institutional	3.829	1.205	0.856	0.749	0.537	0.659***	0.646***	0.733***	<u>0.866</u>		
Natural	3.894	1.267	0.909	0.834	0.487	0.549***	0.621***	0.698***	0.607***	<u>0.913</u>	
Relational Value Optimisation	3.997	1.200	0.915	0.643	0.542	0.699***	0.629***	0.736***	0.690***	0.685***	<u>0.802</u>
Age	42.617	10.201	N/A	N/A	N/A	0.087 <sup>ns</sup>	-0.075 <sup>ns</sup>	0.104 <sup>ns</sup>	0.05 <sup>ns</sup>	0.015 <sup>ns</sup>	0.116 <sup>ns</sup>

Significance of correlations: \_\_\_\_\_ ns p >= 0.05 \* p < 0.050 \*\* p < 0.01 \*\*\* p < 0.001

In Table 5.5 above, columns four to six provide reliability and validity estimates for each factor: Composite reliability (CR), similar to Cronbach’s  $\alpha$  (calculated in EFA), provides *scale reliability* but considers varying factor loadings of the variables. Average Variance Extracted (AVE) by each factor measures *convergent validity* which confirms that variables within a parent factor correlate well with each other, *while* Maximum Shared Variance (MSV) measures *discriminant validity* which confirms that such variables are not more highly correlated with variables outside their parent factors. To confirm *discriminant validity*, each factor’s AVE should be greater than all the MSVs for that factor (or the squared correlations between that factor and all other correlated factors). Columns 7 to 12 measure the standardised correlations between factors (all significant  $p < 0.001$ ), and underlined estimates on the diagonal are the square-root of each factor’s AVE.

## 5.4 Findings

As the original eight constructs formed factors which each contain an original capital, the factors will be termed capital factors.

### 5.4.1 Confirmatory factor analysis (Measurement model)

The standardised correlations for each capital are all positive associations (Table 5.5), and it should be noted that the three high correlations greater than 0.7 all contain digital innovation (with relational value optimisation, value governance, and Operations); ten of the remaining correlations are  $> 0.6$ , with only 2 correlations falling between 0.5 and 0.6. While it must be acknowledged that correlations are: plausible associations; can sometimes be coincidences; and do not imply causation, findings highlight a systemic

level of positive correlation between all confirmed factors (all are significant at  $p < 0.001$ , are positive, and lowest correlation is 0.549). This level of systemic correlation suggests an organisation: is a configuration of interconnected capitals; has a high degree of systemic fit; and forms a complementary value system.

#### 5.4.2 Multi-variate regression analysis (Structural model)

Using the retained factors and elements from the confirmatory factor analysis (measurement model), the structural model tested the a priori hypotheses by calculating standardised regression estimates for direct, indirect, and total effects between capital factors. All significant estimates between capital factors indicated positive relationships. The model is people centric with relational value optimisation being the dominant independent (explanatory) factor; digital innovation and value governance are mediating factors; reputational, institutional, and natural are dependent factors; and age and vintage are retained control variables. Figure 5.2 visualises the structural model, comprising standardised regression estimates of all factor relationships, and the two retained control variables namely age (one small negative effect) and vintage (all effects are non-significant), and Table 5.6 details the total, direct, and indirect effects: -

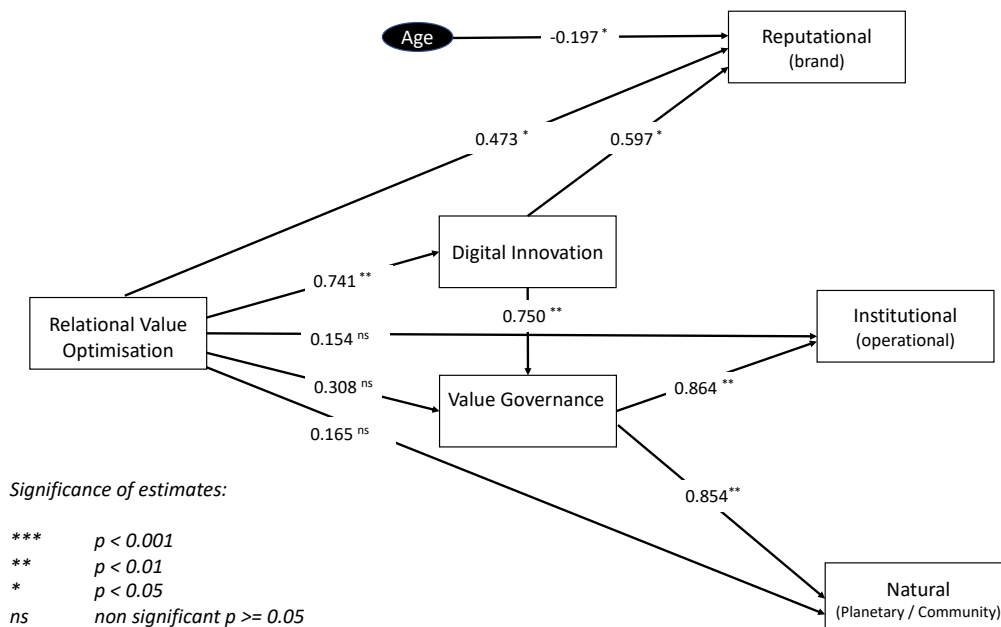


Figure 5.2: Structural model

Table 5.6: Structural model direct, indirect, and total estimates (standardised regression estimates)

a) Standardised regression weights : where sig column represents significance levels: \*\*\* p < .001, \*\* p < .01, \* p < .05, ns p >= .05

	Relational Value Optimisation						Digital Innovation						Value Governance				Age				Vintage					
	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	Total	sig	Direct	sig	Total	sig	Direct	sig	indirect	sig
Digital Innovation	0.736	**	0.736	**																	0.016	ns	0.016	ns		
Value Governance	0.943	**	0.579	**	0.364	**	0.494	**	0.494	**											0.008	ns			0.008	ns
Natural	0.909	**	-0.269	ns	1.178	**	0.617	**			0.617	**	1.249	**	1.249	**					0.01	ns			0.01	ns
Institutional	0.903	**	-0.312	ns	1.215	**	0.637	**			0.637	**	1.289	**	1.289	**					0.01	ns			0.01	ns
Reputational	0.93	**	0.528	*	0.402	*	0.546	**	0.546	*							-0.2	*	-0.2	*	0.008	ns			0.008	ns

b) Standardised regression weights : sig column represents actual significance levels as calculated using maximum likelihood estimation and bootstrapping

	Relational Value Optimisation						Digital Innovation						Value Governance				Age				Vintage					
	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	Total	sig	Direct	sig	Total	sig	Direct	sig	indirect	sig
Digital Innovation	0.736	0.001	0.736	0.001																	0.016	0.815	0.016	0.815		
Value Governance	0.943	0.001	0.579	0.017	0.364	0.001	0.494	0.001	0.494	0.001											0.008	0.815			0.008	0.815
Natural	0.909	0.001	-0.269	0.609	1.178	0.002	0.617	0.003			0.617	0.003	1.249	0.002	1.249	0.002					0.01	0.817			0.01	0.817
Institutional	0.903	0.001	-0.312	0.439	1.215	0.001	0.637	0.001			0.637	0.001	1.289	0.001	1.289	0.001					0.01	0.815			0.01	0.815
Reputational	0.93	0.001	0.528	0.024	0.402	0.023	0.546	0.023	0.546	0.023							-0.2	0.023	-0.2	0.023	0.008	0.835			0.008	0.835

c) Standardised regression weights : Below displays only significant standardised regression weights

	Relational Value Optimisation						Digital Innovation						Value Governance				Age			
	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	indirect	sig	Total	sig	Direct	sig	Total	sig	Direct	sig
Digital Innovation	0.736	0.001	0.736	0.001																
Value Governance	0.943	0.001	0.579	0.017	0.364	0.001	0.494	0.001	0.494	0.001										
Natural	0.909	0.001			1.178	0.002	0.617	0.003			0.617	0.003	1.249	0.002	1.249	0.002				
Institutional	0.903	0.001			1.215	0.001	0.637	0.001			0.637	0.001	1.289	0.001	1.289	0.001				
Reputational	0.93	0.001	0.528	0.024	0.402	0.023	0.546	0.023	0.546	0.023							-0.2	0.023	-0.2	0.023

The direct and indirect effects are generally significant at  $p < 0.01$  level, with all direct and indirect effects on reputational capital significant at  $p < 0.05$ . To interpret the above numbers, note that in Figure 5.2 the path from relational value optimisation to reputational, and in Table 5.6 the direct column in relational value optimisation and the reputational row (row 6) both contain 0.528. This indicates that the standardized direct only (unmediated) effect of relational value optimisation on reputational is 0.528, meaning that when relational value optimisation increases by one standard deviation, reputational also increases by 0.528 standard deviations. In the relationship between relational value optimisation and value governance, the total effect is 0.943 made up from a direct effect of 0.579, and an indirect effect of 0.364, the latter mediated through digital innovation ( $0.736 * 0.494 = 0.364$ ). The small negative causal effect between the control variable age and reputational, suggests that as respondents get older they are more critical of the organisation's reputational and specifically the strength of relationships with customers. However, this is a relatively small effect on a dependent factor, and does not impact the overall causal structure. Applying the results from Tables 5.4, 5.5, and 5.6, support for the original hypotheses is evaluated in Table 5.7:-

Table 5.7: Hypotheses assessment

#	Hypothesis	Finding	Result
H1	The organisation will be configured from, and have a close alignment with the set of praxis elements that comprise the initial eight constructs	20 of the original 40 measurement items from eight constructs contributed to the final models.	Partially supported
H2	Confirmed organisational capitals will be configured from patterns of praxis elements similar to the initial configurations of the eight GDEA constructs	Three constructs retained in the final models (institutional, reputational, and natural), five merged: financial and governance into value governance; social (innovation) into digital innovation and responsible leadership and human into relational value optimisation.	Partially supported
H3	Each confirmed capital will have positive connections with other related capitals	Reputational, natural, institutional, and digital innovation; and financial as combined factor value governance, human as part of relational value optimisation have strong positive correlations.	Supported
H4	Each confirmed capital will have systemic positive connections with the wider set of capitals, forming an organisational configuration	As above, all factors have strong correlations with all other factors, and confirmed causal influences are: -  Relational value optimisation -> reputational, digital innovation, natural, value governance, and institutional.  Digital innovation -> reputational, value governance, natural, and institutional.  Value governance -> natural and institutional.	Supported
H5	Responsible Leadership will have positive relations with all constructs.	As part of confirmed factor relational value optimisation relations are: -  Positive direct effect on -> reputational, digital innovation, natural, value governance Positive indirect direct effect on -> institutional, reputational, natural, value governance	Partially supported
H6	Responsible Leadership will have a stronger influence on the non-financial and non-institutional capitals.	As part of confirmed factor relational value optimisation two of responsible leadership's weakest influences are value governance (financial) and institutional capitals.	Supported
H7	Governance will have positive relations with all constructs.	As part of confirmed factor value governance, governance has positive direct effects on natural and institutional.	Partially supported

## 5.5 Discussion

The study's findings evidenced the systemic correlations and significant causal relations between retained capital factors, and thus an organisation was confirmed as a systemically connected set of multi-capitals. Furthermore, the research proposes that: one capital factor, relational value optimisation (two original constructs and six variables) is significant in determining organisational purpose and values; two capital factors, digital innovation and value governance (three original constructs and eight variables) mediate the translation of purpose and values into outcomes; and three factors, institutional, reputational and natural (three original constructs and six variables) broadly represent tangible outcomes and success. Such insights provide guidelines to design organisations around diverse multi-capital needs. These observed associations and relations highlight three additional frames of interest: configurations as patterns of prâxis elements form capital factors; contingent mis(fit)s are important both from an intra- and inter- capital factor perspective; and structures of complementary patterns of elements produce relational outcomes. In this context, the term (mis)fit represents a fit or misfit depending upon the specific scenario.

Findings suggest that the concept of configuration applies to both patterns of elements at a micro level as embodied in factors, while at a macroscopic level it manifests in contingent (mis)fits between all factors. This collective interaction of all factors, represents the connected organisation. The 20 variables as encapsulated in the models' retained six factors form the patterns of elements or key configurations in a connected multi-capital prâxis organisation. Furthermore, relational value optimisation as a composite of responsible leadership and human, digital innovation as a composite of Digital and social (innovation), and value governance as a composite of financial and governance can be conceptualised as complementary patterns of elements.

At an organisational level, each factor must positively interact with the other factors symbiotically satisfying those contingent needs and expectations that are exogenous to each specific factor, yet collectively fulfil the purpose of the connected organisation and enable value realisation. When systems become complementary, each 'requires the others to complete it, and more than influencing each other they rely on each other, presuppose each other, operate by virtue of each other, and are functionally incomplete without each other' (Fiske, 2000, p. 91). Complementary systems thus shape relational outcomes, this



phenomenon observed in the research context as all factors exhibit systemic associative and relational connections. To further conceptualise a multi-capital praxis organisation, a framework of intersecting theoretical dualities is envisaged in 5.3: -

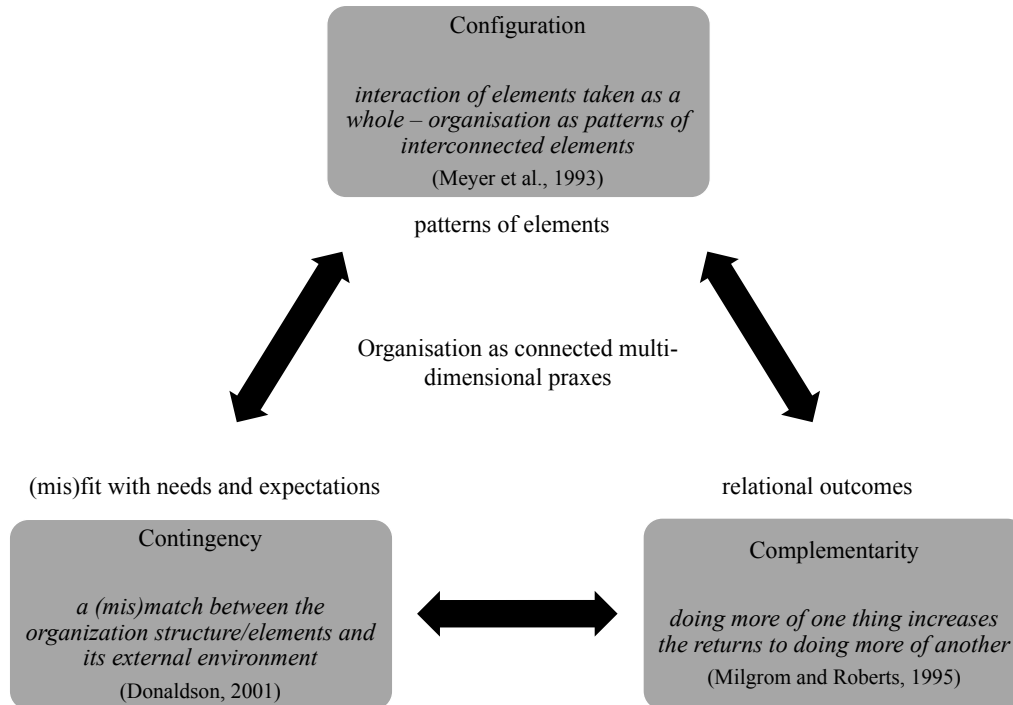


Figure 5.3: Framework to design organisations as connected multi-dimensional praxes

Using the intersections of these theories, a set of key design considerations is now proposed in Figure 5.4, and discussed in the following sections: -

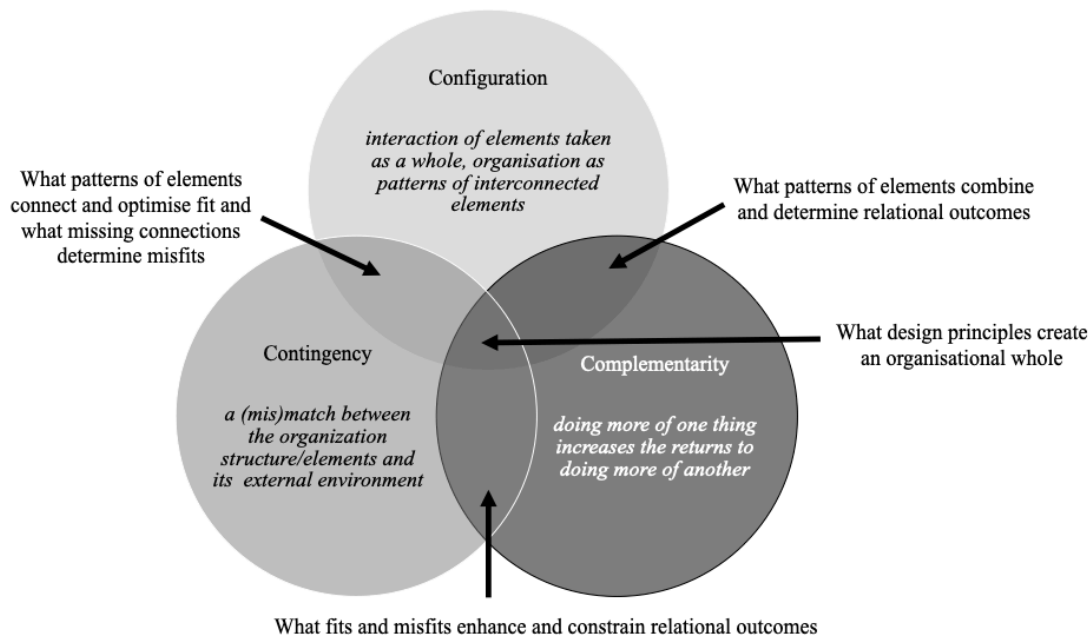


Figure 5.4: Organisational design considerations

### 5.5.1 Configuration and complementarity

*What patterns of elements determine relational outcomes*

Having established the patterns of connected praxis elements in the form of capital factors, and quantifying both the strength and direction of the inter-capital connections in the form of correlations and causations, the leading question is how are these best packaged to realise symbiotic and expected outcomes?. Strictly speaking, a bivariate correlation only applies to two specific dimensions, however the aggregate of all correlations is a directional indicator as to the level of complementary association of each factor with the other factors that form the whole organisation. A similar directional indicator can be derived from the sum of causal effects which represents the total influence of each factor, again across the whole organisation. These conceptualisations support proposition [P1]: that each factor should have strong correlations with all of the other factors to optimise interconnectedness, and, additionally considering causation, proposition [P2]: that the aggregated correlations and aggregated causal effects for each factor provides quantified insights on multi-capital connections and direction on an integrated organisational design.

### **5.5.2 Configuration and contingency**

*What patterns of elements connect and optimise fit, and what missing connections determine misfits.*

In a perfect organisation, all patterns of elements are connected, and all interactions create positive outcomes. However, any connection that creates an unintended and/or negative outcome is potentially unwanted. Therefore a connection which generates a misfit might enhance the overall organisational design if it is missing, and a missing value-enhancing connection will reduce the complementarity of the overall organisation. Analysis surfaced that four of the original correlations are not replicated in causal paths, namely value governance with reputational, reputational with Operations, reputational with natural, and natural with Operations. For the last three interactions between only dependent factors it can be argued that their actual complementarity is driven by the common influences, and indeed fits with the independent and mediating capital factors. The missing connection between value governance and reputational is perplexing in that constituent constructs Finance and governance should have a positive relationship with reputational, and their ‘complementary product’ should also have a positive relationship (Parker and van Witteloostuijn, 2010, p. 543). Therefore, additional design propositions are necessary, [P3]: if there is a missing correlation which makes logical sense (it results in a desired outcome) then this is a potential organisational misfit, proposition [P4]: if there is a missing causal connection between two factors which are at least moderately correlated, and the connection makes logical sense, then this is a potential organisational misfit, and proposition [P5]: such misfits could be due to missing, incomplete, or mis-specified configurations of elements and need to be resolved to optimise the organisation.

### **5.5.3 Contingency and complementarity**

*What fits and misfits enhance and constrain relational outcomes.*

In a complementarity scenario, systems are ‘highly interdependent, cannot be understood separately, and each requires the others’ (Fiske 2000, p. 91). In a similar way, contingencies establish such a dependency with exogenous factors which in this research context are the other organisational capital factors associated through correlations and related through causal paths. At a fundamental level, contingencies demonstrate the level of synergy with the needs and expectations of the wider stakeholder community. This

manifests at both the capital factor level in which convergent validity confirms the level of fit between prâxis elements, and at the organisational level where the overall level of inter-capital fit enables the fulfilment of the organisation's purpose. Complementarities also demonstrate the overall synergies between patterns of elements such that the interdependent whole is greater than the sum of the parts. Organisational patterns of elements will only positively synergise if such patterns of elements are designed with regard to the totality of interactive stakeholder needs envisaged as a connected structure. This premise is applicable at both the capital level (configurations of elements), and the organisational level (configurations of capitals), consequently, this leads to proposition [P6]: that both positive and destructive scenarios of combining patterns of elements are evaluated to identify where fits and misfits could be generated.

#### **5.5.4 Organisation design**

*What design principles create a connected organisation.*

Literature has highlighted causal ambiguity as a significant organisational consideration, and specifically how value is generated. To address this gap, the research synthesised configuration, contingency, and complementarity theories and elaborated original insights to mitigate such ambiguity. In this research context, ambiguity is generated when an organisation as a synergetic whole is designed from discrete elements that address bounded stakeholder needs, and leads to proposition [P7]: associations (correlations) and relations (causal effects), must be co-analysed to fit with the overall stakeholder community's needs and expectations, and consciously codesigned as connected patterns of elements (capital factors) that collectively connect as an organisational whole.

## **5.6 Conclusion**

Scientific management principles (Taylor, 1911) have created bounded disciplines and knowledge communities, structured organisations around profitable operations practice, and thus created a success paradox. Conversely, this study has: surfaced the significant latent capital factors and their prâxis elements; explored and quantified the fundamental connections between such organisational capitals; confirmed an organisation as a connected praxeological multi-capital system; and also clarified the contributions of oversight and digital innovation within such a connected system. By applying a theoretical stew of configuration, contingency, and complementarity theories in novel ways to elaborate the findings, the research provides principles to design organisations as connected praxeological multi-capital systems. From a practical perspective the research generates insights on: the significant prâxis elements that need to be considered by organisational designers; how leaders could implement a connected organisational capital framework; and a set of propositions that change agents could use to operationalise capitals and their significant prâxis elements as an organisational whole.

### **5.6.1 Limitations and future research opportunities**

As there are approximately 248,000 SMEs (excluding micro businesses) and 276,000 manufacturing organisations in the UK (UK Parliament, 2021) the study represents selected sampling of both the UK SME and manufacturing business segments. Significant exogenous shocks in the form of Covid19 and BREXIT were likely a pervasive background influence on organisational capital and prâxis priorities, and while they did not influence the study's models and data, it has not been possible to complete a wider investigation of these events within the study's timeline. This study utilises the Good Dividends (Kempster, Maak, and Parry, 2019) framework, and while it represents the diverse views of a global community of academics and practitioners, it is but one framing of this complex organisational domain.

*Opportunities for future research:* Given the ever-increasing diversity of modern stakeholder needs, and emergent multi-discipline sectors such as FinTech, similar studies could be undertaken in other: industries; geographies; and firms of different sizes, purpose, profit-orientation, and structures to generate interesting comparatives. Organisational constructs could also be more granular, for example, natural could be two discrete capitals,

namely natural (planetary / environmental) and community (connected humanity). This research indicates that systemic interactions of organisational prâxes can be quantified as correlations and causal influences, and such predictivity could be utilised to generate further empirical insights on the value realisation and optimisation of multi-capital prâxes.

## **Chapter Six - Towards designing multi-dimensional organisations as a dynamic praxeological system of capital interactions**

This manuscript is sole authored by Eamon Mulligan. Stephen Eldridge, Steve Kempster, Robyn Remke, and Ian Cammack contributed to the preparation of the manuscript, providing ongoing reviews and suggestions for improving the clarity of the paper. Adjustments have been made to the original manuscript (such as the numbering of sections, figures and tables, and moving common artifacts to appendices) to improve the integration within this overall thesis.

## **Abstract**

Organisations oversimplify value praxis through a creation and destruction dualism, and operationalise the fallacy of causal and value dead-ends. Furthermore, contemporary systems theory literature tends to focus on the problem-solving aspects of value destroying behaviour. Consequently, this paper examines how multi-dimensional organisations can be designed as a dynamic system of capital praxis interactions. A university-led leadership development programme provided the research setting, and generated both qualitative and quantitative data. Hence the study utilised the complementary potential of mixed methods research. Analysis suggests a five phase systems-theory-as-praxis design methodology. From a theoretical perspective, findings surfaced the capital praxis interactions of organisations, and highlighted the dynamic means-ends configurations that orchestrate complex multi-capital operations and form pan-organisational value journeys. A further contribution indicated that such value journeys form generalisable value archetypes. The methodological contribution demonstrates how complementary qualitative and quantitative frames can be combined in an iterative, sensemaking approach to organisational design, which can be used to (re)frame and (re)connect multi-capital organisations.

## **Keywords**

Organization and management theory, digital innovation, organisation design, organisational evolution and changes, organisational processes, practice, structural modelling.



## 6.1 Introduction

Organisational life expectancy is steadily decreasing (World Economic Forum, 2015; Garelli, 2016), whereas the demands of modernity ever diversify. These systemic movements suggest that organisations shaped by scientific management principles of long-gone eras are inadequate in fulfilling the connected needs of contemporary stakeholder communities. A further consequence of scientific management theory is that organisational value praxis is often oversimplified into a creation and destruction dualism, in a structure with a single direction and flow, and operationalised in an organisational fallacy of causal and value dead-ends. Such reductionism manifests as profitable operations practice which reinforces the primacy of financial capital and operational efficiency, and propagates an organisational zero-sum value game. Furthermore, contemporary organisational thinking displays renewed interest in multi-capital value. This renaissance driven by systemic phenomena in which: transparent and available knowledge is repositioned as a differentiating resource; digital innovation has connected previously isolated individuals into global stakeholder communities, disintermediated legacy boundaries and structures, and created entire new industries and markets; and the diverse needs of modernity demand wider multi-capital fulfilment.

Capital is fundamental to organisations and exists in many forms, Bourdieu (1986, p. 241) defining capital as ‘accumulated labour’. In his seminal work ‘Forms of Capital’ (1986), Bourdieu introduces a system of multiple capitals and profits, in which he espouses the criticality of multiple capitals ‘it is in fact impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms and not solely in the one form recognized by economic theory’ (Bourdieu, 1986, p. 241). There are many contemporary conceptualisations of multi-capital value systems, examples being: the 17 UN Sustainable Development Goals (SDGs) which link a set of goals into a blueprint to achieve a better and more sustainable future for all (United Nations, 2017; Adams et al., 2017) advance the SDGs by mapping the 17 goals onto a set of capitals; the Good Dividends framework (Kempster, Maak, and Parry, 2019) proposes that an organisation is a system of capitals grounded in an organisation’s business activities; and Gaia University (2021) proposes that ecological regeneration and social justice can be facilitated through a set of interactive capitals. However, such conceptualisations are descriptive and what is needed is an empirically grounded model of a multi-capital organisation.

The Good Dividends Evaluation Audit (GDEA) (Appendix A) based on Kempster, Maak, and Parry's (2019) framework, played a dual role in this study. The GDEA encompassed the notion of multiple capitals and precipitated pan-organisational and inter-participant reflection on the contemporary nature of business and value. GDEA questions evaluated 'purposeful actions' (Rigg, 2014, p. 651) or prâxes across an initial set of eight constructs including six capitals. However, each prâxis also influences an underlying element forming a prâxis-element duality. For example, the GDEA question '*Regularly communicate a clear sense of purpose (why the business exists) which generates passion, excitement and commitment and makes sense and meaning consistently throughout the organisation*' represents a sense-making prâxis and a related element clarity of purpose. The GDEA survey prompted deep reflection and pan-programme dialogue creating rich qualitative insights, and also provided quantitative data as a measurement instrument. Consequently, these two streams of data collection enabled three analysis and research streams. Firstly, a qualitative ethnographic study surfaced the key mental models, organisational events, key elements of interest, (re)framing priorities, and empirical notions of connected multi-capital value journeys. Secondly, quantitative modelling of the GDEA data confirmed an organisation's underlying capitals, their significant prâxis-elements, and the inter-capital connections in the form of correlations and causal estimates. Finally, this study elaborates these qualitative and quantitative insights into a sense-making systems dynamics model of a praxeological multi-capital value organisation. Thus, this manuscript presents a novel analysis of these complementary perspectives as both empirical findings and a generalisable organisational design methodology.

This study aspires to 'help bridge the growing gap between the reality of organization design and organization theory' (Zott and Amit, 2007, p. 195). From an epistemological perspective, organisational knowledge exists as theory and practice. Thus, prâxis as purposeful and value-driven actions enabled by a synthesis of theory and practice in which each informs the other (Freire, 1985; Nicolini, 2013; Rigg, 2014) provides a key foundation for a novel conceptualisation of multi-capital organisations. Critical to this research 'organisations are so central to human life, even a slight improvement in their performance may have important payoffs' (Csaszar, 2013, p. 1097). However, in a connected organisation appropriation of value creation is complex, Parker and van Witteloostuijn (2010, p. 542) informing that 'a researcher rarely if ever knows the true relationship between performance and its determinants'. For example, itemising the

‘influence of individual macro-policies on specific dimensions of an organisation’ (Van de Ven et al, 2011, p. 1055), versus the contributions of individual capitals and prâxes is challenging in terms of understanding organisational performance and value.

A connected organisation comprises multiple configurations which are a ‘combination of work contingencies, design, and performance elements that commonly occur together’ (Sinha and Van de Ven, 2005, p. 397). According to Elsbach and Hargadon (2006, p. 470) ‘innovation is one of the top five profit enablers, however, a product innovation by definition, exhibits some degree of misfit with existing configurations (Henderson and Clark, 1990)’. In any organisational context, there will be multiple configuration options, and the principle of equifinality states that ‘in open systems a given end state can be reached by many potential means’ (Sinha and Van de Ven, 2005, p. 402). A suboptimal equifinality exists when organizations must satisfy multiple and conflicting functional demands with a restricted set of design options, and Gresov and Drazin (1997, cited in Payne, 2006) speculate that in such a situation legitimacy claims are made about one function adding more value than the others. However, Brunsson (1982a, p. 4) also elaborated ‘when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations.’ Such an organisation is designed around unifinality or a single means-ends configuration. Relevant to this research, the counterfinality configuration depicts a pattern of means-ends relations wherein ‘a means seen to serve a given focal goal is at the same time believed to undermine another goal’ (Kruglanski et al., 2015, p. 71). This study posits that extant profitable operations practice underpinned by scientific management theory exhibits unifinality and counterfinality means-ends configurations. Consequently, the research conceptualises capitals as configurations of related prâxis-accumulators (prâxis-accumulators are prâxis-elements that can be influenced by flows), prâxis dynamics represent flows that can increase or decrease the levels of such accumulators, and a multi-dimensional organisation is a connected set of capitals and prâxes.

Contemporary systems dynamics theory focuses on examining complex problems, proposing non-linear and often counter-intuitive solutions, and facilitating the transfer of such learning between contexts. Therefore, phenomena of interest often focus on value destroying behaviour and its resolution, and scant attention is paid to understanding ‘the

life-giving forces' (Cooperrider, Whitney, and Stavros, 2008, p. 35) such as positive emotions, leadership, or relationships which also contribute to organisational success. According to Bosch, Maani, and Smith (2007a) systems thinking is increasingly being regarded as a new way of thinking to understand and manage the natural and human systems associated with complex problems in sustaining and enhancing natural resources, thus systems thinking tools can potentially be used to solve complex adaptive problems. Important to this research, systems archetypes, as 'structural patterns that recur again and again' (Senge, 2006, p. 93) are prominent tools used to generate knowledge of such complex phenomena. System archetypes 'move the user from an idea of problematic behaviour, through a causally-based diagnosis of the reason for the dysfunction and then straight to a surprising management principle indicating ways of alleviating the problem' (Lane & Smart, 1996, p. 104). Lane & Smart (1996, p. 112) further highlight that 'a central premise of system dynamics is that structure generates behaviour, and consequently behaviour can go some way in helping to infer structure'. However, with system archetypes there is 'no rigorous linkage between system structure and system behaviour: the user is called upon to make an inference rather than a deduction' (Lane and Smart, 1996, p. 112). Checkland (1995) further informs that the sole measure of validity is whether the model gives rise to insights which are deemed to be helpful.

Extant profitable operations practice is an over-simplification that propagates an organisational zero-sum value game. Consequently, this research evaluates if categorising value prâxis into a creation and destruction dualism, in a structure with a single direction and flow, and enacting causal and value dead ends does not reflect organisational reality. An alternative frame conceptualises an organisation as a connected praxeological multi-capital value system. In this sense, capital interactions are enabled by related prâxes, capital prâxis interactions form pan-organisational value journeys, and ultimately represent generalisable value archetypes.

In summary, this study seeks to innovate a generalisable sense-making organisational design methodology which leverages a set of standardised building blocks that are re-creatable in any research or organisational environment. The input building blocks are: -

1. A set of capital factors, each capital factor structured from a configuration (pattern) of prâxis-elements

2. The quantified connections between each capital factor in the form of correlations and causal estimates, which provide the initial structure for a multi-capital organisation
3. For each capital factor, one or more exogenous elements that can act as key points of intervention and/or benchmarks
4. A set of key organisational events that form empirically observed value journeys across multiple connected capitals
5. Significant elements such as purpose and clarity-of-purpose
6. A set of current and aspired mental models

This study examines how an organisation can be (re)framed and (re)connected as an interactive set of capitals that are dynamically connected by related prâxes through the following questions: -

- How do configurations of capitals and their prâxis-elements dynamically interact as value systems?
- What new value opportunities are created by such connected structures?
- How can a deeper understanding of dynamic systems assist in developing the next generations of value orientated organisations?
- What are the key steps needed to model such future organisations?

This paper is structured as follows, firstly, the key theoretical underpinnings of connected multi-dimensional organisations are explored. Secondly, the methodology used to combine empirical qualitative and quantitative insights with sense-making systems theory is described in detail. Thirdly, the output analysis from the methodology is presented in the form of an organisational design blueprint. Next, the methodology is used to develop empirical instances of pan-organisational multi-capital value journeys as generalisable value archetypes. Finally, the conclusions of the research, the research's limitations, and opportunities for future research are discussed.

## **6.2 Theoretical underpinnings**

This study seeks to advance profitable operations practice and conceptualise future organisations that are capable of addressing the grand challenges to humanity and fulfilling the diverse needs of modernity. The study achieves this goal by evaluating organisations as connected praxeological multi-capital value systems. The relevant theoretical foundations of such a perspective are now discussed.

### **6.2.1 Connecting organisations as dynamic systems and structures**

A system can be described as a set of things—people, cells, components, molecules, and so on—interconnected in such a way that they produce their own pattern of behaviour over time (Meadows, 2008). Blokland & Reiners (2020, p. 1) further elaborate that ‘a system consists of three kind of things: “elements”, “interconnections” and a “function” or “purpose”’. In a manufacturing context, ‘a new design element became a core element as it generated new connections and feedback loops with other elements within the knowledge domain and also with other domains’ (Brusoni and Prencipe, 2006, p. 186). Collectively, these insights suggest that connections are a key organisational enabler, and connecting is a core organisational prâxis.

System archetypes according to Lane and Smart (1996, p. 100) are ‘recurrent patterns of structure which attempt to explain commonly occurring dysfunctional behaviours in complex dynamic systems.’ In systems thinking, system archetypes (Forrester, 1961; Meadows, 1982; Kim, 1994; Lane, 1998; Wolstenholme, 2003; and Senge, 2006) are often visualised in causal loop diagrams constructed from combinations of: reinforcing or amplifying feedback loops that act as engines of rapid growth or decay; balancing or stabilising feedback loops that enforce a goal; and temporal delays or interruptions to the flow of influence that make the consequences of actions appear gradually and unconnected to events.

Causal loop diagrams (CLD) are used to model generic systems archetypes that ‘recognise common system behaviour patterns’ (Kim, 1994, p. 7). CLD’s are useful for capturing hypotheses about causal dynamics, for eliciting and capturing mental models, and for communicating the feedback mechanisms that may be responsible for a particular problem (Sterman, 2000). In such modelling, it is important to distinguish between objects that are accumulators (stocks) versus flows or actions that change the level of accumulators.

Aronson and Angelakis (2021, p. 2) advise to ‘distinguish a stock from a flow is to consider what would happen in the system if time were to stop. Accumulators, which are accumulations, would continue to exist. Flows, however, would disappear, because they are actions’. In this research context, prâxis as ‘purposeful action’ (Rigg, 2014, p. 651), which Nicolini (2013, p. 26) elaborates as ‘action informed by knowledgeable value-driven deliberations’, and Freire (1985), suggests is enabled by the synthesis of theory and practice in which each informs the other provides the dynamic flow dimension for organisational capitals and accumulators.

Understanding how, and where to influence such connected systems is also significant for this study. Meadows (2008, p. 1) defines leverage points as ‘places within a complex system to intervene in a system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything.’ Meadows (2008) informs that leverage points are points of power, not intuitive, and are often used backwards worsening whatever problems we are trying to solve. The highest leverage in a system is often in a completely unexpected source, and Senge (1994) provides further guidance on how to understand what is going on in complex systems: ‘balancing loops ensure that a system never strays from its natural operating range...often implicitly set by the system’ (Senge, 1994, p. 117); ‘archetypes often pivot around a key variable...build the feedback loop by asking what affects that variable’ (Senge, 1994, p. 124); ‘work backward - what's causing this element to vary’ (Senge, 1994, p. 124); ‘work forward - what is the impact if this variable changes’ (Senge, 1994, p. 124); ‘use archetypes as tools for inquiry rather than advocacy’ (Senge, 1994, p. 139); ‘sustained multi-functional dialogue often surfaces deep mental models’ (Senge, 1994, p. 140); and ‘adding links and reinforcing and balancing loops is part of the theorizing of what is going on here’ (Senge, 1994, p. 163). Significant for this research, these considerations will provide key praxeological insights into the dynamics of multi-capital organisations.

Systems dynamics literature therefore provides insights on the dynamic and often unexplained behaviour of organisations, and a lens to understand the complex connections and interactions between multiple capitals. Specifically, systems dynamics theory can be used to (re)frame extant bounded practice, and (re)connect organisations through the key foundation of prâxis as the synthesis of theory and practice, and multi-capital connections as a fundamental enabler.

### **6.2.2 Organisations as ambiguous multi-capital value systems**

Various studies have suggested that legacy financial performance indicators are not accurate predictors of value. Presenting a compelling argument against the primacy of financial returns, Lev and Gu (2016) argue that intangible assets such as innovation, research and development, IPR, and people are the true determinants of organisational value. Moreover, they emphasise that identifying, maintaining and developing, and deploying such strategic resources is critical to organisational success. In essence, different organizational dimensions influence different sources of organizational performance, under different environmental conditions (Donaldson, 2001). March and Simon (1958) further elaborate on this multi-dimensional reality, suggesting that the notion that conflicting selection pressures can somehow be aggregated into a single measure of performance is presumptuous, when in reality, organizations and the individuals in them juggle a host of conflicting expectations and assessments that create a payoff function too difficult to assess and optimize. Studies on environmental emissions by Russo and Harrison (2005) illustrated reverse causality, in that organization design components might be reactions to, rather than causes of, firms' performance. Furthermore, research on value realisation in a manufacturing context highlighted that 'changes in workers' actual activities had tiny effects on, whereas the differences in the plant managers' expectations seemingly had much larger effects' (Dunbar and Starbuck, 2006, p. 174). Collectively, such insights illustrate the ambiguity of what drives value and performance, and thus how difficult it is to interpret empirical research results that attempt to link aligned organization design components to performance (Dunbar and Starbuck, 2006).

Through the concept of symbolic capital, Bourdieu (1977) succeeds in legitimising his other forms of capital namely economic, cultural, and social, and most importantly visualising connections between the symbolic and the material in his balance-sheet of symbolic profits. Bourdieu also introduces a dynamic dimension to such capital interactions 'it can be seen that the exhibition of symbolic capital (which is always very expensive in economic terms) is one of the mechanisms which (no doubt universally) make capital go to capital' (Bourdieu, 1977, p. 181). Significant to this research, Bourdieu examined the dynamics of capital interactions, specifically conversions,

'Capital can present itself in three fundamental guises: as economic capital, which is immediately and directly convertible into money and may be institutionalised



in the form of property rights; as cultural capital, which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of educational qualifications; and as social capital, made up of social obligations (“connections”), which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility’ (Bourdieu, 1986, p. 265).

Bourdieu elaborates on the fungibility and transparency of such capital interactions, ‘the different types of capital can be distinguished according to their reproducibility or, more precisely, according to how easily they are transmitted, i.e., with more or less loss and with more or less concealment; the rate of loss and the degree of concealment tend to vary in inverse ratio’ (Bourdieu, 1986, p. 265). He also includes transformation ‘but only at the cost of a more or less great effort’ (Bourdieu, 1986, p. 264), where ‘profits in one area are necessarily paid for by costs in another’. In essence, Bourdieu applies the principle of the conservation of mass energy (Einstein and Lawson, 1921), and outlines a multi-capital framework in which value is dynamically exchanged. This study will further elaborate such a perspective into a connected praxeological multi-capital value system.

Numerous contemporary multi-capital frameworks have since been conceptualised. The 2030 UN Agenda for Sustainable Development provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 UN Sustainable Development Goals (SDGs), which recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all the while tackling climate change and working to preserve our oceans and forests (United Nations, 2021). Under the umbrella of the International Integrated Reporting Council (IIRC), a global coalition of regulators, investors, companies, standard setters, the accounting profession, academia and NGOs, Adams et al. (2017, p. 14) consider ‘aligning the SDGs with the value creation process’, thus linking the SDGs with outcomes for the six capitals of Integrated Reporting, namely financial, intellectual, manufactured, human, natural, social / relationships. The UN SDGs are detailed in Appendix D.

The circular economy is another topical conceptualisation of a multi-capital framework, connected by purposeful actions or *prâxes*. The circular economy encapsulates an

economic model that is regenerative by design and ‘attempts to conceptualize the integration of economic activity and environmental wellbeing in a sustainable way’ (Murray et al, 2017, p. 369). Circular in this context meaning an economy that would: ‘turn goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste’ (Stahel, 2016, p. 435); and ‘replace the “end-of-life” concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes’ (Kirchherr et al, 2017, p. 224). Humans continue to ‘make, use, dispose’ (Stahel, 2016, p. 435) which explains why the world is only 9% circular (World Business Council for Sustainable Development, 2019) (WBCSD). While moving towards a circular economy suggests decoupling resource consumption from economic performance (WBCSD, 2019), Stahel (2016, p. 435) crucially informs of real-world synergies between resource optimisation and economic success ‘a study of seven European nations found that a shift to a circular economy would reduce each nation’s green-house-gas emissions by up to 70% and grow its workforce by about 4% — the ultimate low-carbon economy’. The absence of a social dimension led Murray et al. (2017, p. 369) to reframe the circular economy as ‘an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human wellbeing’. Synergetic with the thesis of this study, process and output represent means and ends.

Relevant to this research, Kempster, Maak, and Parry’s Good Dividends framework (2019) advocates a regenerative and circular system of capitals that can be associated with various stakeholders. In the Good Dividends framework, each capital produces a good dividend: financial capital with owners/investors produces the financial dividend; reputational capital with customers produces the brand dividend; social capital with employees and communities produces the social innovation dividend; natural capital with communities and societies linked to the environment, produces the planetary / community dividend; human capital with employees produces the people dividend; and institutional capital is associated with all stakeholders and produces the operational dividend.

Analysis of contemporary multi-capital frameworks including the Good Dividends system of capitals (Table 6.1) suggests a comparable set of capital categories. As the GDEA played a key role in this study’s data collection and analysis framework, this provides a

level of assurance that the research’ initial position is in line with other industry and scholarly positions.

Table 6.1: Capital categories

<b>Capital</b>	Bourdieu (1986)	Kaplan & Norton (1996)	Roland (2011)	Lev & Gu (2016)	Adams et al (2017)	Kempster, Maak, & Parry (2019)
Economic	✓					
Financial		✓	✓	✓	✓	✓
Intellectual			✓		✓	
Innovation (digital)				✓		
Social (innovation)						✓
Experiential			✓		✓	
Learning & innovation		✓				
Human			✓	✓	✓	✓
Stakeholder / relationships				✓		
Social / relationships				✓		
Social	✓					
Cultural	✓		✓			
Purpose / spiritual			✓			
Natural			✓		✓	✓
Strategic resources				✓		
Operational		✓				
Institutional						✓
Manufactured / Manufacturing					✓	
Material			✓			
Reputational				✓		✓
Customers		✓				
Symbolic	✓					

Stahel (2016, p. 437) summarises that ‘more research and innovation at all levels — social, technological and commercial is needed to convince businesses and governments that a circular economy is feasible’, and also proposing a shift in policy focus from protecting the environment to promoting business models that feature full ownership and liability. In this paradigm shift, asset ownership gives way to service stewardship which requires ‘new technologies to de-polymerize, de-alloy, de-laminate, de-vulcanize and de-coat materials’ (Stahel, 2016, p. 437). Bourdieu (1977; 1986) suggested that dynamic prâxes in the form of transmission, transformation, and conversion orchestrate the interactions of capitals.

In this research context, organisations exist to fulfil the connected needs of the modern stakeholder community which demands multi-capital value generation, Lepak, Smith, and Taylor (2007, p. 192) also clarifying that it is essential ‘to understand not only how value is created, but also the consequences of value creation’. To support this view, literature has provided a number of frameworks that conceptualise value dynamics around notions of circulatory and regenerative interactions, again orchestrating multiple capitals to fulfil diverse yet connected needs.

### **6.2.3 Organisations as means-ends (finality) journeys**

The classical principle of causality maintains that similar initial conditions produce similar results, and consequently, that dissimilar results are due to dissimilar initial conditions. In essence, this suggests a static and prescriptive relationship between means and ends.

Conversely, the concept of finality ‘addresses the epistemic uncertainties and hence modelling limitations of a system that displays myriad (ever evolving and dynamic) paths by analysing the different means-ends configurations’ (Khatami, 2019, p. 8935).

Unifinality is a configuration, in which ‘one goal is served by a single means’ (Kruglanski et al., 2015, p. 72). Equifinality is where: a final state may be reached by any number of different developmental routes (Von Bertalanffy, 1968); a situation in which multiple plausible explanations exist for a single outcome (Williams et al., 2020); or one goal is served by multiple means (Kruglanski et al., 2015). The opposite principle, multifinality, suggests that similar initial conditions may lead to dissimilar end states. So, the process, rather than the initial conditions, is responsible for future states (Buckley, 1967). The multifinality configuration refers to a situation wherein ‘a single means is seen as serving more than one goal, thus affording the attainment of several objectives via a single activity’ (Kruglanski et al., 2015, p. 71). While the multifinality configuration ‘maximizes value (that accumulates across the different goals the multifinal means may attain), it may sacrifice the perceived instrumentality of each means because of a dilution effect, related to the number of links between the means and the goals’ (Zhang, Fishbach, and Kruglanski, 2007, p. 398). The basic premise of the dilution hypothesis is that ‘adding more goals to a single means renders this means subjectively less instrumental with regard to each individual goal, with highly distinctive goals amplifying the dilution effect, and less distinctive (or more similar) goals attenuating it’ (Zhang, Fishbach, and Kruglanski,

2007, p. 398). Finally, the counterfinality configuration depicts ‘a pattern of goals-means relations wherein a means seen to serve a given focal goal is at the same time believed to undermine another goal’ (Kruglanski et al., 2015, p. 71).

Extant manufacturing organisations exhibit equifinality and counterfinality, ensuring the dominance of profitable operations practice and a zero-sum game value frame. Therefore, means-ends configurations and finality theory are significant to organisations, and provide insights on the interactions of capitals and prâxes within pan-organisational value journeys. Specifically, this study seeks to understand how different means-ends configurations and finality theory contribute to such value journeys, and ultimately generalisable value archetypes.

#### **6.2.4 Organisations as esoteric structures**

System dynamics theory was originally envisaged as a theory of behaviour for a ‘common frame of reference to enable transference of experience’ (Forrester, 1961, p. 3). Lane (1998, p. 939) elaborated that ‘this is an explicit goal of the field; to create integrative theories (models) of different social systems which then make it possible both to understand specific situations and to produce generalisable insights’. Hence, systems dynamics theory can be defined as the art and science of making reliable inferences about the behaviour of systems by developing an increasingly deep understanding of their underlying structure (Richmond, 1987). Structure is thus a pivotal concept in systems dynamics theory, and in order to understand observed organisational behaviours, Senge (2006) suggests that we must first identify and then understand the systemic structures and underlying mental models that cause such behaviours. A review of previous systems thinking work led to ‘the identification of different views of what a “generic structure” is and, hence, what transferability means’ (Lane and Smart, 1996, p. 87), while Paich (1985, p. 127) offers a tentative working definition that generic structures are ‘dynamic feedback systems that support particular but widely applicable behavioural insights’. The significance of structures was epitomised by Forrester (1980, p. 18) in his seminal statement that probably ‘20 basic structures would span 90% of the policy issues that most managers encounter’. Deming (1986) further informed that different people in the same structure will produce similar results, that is, the structure causes 85% of all problems, not the people.

Managers create modularized organizational structures by grouping activities into business divisions and units, each of which contains greater interdependence within than across such modules. Grouping reduces complexity because ‘each division specializes and configures its activities and resources to address its local task environment without the need for extensive coordination with other parts of the organization’ (Albert, 2018, p. 890). However, a consequence of a modular system is that centralization of decisions and functions reduces redundancies across modules but requires greater interaction between the global design and individual modules through standardized interfaces (Baldwin and Clark, 2000). Modularity literature also suggests that modular architectures are inherently set up to increase abstraction and mask all information deemed irrelevant for the functioning of other modules (Baldwin and Clark 2000).

In contrast, a core tenet of systems thinking is that behaviour in any context cannot be understood by examining components in isolation; rather, the system as a whole is more than the sum of the parts. However, Albert (2018, p. 890) also stresses the importance of individual micro-level perspectives ‘because a division as an organizational module can constitute a crucial source of architectural innovation but may hamper the discovery and realization of such, it is important to study organizational change from the perspective of a given module rather than only an aggregated system (Tushman 1977, Karim 2006)’.

In this research context, the interaction of multiple modules and components in the form of praxis-accumulators, capitals, and interfaces suggest a complex and dynamic structure. Such a structure needs to support many contextual pan-organisational journeys, these journeys enabled by means-ends configurations which orchestrate inter-capital connections.

### **6.2.5 Understanding and designing dynamic organisations**

Designing organisations can be challenging, (Bowman and Ambrosini, 2000, p. 1) for example, highlight that ‘resource-based theories of organisations have tended to focus on the development and protection of valuable resources without clearly defining valuable resources’. Organisational heterogeneity provides further ambiguity in that ‘firms consist

of different domains, e.g., organizational structures, technological architectures, etc., that may obey different design rules' (Brusoni and Prencipe, 2006, p. 179).

An additional complication concerns the tension between static and dynamic dimensions, however, 'we do not notice what keeps things stable rather we notice dramatic growth or decline' (Senge, 1994, p. 132). Bowman and Ambrosini (2000, p. 1) elaborate that 'it is theoretical assumptions rather than practical experiences that impose static perspectives on organization designs and that suggests to designers that their focus should be on aligning components, after which they can just sit back and wait for the desired results to appear'. To discover why organisational equilibria exist, Dunbar and Starbuck (2006, p. 173) suggest that researchers need to see 'how organizations respond to efforts to displace them from equilibrium which also surfaces an organizations' adaptive and reactive capabilities'. For example, in a manufacturing context, when new core elements were added over time as necessary for the development of a robotised manufacturing system, Brusoni and Prencipe (2006, p. 186) observed these processes precipitated a complete cross-domain rewiring leading to radical innovation. In essence the (re)framing of bounded analogue modules led to a connected and innovative organisation.

To aid understanding of this manuscript, the relevant theoretical concepts from literature are summarised in Table 6.2 below.

Table 6.2: Key organisational design concepts

<b>Theoretical concept</b>	<b>Definition</b>
System	A system is any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose. (Kim, 1999, p. 2)
Stakeholder community	The set of involved parties (employees, suppliers, customers, regulators, and owners) and their interactions
Capital	Capital is accumulated labour...which, in its objectified or embodied forms, takes time to accumulate and which, has a potential capacity to produce profits and to reproduce itself in identical or expanded form (Bourdieu, 1986, p. 241)
Factor	Underlying dimensions, that explain the correlations amongst a set of observed variables (Daryanto, 2012; UCLA, 2021)
Accumulator (or stock)	An accumulator is anything that builds up or dwindles (Kim, 1999, p. 19); and represents system states that are either physical stocks, or nonmaterial items such as self-confidence or degree of trust (Meadows, 2008, p. 4)
Exogenous element	External benchmarks that function as key points of intervention, or standards and benchmarks that surface gaps with an aspirational state
Flow	Entities that make stocks (accumulators) increase or decrease (Aronson and Angelakis, 2021)
Feedback (loop)	Feedback recognises that as well as one cause (A) leading to an effect (B), B will also affect A in various ways, this circular causality is called a 'feedback loop' (Open University, 2021)
Re-enforcing loops	Compound change in one direction with even more change in that direction. (Kim, 1999, p. 14)
Balancing loops	Seek equilibrium and continually try to keep a system at some desired state (Kim, 1999, p. 14), and maintain performance through an intrinsic goal.
Temporal delay	The amount of time between an event happening and awareness of that event (Kim, 1999, p. 11)
Interface	Points of interaction or intersection between two or more capital factors
Key Leverage Point	Area where small changes can yield large improvements (Kim, 1999, p. 19)
Archetypes	Capture the common stories – dynamic phenomena that occur repeatedly in diverse settings (Kim, 1992, p. 2); generic structures - patterns of structure that recur again and again (Senge, 2006, p. 93)
Finality	Configurations that represent means-ends dynamics (Kruglanski et al., 2015)
Prâxis	Purposeful action (Rigg, 2014, p. 651); action informed by knowledgeable value-driven deliberations (Nicolini, 2013, p. 26); the synthesis of theory and practice in which each informs the other (Freire, 1985)
Prâxis-accumulator	A measurement item of interest in which a purposeful action (prâxis) can positively or negatively influence a related accumulator (element in a static sense)



While systems dynamics theory has demonstrated significant success in surfacing organisational structures, and providing alternative understandings of complex phenomena, Lane (1998, p. 936) cautioned ‘systems science is a heterogeneous and baroque collection of ideas which sometimes aspires to such abstract generality that it struggles to define its content at all’. The methodology proposed in this paper addresses this ambiguity and combines and elaborates the organisational design building blocks (Table 6.2) within a reflective methodological and integrated theoretical framework.

### **6.3 Research design and methodology**

Most work systems are ‘too complex for armchair theorizing, necessitating a research agenda that emphasizes grounded empiricism’ (Sinha and Van de Ven, 2005, p. 403). To mitigate such complexity, this study leverages empirically derived qualitative and quantitative insights as complementary foundations in a sense-making systems dynamics model of a connected organisation.

#### **6.3.1 Research setting**

This research is grounded in the university-led Made Smarter Leadership Programme (MSLP) for manufacturing medium enterprises who aspire to future proof their organisations through notions of multi-capital value and digital innovation. MSLP comprised 37 manufacturing medium enterprise organisations providing 37 delegate participants and 170 anonymous pan-organisational contributors. The organisations are receptive to change, geographically spread across North West England, represent multiple manufacturing sub-sectors, and comprise a wide diversity of SME culture including mature medium enterprises, organisations of entrepreneurial origin, and businesses which are family owned and governed. MSLP participant and organisation profiles are detailed in Appendix C. The research followed a longitudinal case study approach over the MSLP lifecycle of approximately two years evaluating three MSLP cohorts (each cohort had a life-cycle of approximately nine months). This case study generated complementary qualitative and quantitative praxeological multi-capital insights which were combined in the systemics dynamic model.

### 6.3.2 Data collection and inputs

The Good Dividends Evaluation Audit (GDEA) is a reflective survey which evaluates organisational prâxes across eight constructs comprising six capitals and two overarching concepts responsible leadership, and governance. Capitals are financial, human, social (innovation) that is (networks, relationships, communities), reputational (brand value), institutional (transforming capability) and natural (planetary-community impact). Each of the eight constructs contained five probing questions, and one of the five questions specifically assessed digital prâxis. Each of the 40 measurement items and associated scale represent a ‘purposeful action’, and the six-point measurement scale incorporates the dual dimensions of frequency of execution and quality of action. Therefore, the collected data represents prâxis, and the measurement scale inherently examines prâxis maturity.

The GDEA was conducted several weeks prior to the programme’s initial residential induction, and served a dual purpose. Firstly, the GDEA prompted participants to reflect on a wide set of constructs (mainly capitals) and their potential connections as an alternative to extant profitable operations practice. Thus, it provided the reflective context for the study’s ethnographically sourced qualitative data, which was collected from the engagement of participants with their peers, their organisations, and the programme delivery team. Data was aggregated across a diverse set of researcher-participant touchpoints, all programme activities, and formal and informal sources into a single source totalling greater than 30,000 words. Secondly, as a quantitative survey the data elements (40 respondent items, and ten associated demographic items) for each of the 207 respondents was aggregated into a dataset containing approximately 10,500 data points. This dataset was analysed to generate statistical comparatives, and structured equation modelling reduced the original eight constructs and 40 elements into six capital factors and 20 significant elements. All six capital factors display significant positive connections in the form of standardised correlations and causal estimates. The research setting, and this paper’s scope are detailed in Figure 6.1, and the initial GDEA constructs (eight), retained capital factor structures (six) and their significant variables (20) are illustrated in Table 6.3. Summarising from Figure 6.1, the primary qualitative insights from stream one are key organisational events which form multi-capital value journeys, mental models, (re)framing priorities, and elements such as purpose. Stream two’s quantitative modelling provided a set of capital factors, their constituent prâxis-elements, and the connections between capitals in the form of correlations and causal relations.

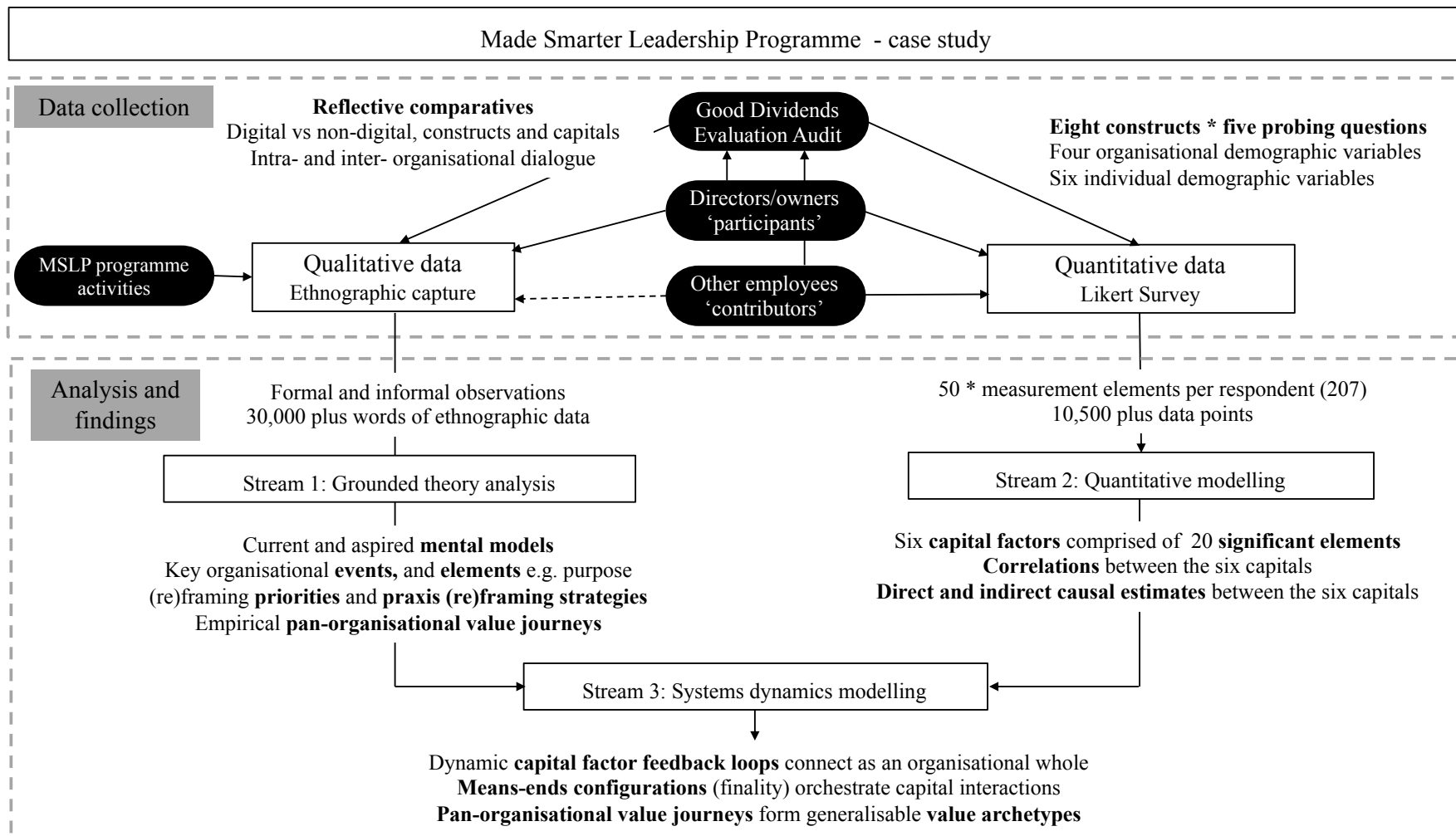


Figure 6.1: Research setting, scope and key inputs

Table 6.3: Retained capital factors and measurement items (prâxis elements/accumulators)

Initial GDEA construct	GDEA measurement item	Measurement items		Capital Factor
		elements/accumulator	prâxis	
Responsible leadership	Create an enjoyable and a rewarding working environment, where everyone takes responsibility for their personal contribution and the wider organisation's performance	connected responsibility	organising	Relational value optimisation
Responsible leadership	Are highly respected and trusted for their responsibility, integrity, decision making and actions towards the stakeholder community (employees, customers, owners and partners)	stakeholder relationships	relating	
Responsible leadership	Regularly communicate a clear sense of purpose (why the business exists) which generates passion, excitement and commitment and makes sense and meaning consistently throughout the organisation	clarity of purpose	sensemaking	
Human	Feel that their well-being is highly valued	well-being	appreciating	
Human	Are proud to be associated with the business for the valuable work we do	meaningful work	fulfilling	Natural
Human	Value the work they do and feel responsible and accountable for it	value ownership	contributing	
Natural	Engage customers, suppliers and communities to understand our purpose	stakeholder engagement	clarifying direction	
Natural	Work with customers, suppliers and communities to deliver our purpose	collaborative value proposition	cooperating	
Natural	Use digitalisation to responsibly utilise all resources ( materials, people and energy )	resource optimisation	optimising	Digital innovation
Social (innovation)	Take the lead in innovating and continuously improving our products, services and business processes	empowered creativity	continuously improving	
Social (innovation)	Actively engage with the wider community of stakeholders ( suppliers, partners, customers ) to enhance our products, services and business processes	needs based value	translating	
Social (innovation)	Are enabled to apply digital technology in seeking to innovate	digital maturity	enabling	
Institutional (operations)	Actively seek to understand where value is generated and lost in our business processes and take action to enhance value	effectiveness	multi-capital investing	Institutional (operations)
Institutional (operations)	Evaluate and implement improvements to our products, services, and business activities to be more sustainable and responsible	multi-capital improvement	developing	
Reputational (brand)	Actively promote us to other customers	customer advocacy	confirming success	Reputational (brand)
Reputational (brand)	Are loyal to our products or services and to our business	customer loyalty	meeting needs and expectations	
Financial	Actively plan and measure our financial goals and Key Performance Indicators ( e.g. Cash flow, P&L, gearing, debtors ) with responsible financial systems and governance	multi-capital strategy	strategising	Value governance
Financial	Understand which products, services, and groups of customers are most profitable	value insights	understanding success	
Governance	Provide transparency with regard to strategic execution and organisational performance	oversight	measuring	
Governance	Have necessary scrutiny and evaluation of board and management performance in pursuance of stated business purpose, objectives and values	compliant value creation	governing	
	Demographic control variable: Age			
	Demographic control variable: Vintage			

To understand the full set of connections between the six capital factors, the inter capital factor correlations are juxtaposed alongside the causal regression estimates in Figure 6.2.

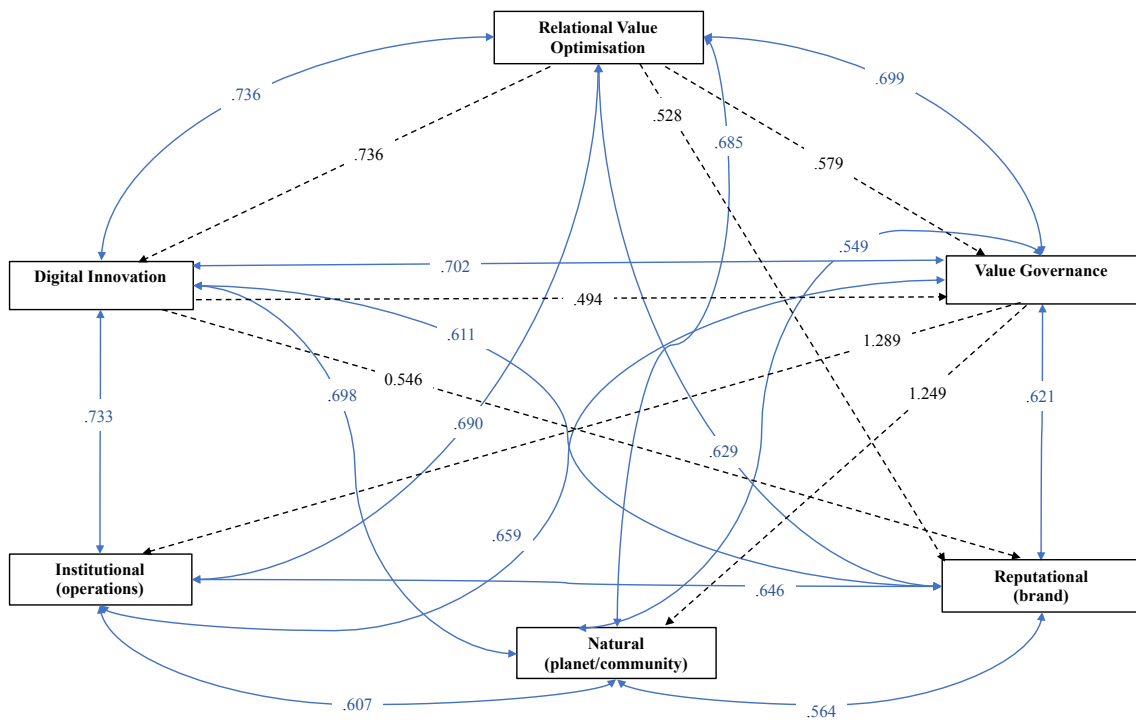


Figure 6.2: Connections (correlations and causal relations) between capital factors

### Legend

A ↔ B Correlation between capital factors A and B

A - - -> B Causal relation from capital factor A to B

.nnn Strength of correlation between A and B (e.g. .699)

.nnn Casual strength from A to B (e.g. .579)

In a practical sense, if the correlation between capital A and capital B is 0.9 then in simple terms if there is a positive increase in A, there is a 90% probability that B will positively increase as well. Likewise, the meaning of a causal estimate  $x$  (standardised regression estimate) from capital factor A to capital factor B implies that when A increases by 1 standard deviation, B increases by  $x$  standard deviations (of B). Relevant to this study, the quantifications are not the most critical perspective, rather the connections between capital factors form the structural building blocks for the systems dynamic modelling of the connected multi-capital organisation.

## **Modelling fundamentals**

While it is beyond the scope of this paper to comprehensively discuss the detailed intricacies of structured equation modelling and systems dynamics theory, the significant concepts which underpin this praxeological multi-capital organisation design methodology are now introduced.

A causal loop diagram (CLD) is composed of feedback loops, which depending upon the organisational context may be a combination of balancing and re-enforcing loops, or just a single type. The data elements in this research context are prâxis-accumulators, and a connecting arrow between two accumulators A and B, while representing causation, more specifically identifies accumulation in that A adds to (accumulates +) or subtracts from (dissipates -) B (Kim, 1999). As illustration, the CLD in Figure 6.3a below models the three related accumulators, namely births, deaths, and population to better understand their dynamic relationships as a connected system. In this system: births, deaths, and population are based on a common measure, namely people; births, deaths, and population are accumulators; both links in the re-enforcing R1 loop are '+' links, indicating that as births increase, population increases (a change in the same direction), and as population increases, births also increase (another change in the same direction). However, in the balancing loop B1 the left component of the loop is a '-' link, thus as deaths increase, population decreases (a change in the opposite direction), conversely in the loop's right component, as population decreases deaths decrease (a change in the same direction). An important heuristic is that 'if there is an odd number of '-' links in the loop then it is a balancing loop' (Kim, 1999, p. 9).

It is also important to distinguish between elements that are accumulators versus flows or actions that change the level of accumulators, Aronson and Angelakis (2021, p. 1) advise to 'distinguish a stock from a flow is to consider what would happen in the system if time were to stop. Accumulators, which are accumulations, would continue to exist. Flows, however, would disappear, because they are actions.' A flow can indicate the movement of a tangible material for example inventory or cash, or intangible concepts such as well-being or confidence, or resilience. In the context of accumulators, Aronson and Angelakis (2021, p. 1) further suggest that a detailed evaluation of measurement of such items: 'forces you to think about each variable in more detail and determine its units of measure; makes you think more specifically about the relationships between the variables in order to

check that the units of the diagram combine properly; and pushes you to discover overlooked variables that are necessary to make the units match.’

This paper adopts the following nomenclature: prâxis-accumulators are prâxis elements retained from the original GDEA measurement elements, the difference being that in a systems dynamics context accumulators can be dynamically influenced by flows; prâxes as purposeful actions represent flows that can lead to accumulation or dissipation in accumulators; feedback loops are capital factors composed of the set of related prâxis-accumulators that represent the underlying construct; and the set of feedback loops and their interfaces connect as the organisation. The CLD in Figure 6.3b comprises one reinforcing loop (R1, capital factor A), one balancing loop (B1, capital factor C), and one interface prâxis-accumulator B, and illustrates the study’s organisational design topography: -

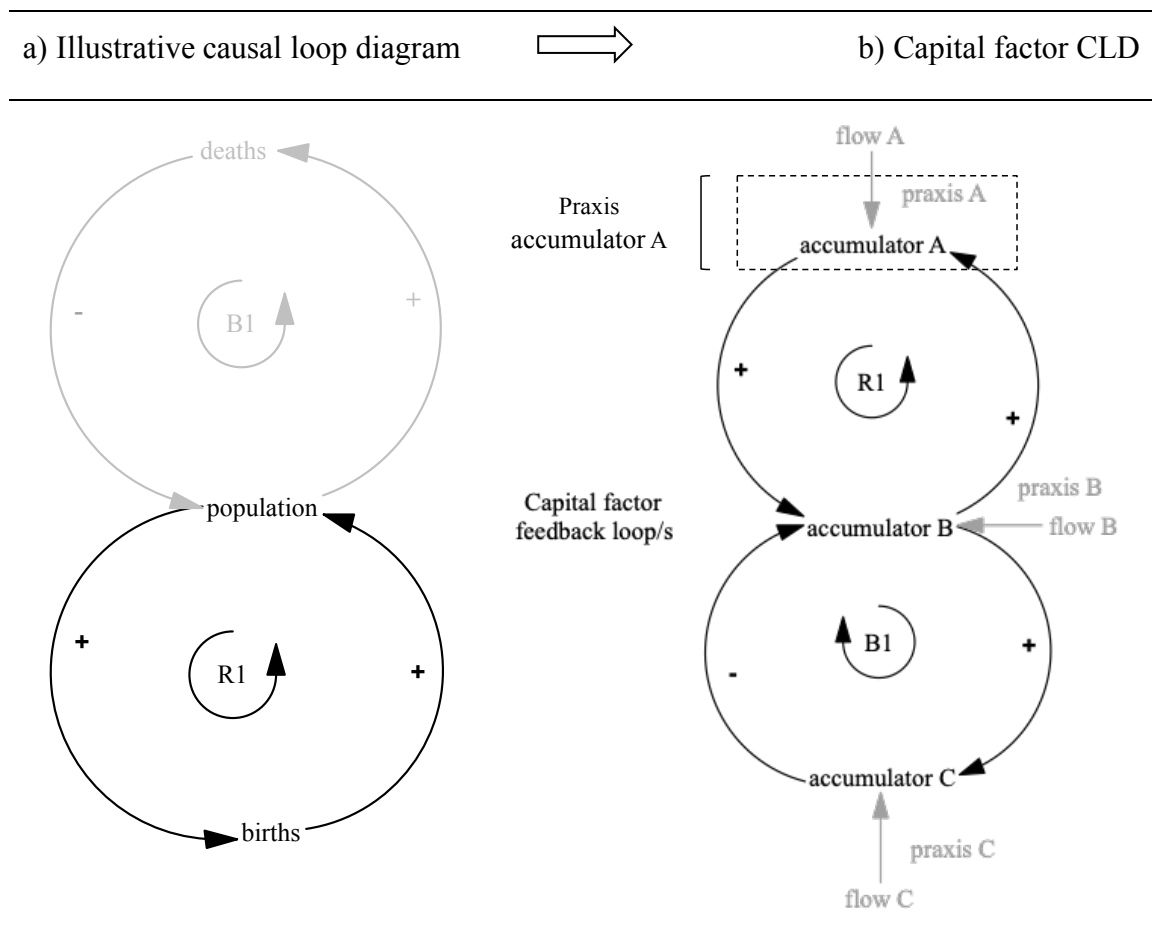


Figure 6.3: Causal loop diagrams

### 6.3.4 Detailed methodology

Using this topography, a five-phase design methodology for a praxeological multi-capital organisation is constructed, namely: shape the high-level context; define the capital factor building blocks; connect the organisation; surface the organisation's praxis dynamics; and understand the implications of the new design. This methodology will reframe and (re)connect the six factors and 20 key variables (Table 6.3), using empirically derived measures of association and causation (Figure 6.2) into a multi-capital organisation.

#### *Phase 1: Shape the organisational design context*

The direct and mediated causal estimates between capital factors (Figure 6.2) are replicated in a high-level organisational context diagram (Figure 6.4). This visualisation suggests that there are no complete loops per se at this stage, as natural, institutional, and reputational are dependent capital factors at the end of causal paths. However, these dependent capital factors are strongly correlated both with each other, and the other three independent and mediating capital factors, therefore where there are no significant inter-capital causal relations, additional sense-making inter-capital factor correlations are added. In Figure 6.4, solid connections are causal effects, the combinations of solid connections could represent mediated influences, and dotted paths are correlations and considerations for inter capital factor connections.

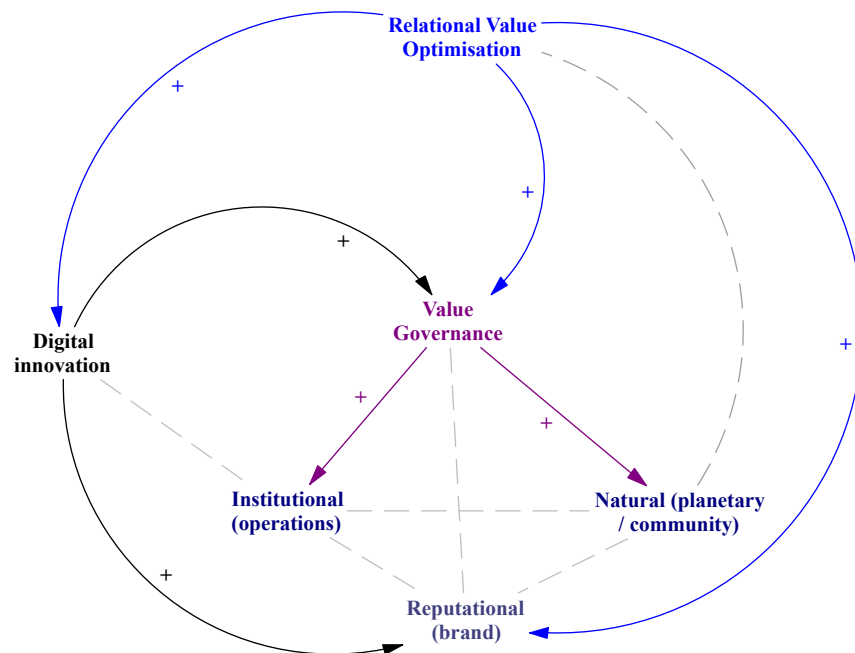


Figure 6.4: High level organisational context



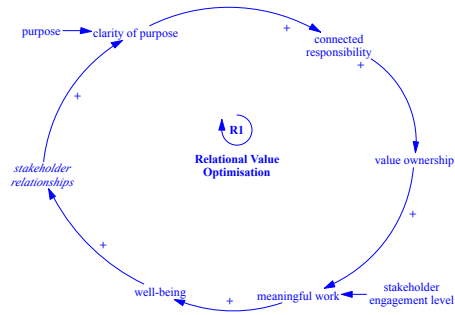
### *Phase 2: Define the capital factor building blocks (feedback loops)*

Capital factors represent an underlying or latent construct comprising a configuration of observed and correlated prâxis-accumulators. Therefore, each capital factor with its prâxis-accumulators (Table 6.3), should logically form a connected feedback loop. Further consideration should identify: if each loop has a primary accumulator that best represents the essence of that capital factor; if there are key leverage points; and if there are exogenous elements which provide a benchmark or performance standard for the key leverage points. Using the capital factors and their retained prâxis-accumulators from Table 6.3, each of the six capital factors is (re)framed as a dynamic feedback loop in Figure 6.5 below.

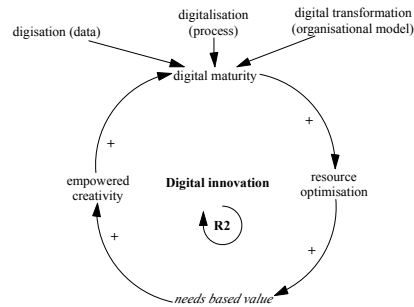
To improve sense-making and provide contextual reality for any customer-focused organisation, further prâxis-accumulators are added to the reputational capital as a customer extension, namely capacity, customers, acquisition, and attrition, which form a pair of re-enforcing / balancing loops. Customers would be a primary accumulator; capacity, attrition, and acquisition could function as key leverage points; and significant exogenous elements are performance standard and strategy.

### *Phase 3: Connect the organisation*

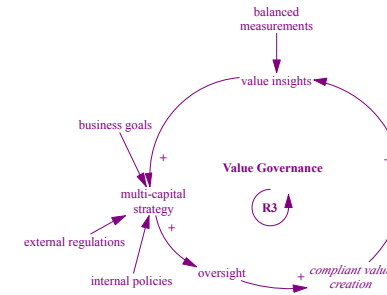
The individual capital factors constructed in phase 2 are now connected to form an organisation. The essence of this activity is in identifying the interfaces between capital factor feedback loops in the form of pairs of prâxis-accumulators and thus extending the intra capital factor influence of key prâxis-accumulators into a wider inter capital factor role. This phase enacts a fundamental reframing of the directional quantitative, and linear causal paths with prescribed start and end points into a system of interconnected capital factor feedback loops, while at the same time maintaining the original essence of the direct and indirect causal effects between capital factors. Direct causal effects between any two capital factors can be implemented as prâxis-accumulator to prâxis-accumulator interfaces between that specific pair of capital factors. Indirect effects are enacted as journeys across multiple capital factors and their connecting interfaces. Where appropriate, correlations can provide further inter-capital connections.



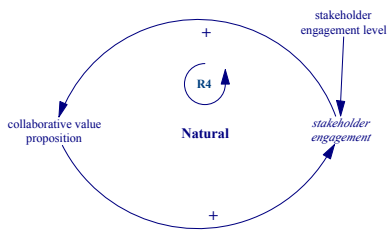
**Relational Value Optimisation:** Stakeholder relationships would be a primary accumulator; clarity of purpose and meaningful work could function as key leverage points; and significant exogenous elements would be purpose and stakeholder engagement level.



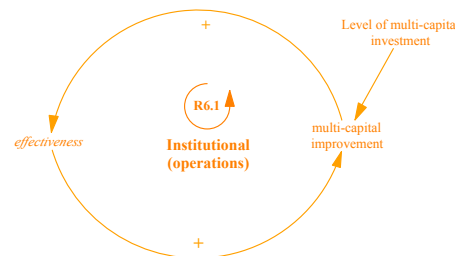
**Digital Innovation:** Needs based value would be a primary accumulator given how and why digital capabilities are used is the significant dimension; digital maturity could function as a key leverage point; and significant exogenous elements are digitisation (converting analogue data), digitalisation (automating manual processes), and digital transformation (reframing organisational models).



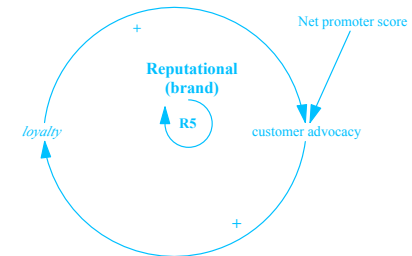
**Value Governance,** compliant value creation would be the primary accumulator; value insights and multi-capital strategy could function as key leverage points; and significant exogenous elements are business goals, balanced measurements, external regulations, and internal policies



**Natural** capital, stakeholder engagement would be a primary accumulator; collaborative value proposition a key leverage point; and a significant exogenous element is stakeholder engagement level.



**Institutional:** effectiveness would be a primary accumulator; multi-capital improvement could function as a key leverage point; and a significant exogenous element would be level of multi-capital investment.



**Reputational:** Loyalty would be a primary accumulator; customer advocacy could function as a key leverage point; and a significant exogenous element is net promoter score

Figure 6.5: Capital factor feedback loops

*Phase 4: Surface the organisation's prâxis dynamics*

A prâxis lens provides essential insights into an organisation's capital dynamics through both the influence of individual prâxis-accumulators, and means-ends finality configurations which represent the interaction of multiple prâxis-accumulators and capitals. To surface such dynamics, this step identifies how capitals and their prâxis-accumulators can be accumulated or dissipated. This goal is achieved by analysing the praxeological drivers of capitals and their interactions where specific prâxes represent flows that increase or decrease accumulators. Furthermore, as each inter-capital interface is composed of a minimum of two prâxis-accumulators then means-ends (finality) configurations are formed which orchestrate the dynamic operations of multiple capitals.

*Phase 5: Understand the implications of the new organisation design*

In this final step, the proposed design is evaluated against the existing organisational model, specifically assessing structures, modules, boundaries, and disciplines. In a practical sense, this analysis seeks to understand how legacy constructs such as departments, functions, and indeed policies can be reframed through alternative understandings of capital prâxis dynamics. The outcome of this phase is to operationalise dynamic capital interactions in new pan-organisational value journeys.

#### **6.4 Analysis and findings**

This study contributes two novel insights into designing organisations as praxeological multi-capital value systems. Firstly, an elaborated causal loop diagram represents a conceptual design blueprint (Figure 6.6) for such a connected organisation. This proposed organisation integrates: capital factors and their related set of prâxis-accumulators as feedback loops; means-ends configurations as the connecting interfaces between multiple capital factors; and exogenous elements which can enable points of reference and intervention. Exogenous elements such as performance standards, strategy, and business goals signify pivotal points in capital loops, and provide important external benchmark measures which can surface a gap between a current and aspired state. Primary prâxis-accumulators such as stakeholder relationships, compliant value creation, and needs based value are both critical concepts in capital factor feedback loops and also interfaces between multiple capitals, and thus function as praxeological engines of capital interactions. From a sense-making perspective, key accumulators will sometimes need to form dynamic pairs. For example, customer acquisition and customer attrition form a logical pair of re-enforcing and balancing loops. The organisational design blueprint (Figure 6.6) has been constructed using the five steps previously identified, and in essence is an extended sensemaking derivative of a CLD comprising the confirmed six factors and 20 key elements identified in Table 6.3 This overarching organisational blueprint is created by connecting the individual capital factor feedback loops conceptualised in Figure 6.5. The second contribution of this study is to surface the dynamic interactions of capitals which are orchestrated by related prâxes. In this research context, prâxis represents purposeful and value-driven actions enabled by a dynamic synthesis of theory and practice (Freire, 1985; Nicolini, 2013; Rigg 2014), and enables the inter-capital interfaces in which prâxis-accumulators connect in a real operational sense. Applying a finality theory lens as discussed in section 6.2 to the pan-organisational multi-capital value journeys evidenced in Figure 6.6, a set of prâxis-accumulator means-ends configurations are observed and itemised in Table 6.4.

Note: in Figure 6.6 dotted lines represent exogenous elements to prâxis-accumulators, and solid lines represent an accumulation or dissipation between pairs of prâxis-accumulators.

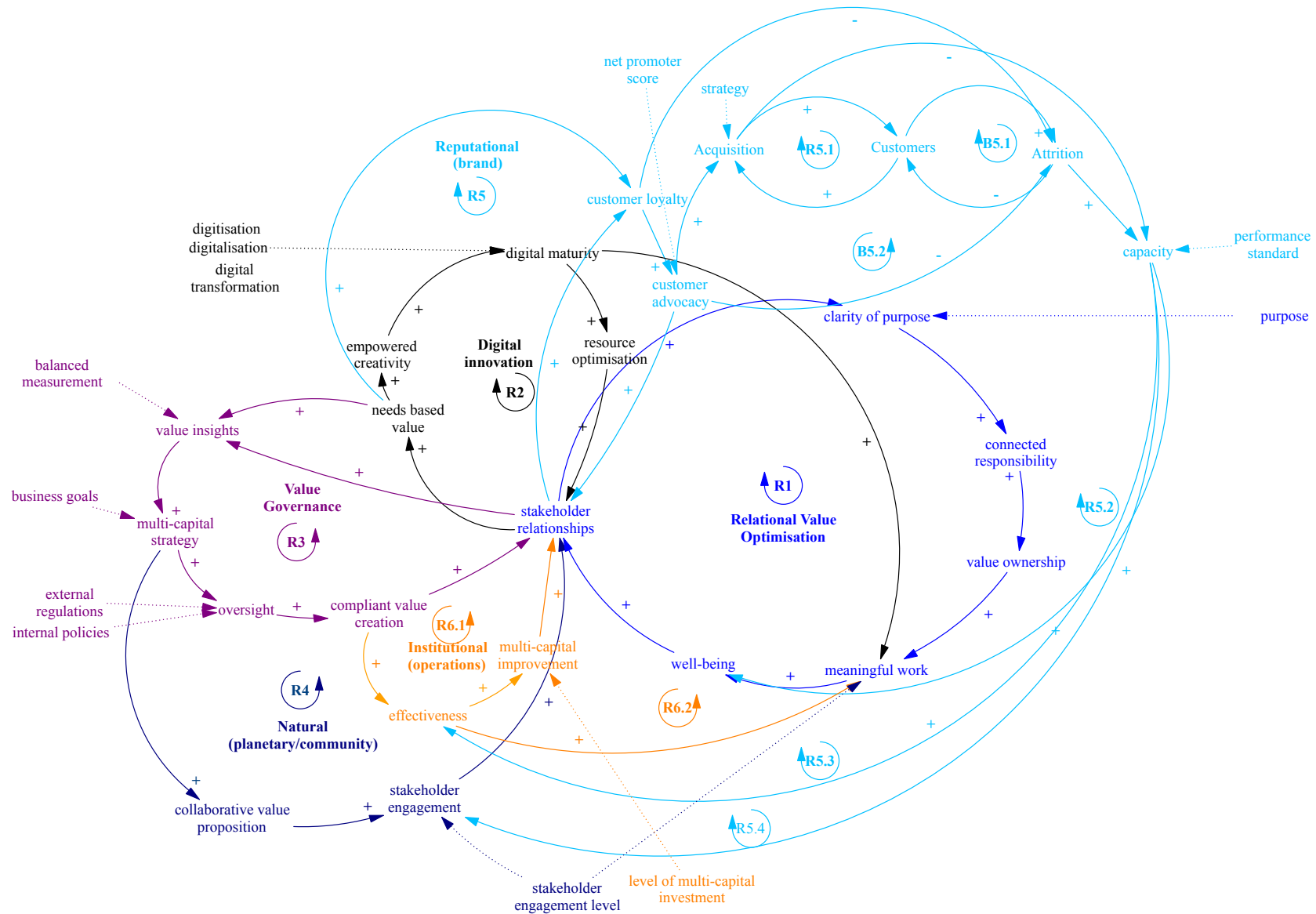


Figure 6.6: Organisation design blueprint

Table 6.4: Prâxis-accumulator finality configurations

Prâxis-accumulator type	Description
<pre> graph TD     PU[Prâxis U] --&gt; AU[accumulator U]     AI[accumulator - I] --&gt; AU     AU --&gt; AO[accumulator - O]         </pre>	<p>Prâxis-U (unifinality) influences an accumulator U which has one connection to accumulator O. Type U prâxis-accumulators have one input (I) and output (O) connections. This type occurs within (intra-) a capital factor and in a capital factor interface.</p>
<pre> graph TD     PE[Prâxis E] --&gt; AE[accumulator E]     AI1[accumulator - i1] --&gt; AE     AI2[accumulator - i2] --&gt; AE     AE --&gt; AO[accumulator - O]         </pre>	<p>Prâxis E (equifinality) influences an accumulators E which has one connection to prâxis-accumulators O, and minimum two input influences (i1,i2). Therefore, this prâxis-accumulator type acts as an inter-factor interface.</p>
<pre> graph TD     PM[Prâxis M] --&gt; AM[accumulator M]     AI[accumulator - i] --&gt; AM     AM --&gt; AO1[accumulator - o1]     AM --&gt; AO2[accumulator - o2]     AM --&gt; AO3[accumulator - o3]         </pre>	<p>Prâxis M (multifinality) influences an accumulator M which has three connections to prâxis-accumulator o1, o2, and o3 and one input influence (I). Therefore, this prâxis-accumulator type acts as an inter-factor interface.</p>
<pre> graph TD     PO[Prâxis O] --&gt; AO[accumulator O]     AI1[accumulator - i1] --&gt; AO     AI2[accumulator - i2] --&gt; AO     AO --&gt; AO1[accumulator - o1]     AO --&gt; AO2[accumulator - o2]     AO --&gt; AO3[accumulator - o3]         </pre>	<p>Types E and M can combine into a single configuration that acts as an inter-factor interface, and a key multi-capital intersection, and this can be defined as omnifinality. Prâxis O (omnifinality) influences an accumulator O which has three causal connections o1, o2, and o3 and two input influences (i1, i2).</p>

Applying this means-ends finality categorisation to the organisational design blueprint, the connection profile of the capital factors, and their associated prâxis-accumulators can be analysed. Furthermore, this granular accumulator-level finality of the organisational design blueprint (Figure 6.6) can be compared with the capital factor finality in the high-level context model (Figure 6.4), This analysis and comparison is presented in Table 6.5 below. For each accumulator, an appropriate prâxis is allocated, so for example relating is the omnifinality prâxis that influences the stakeholder relationships accumulator, while fulfilling is the pivotal influence in the meaningful work accumulator.

Table 6.5: Organisational prâxis finality

Initial organisational context (Figure 6.4)		Final organisational blueprint (Figure 6.6)			
Capital Factor	Finality	Accumulator	Connections # In # Out	Finality	Prâxis
Relational value optimisation (RVO)	M	connected responsibility	1 1	U	organising
		stakeholder relationships	6 4	O	relating
		clarity of purpose	1 1	U	sensemaking
		well-being	2 1	E	appreciating
		meaningful work	3 1	E	fulfilling
		value ownership	1 1	U	contributing
		<i>total</i>	<i>14 9</i>		
Natural (N)	E	stakeholder engagement	2 1	E	clarifying direction
		collaborative value proposition	1 1	U	cooperating
		<i>total</i>	<i>3 2</i>		
Digital innovation (DI)	M	resource optimisation	1 1	U	optimising
		empowered creativity	1 1	U	continuously improving
		needs based value	1 3	M	translating
		digital maturity	1 2	M	enabling
		<i>total</i>	<i>4 7</i>		
Institutional (I)	U	effectiveness	2 2	O	multi-capital investing
		multi-capital improvement	1 1	U	developing
		<i>total</i>	<i>3 3</i>		
Reputational (R+)	E	customer advocacy	1 3	M	confirming success
		loyalty	2 1	E	meeting needs and expectations
		<i>capacity</i>	<i>2 3</i>	O	enabling performance
		<i>customers</i>	<i>2 2</i>	O	meeting needs and expectations
		<i>acquisition</i>	<i>2 2</i>	O	setting expectations
		<i>attrition</i>	<i>2 2</i>	O	disappointing
		<i>total</i>	<i>11 13</i>		
Value governance (VG)	O	multi-capital strategy	1 2	M	strategising
		value insights	2 1	E	understanding success
		oversight	1 1	U	measuring
		compliant value creation	1 2	M	governing
		<i>total</i>	<i>5 6</i>		

Interestingly, the initial organisational context (Figure 6.4) had seven causal inter-capital connections while the organisational design blueprint (Figure 6.6) has 17 accumulations (or dissipation). This suggests that designing praxeological multi-capital connections creates a more granular understanding of the organisation’s dynamic capital operations.

The capital factors and their interfaces from Figure 6.6 are further decomposed, such that each interface contains a pair of prâxis-accumulators. This provides important information about the value flow across such interactions, what aspects of each capital are interacting, and if the primary function of the capital operation is conservation or conversion (U), convergence (E), diversification (M), or transformation (O).

## 6.5 Discussion

This study developed an innovative approach to organisational design by combining complementary qualitative and quantitative empirics with sensemaking systems dynamics theory. The ensuing methodology suggests an organisation as a connected capital framework in which prâxes accumulate and dissipate the level of such capitals and their constituent accumulators. The connectional foundations of such multi-capital organisations are provided by direct and indirect causal relations which are normally presented as a bounded linear structure with prescribed start and end points. Consequently, proposition [P1a], direct causal effects between any two capital factors can be operationalised in the prâxis-accumulator interface/s between the impacted capital factor feedback loops, and, proposition [P1b], indirect causal effects between any factors can be operationalised through a mediated journey across multiple capital factor feedback loops and their respective prâxis-accumulator interfaces. However, in real organisations there are no causal and value dead-ends, therefore it is essential to evaluate any significant inter-factor correlations which don't have corresponding causal relations. While acknowledging that correlations could be mere coincidences, the design principles are extended with proposition [P1c], significant correlations could provide additional insights on the interactions of capital factor feedback loops, provided they make logical sense, that is the interaction results in a desired and plausible value outcome.

Capital factors represent an underlying (latent) construct composed of a related set of observed elements which are accumulated and dissipated by prâxes, therefore, proposition [P2a] proposes that a confirmed capital factor and its retained prâxis-accumulators should logically form a connected feedback loop, and [P2b], there should be sufficient balancing loops to represent the reality of organisational limits to success (Senge, 1994). To produce an effective design, proposition [P3] is added, data elements in initial capital constructs are prâxis-accumulators in which accumulators are dynamically influenced by related prâxes.

Creating a multi-capital organisation necessitates an understanding of an organisation's prâxis dynamics which accumulate or dissipate prâxis-accumulators. Analysis suggests that means-ends configurations are a key consideration and shape a set of interface types (E, U, M, O) that further orchestrates capital operations. Means-ends configurations are mapped to capital operations in Figure 6.7: -



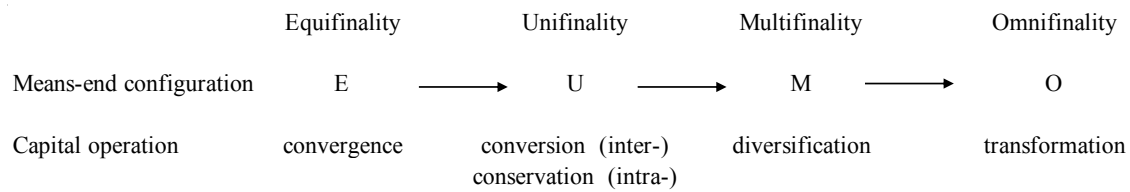


Figure 6.7: Means-ends configurations and capital operations

Therefore, proposition [P4] extends the theoretical framework stating that the means-end configuration and thus finality of the source prâxis accumulator combination is a critical dimension of the inter-capital interface, determines the capital operation of that interface, and influences the capital dynamics of the organisation. Extending this capital prâxis analysis theme, proposition [P5] suggests that, as a capital's accumulators are influenced by prâxes, inter-capital interfaces are determined by the interaction of two or more prâxis-accumulators and their corresponding means-ends configurations. In this research context, some capital factor feedback loops were formed from the fusion of multiple dimensions, relational value optimisation (human capital and responsible leadership), digital innovation (social innovation capital and digital), and value governance (financial and governance). Furthermore, the methodology generated a plausible and connected organisation which displayed unifinality, equifinality, multifinality, and omnifinality effects. Such observations do not support the notion that success in organisations is a zero-sum value game. Therefore, proposition [P6], applying a means-ends configuration and finality frame that identifies where capitals are being converged, conserved, converted, diversified, and transformed against current organisational boundaries, interfaces and structures will surface extant capital dynamics and identify new pan-organisational value journeys. The organisational design methodology and its key theoretical propositions are summarised in Figure 6.8 below. Furthermore, this visualisation demonstrates how complementary qualitative and quantitative insights from prior analysis streams one and two contribute to a sense-making methodology based on systems dynamics principles, and which ultimately creates a design blueprint of a praxeological multi-capital value organisation.

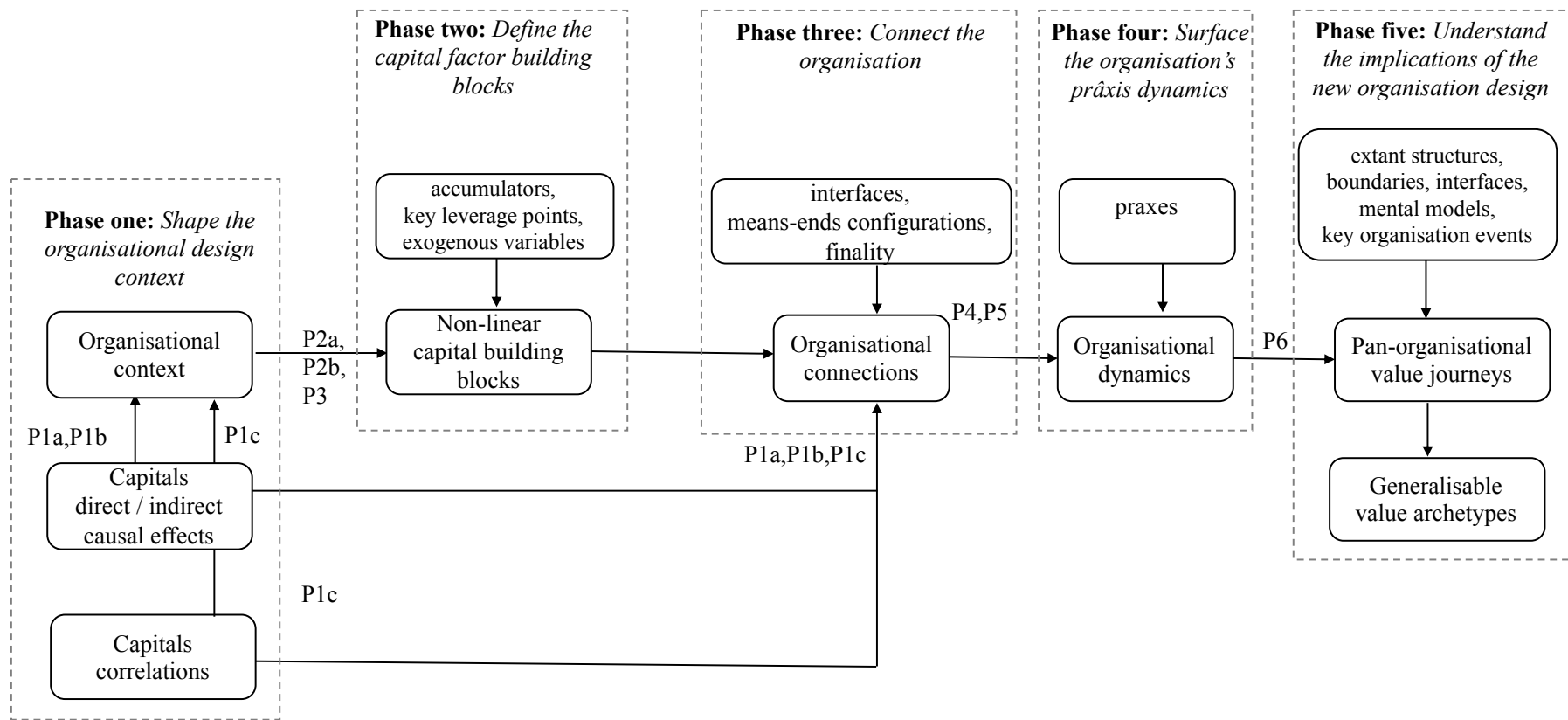


Figure 6.8: A methodology for designing praxeological multi-capital organisations

### 6.5.1 Practical Implications for organisational design

Historically, organisational success has been abstracted into an economic aggregate of financial and operational measures, understandable given these dimensions have been co-constructed in legacy scientific management theories. Another significant influence is the measurement practice that has accompanied such legacy conceptualisations of value, recent studies such as Lev and Gu (2016) arguing that such legacy practice and associated measures are not an accurate indicator of organisational value.

The theoretical and methodological insights from the research can be further elaborated into an operationalizable representation of a praxeological multi-capital organisation. This additional contribution is achieved through (re)framing selected empirical scenarios of profitable operations practice which surfaced during the ethnographic stream (one) of the research. Such empirical (re)framing involved a paradigm shift from executing bounded profitable operations transactions, to realising that connecting capitals and their related prâxis-accumulators also connects, and orchestrates organisational value. During reflective discussions on the Made Smarter Leadership Programme, participants described instances of such empirical (re)framing. Three illustrative scenarios are: introducing a digital health-and-safety device onto the shop floor; delivering a community project; and investing in an Enterprise-Resource-Planning platform. Superficially, these scenarios could be perceived as bounded value transactions which reinforce extant profitable operations practice, that is: an operational enhancement; a non-essential project; and a technology platform implementation. However, participants reported realising wider multi-capital value, respectively, as follows: a key behavioural change that *'significantly reduced injuries, equipment damage, and production outages'*, while improving employees' sense of worth; *'more engaged and positively motivated employees'* who released a greater sense of identity with the organisation; and *'freeing up capable people's time from mindless and repetitive tasks to creating higher order value'* which enhanced the organisations potential to generate value, and increased the fulfilment of their valuable and capable people.

The first value reframing scenario pivoted around a time critical and complex switch between two shop-floor stations on a core production line. This pressurised operation often resulted in equipment damage, injuries, and productivity outages. The intervention placed a digital LED device between the two process stations and activation of the device was built

into the standard operating procedures. The device, when activated, flashed for five seconds and in essence introduced the adaptive concept of mindfulness into a technically-intensive production practice. This intervention precipitated a key behavioural change that significantly reduced negative outcomes. Using the organisational design blueprint (Figure 6.5) as a baseline, Figure 6.9 examines the capital prâxis-accumulator interactions, and overall pan-organisational value journey whose broad purpose is to create a safer workplace and improve productivity. By adding illustrative means-ends goals to each of the numbered items in Figure 6.9, this multi-capital value journey can form an implementation roadmap (Table 6.6), in which means-ends goals provide direction on how the capital and key prâxis-accumulators can be positively influenced. Enacting such a value journey also generates wide improvements across the organisation in areas such as strategy (item 4B), and meaningful work (item 5).

Table 6.6: (Re)framing an operational hot-spot – multi-capital journey

Capital factor	#	Accumulator	Prâxis	Means-ends goals
Institutional (operations)	1	effectiveness	multi-capital investing	Decrease waste, reduce equipment problems, increase yield
Relational value optimisation	2	stakeholder relationships	relating	Increase safety, reduce injuries
Digital innovation	3A	needs based value	translating	Understand and confirm impact
Value governance	3B	value insights	understanding success	Increase revenue, reduce costs
Digital innovation	4A	digital maturity	enabling	Innovate an LED-based solution
Value governance	4B	Multi-capital strategy	strategising	Refine financial and operational objectives
Relational value optimisation	5	meaningful work	fulfilling	Improve employee engagement through enriched role
Relational value optimisation	6	stakeholder relationships	relating	Improve working environment
Reputational (Brand)	7	customer loyalty	meeting needs and expectations	Increase customer satisfaction
Reputational (Brand)	8A	customer advocacy	confirming success	Improve reputation
Reputational (Brand)	8B	customer attrition	disappointing	Decrease customer pain-points
Reputational (Brand)	9	customer acquisition	setting expectations	Strategise acquisition of new customers

The value journey completes with item 9 (customer acquisition), which combined with items 3A (needs-based value) and 4A (digital maturity) could initiate a further virtuous circle of investment in digital innovation.

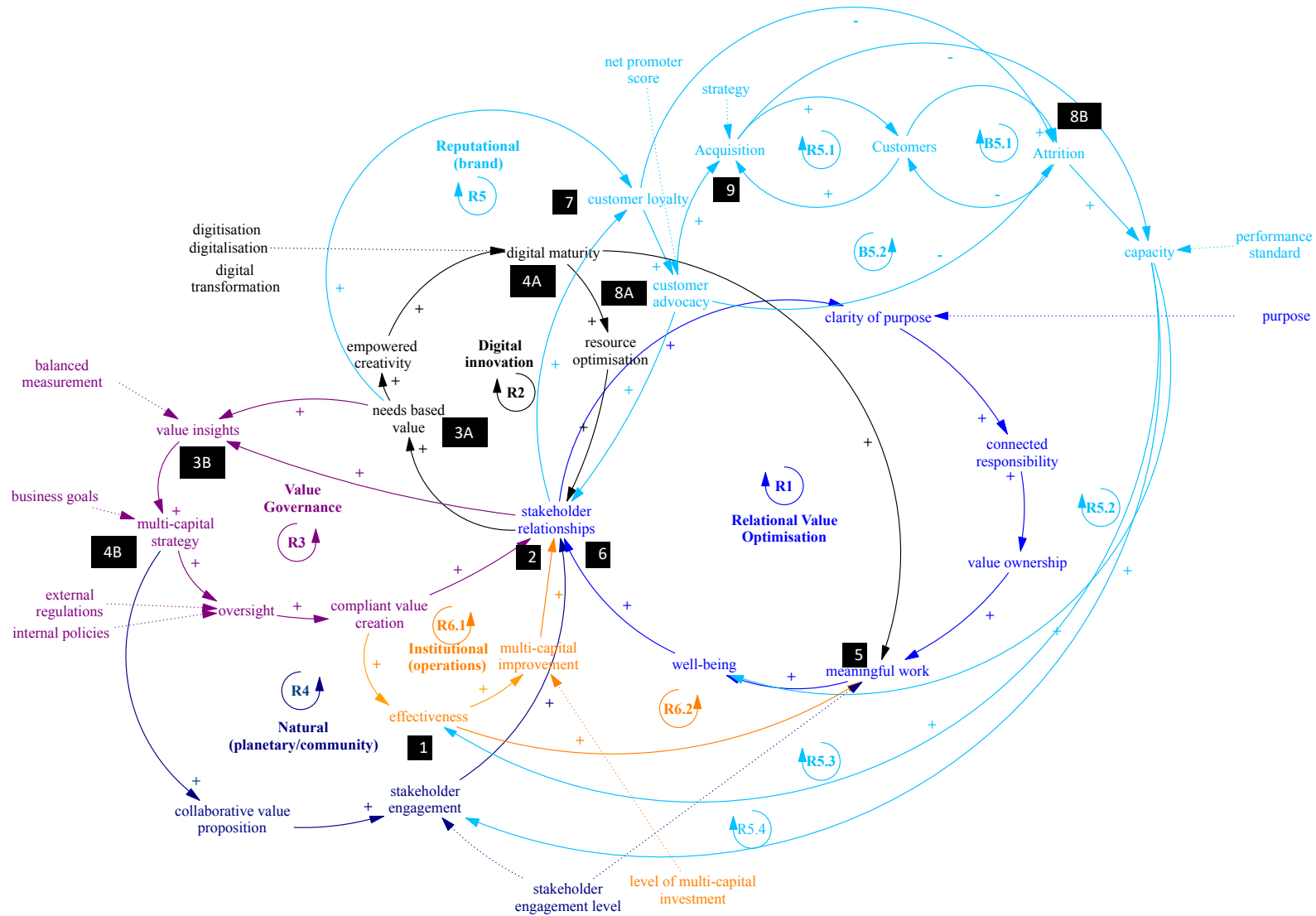


Figure 6.9: (Re)framing an operational hot-spot

The third (re)framing scenario was the implementation of an Enterprise Resource Planning platform (Figure 6.10) which is a common panacea in the manufacturing industry. Many participants highlighted this as a common organisational approach to integrate, automate, and ultimately improve their operating model. They also perceived this specific initiative as a necessity to optimise the organisations' resources. However, for many participants the initiative formed a core tenet of their leadership ethos, which is, that given opportunity, capable and engaged people will gravitate to creating higher-order value. Therefore, freeing up peoples' time from mindless and repetitive tasks such as *'rekeying data, checking and finding inventory, and moving tools'* will allow them to create wider multi-capital organisational value. This reframing also triggered a significant identity change as employees feel more valued and engaged people, rather than enacting bounded identities within prescribed roles. Again, adding illustrative means-ends goals to each of the numbered interactions in Figure 6.10, this conceptual multi-capital value journey can be shaped into an implementable plan (Table 6.7). A further consequence of enacting this value journey is that it generates organisational-wide improvements, examples being effectiveness (item 1), digital maturity (item 5A), and stakeholder relationships (item 6).

Table 6.7: (Re)framing a technology platform implementation

Capital factor	#	Accumulator	Prâxis	Means-ends goals
Institutional (operations)	1	effectiveness	multi-capital investing	Reduce duplication, mitigate analogue constraints, refocus roles
Institutional (operations)	2A	Multi-capital improvement	developing	Decrease waste, optimise inventory, improve yield, decrease turnaround time
Relational value optimisation	2B	meaningful work	fulfilling	Enrich roles
Relational value optimisation	3	stakeholder relationships	relating	Improve employee engagement, increase job satisfaction
Digital innovation	4A	needs based value	translating	Identify new operating model
Value governance	4B	value insights	understanding success	Increase revenue, reduce costs, reduce employee turnover
Digital innovation	5A	digital maturity	enabling	Innovate an ERP platform to deliver new operating model
Value governance	5B	multi-capital strategy	strategising	Strategise higher order value creation in employee roles
Relational value optimisation	6	stakeholder relationships	relating	Improve employees identity and relationship with organisation
Reputational (Brand)	7	customer loyalty	meeting needs and expectations	Increase customer satisfaction
Reputational (Brand)	8A	customer advocacy	confirming success	Improve reputation
Reputational (Brand)	8B	customer attrition	disappointing	Decrease customer pain-points
Reputational (Brand)	9	customer acquisition	setting expectations	Strategise acquisition of new customers

Similar to the previous (re)framing scenario, the completion of the virtuous circle could incentivise further investment, and provide inputs to key organisational areas such as strategising, digital roadmaps, and more effective operating models.

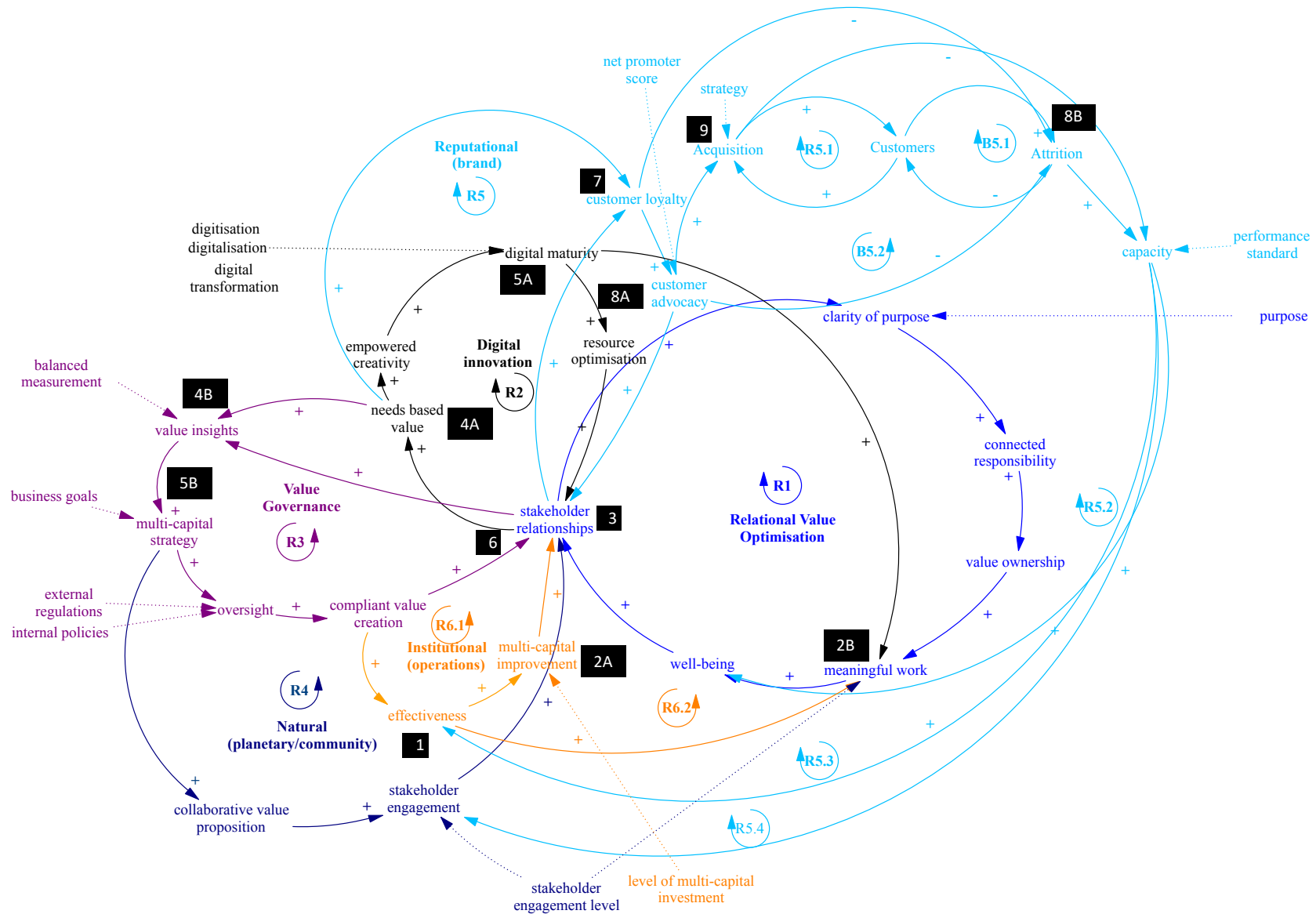


Figure 6.10: (Re)framing a technology platform implementation

Most interestingly, common patterns of value and capital connections are observed across both scenarios. For example, both finished with a loyalty - customer advocacy - customer acquisition - customer attrition (reduced) sub-pattern. Such sub-patterns (and indeed complete organisational patterns), in essence form the basis of transferable value archetypes and could form a key input to multi-capital organisational design.

These empirical prâxis (re)framing scenarios provide practical illustrations of the broad foundations of this study. Prâxis (re)framing strategies were pivoted around key organisational events which form virtuous circles of multi-capital value interactions. These visualisations produce important ramifications for organisational value realisation and optimisation. Firstly, the sequence of capital prâxis interactions form connected temporal patterns, and either whole patterns or sub-patterns are potentially transferrable and repeatable in other contexts. Secondly, each pan-organisational value journey enacts a sequence through multiple capital prâxis interactions, often exhibiting multiple visits to a specific capital. Thirdly, at the end of each value journey, successful outcomes will potentially trigger another virtuous circle of multi-capital value generation. In summary, each of these (re)framing scenarios represent a repeatable pattern, and such patterns or indeed sub-patterns represent repeatable and generalisable value archetypes which are potentially transferable to other organisational contexts.

## **6.6 Conclusion**

Taking direction from notable mixed-method researchers such as Bourdieu and Wolstenholme, this study leverages complementary insights surfaced in empirical qualitative and quantitative models. Specifically, insights in the form of: qualitative prâxis (re)framing strategies, key organisational events and elements, and multi-capital value journeys; and quantitative inter-capital correlations and causal influences provided the foundations for a systems dynamics model. The unique contribution of this study therefore is to combine grounded theory analysis and empirical measurement practice with sensemaking systems dynamics theory in a novel methodology to design praxeological multi-capital organisations.

Such a design is shaped by reflecting on, and surfacing a systematic understanding of the dynamic relationships between capital factors, prâxis-accumulator interfaces, and means-



ends configurations. The methodology comprises five phases and delivers an organisational design blueprint comprised of a set of capitals influenced by related prâxes, and orchestrated by means-ends finality configurations. These capital prâxis interactions further connect as a system of pan-organisational value journeys. Furthermore, understanding the means-ends dynamics through organisational finality theory helps identify the capital operations at play which this research conceptualises as convergence, conversion, conservation, diversification, and transformation. Specifically, analysis proposed the need for an omnifinality theory which is a many-means to many-ends configuration and addresses the more complex multi-capital interactions. Most importantly, this study further conceptualises pan-organisational value journeys as a set of generalisable multi-capital value archetypes. It is worth noting that the key inputs for this study can be recreated in other contexts and organisations, being composed of a set: of key constructs (capitals), prâxis-elements, industry standard correlations and causal estimates between capitals, and a set of empirical scenarios which chart organisational value journeys. Thus, the study can be replicated by other researchers.

#### **6.6.1 Limitations and future research opportunities**

The original constructs and their associated prâxis-accumulators are dependent upon the accuracy of the Good Dividends Evaluation Audit framework (Kempster, Maak, and Parry, 2019). In common with many measurement surveys, confidence that the framework accurately measures what it says it measures, and survey construction and respondent biases are unknowns. To improve the effectiveness of the methodology, the output organisational design components could be critiqued by a wider audience of theoretical domain experts, and practitioners as knowledgeable agents from a more diverse set of organisations. Data collection from 37 manufacturing medium enterprises in North-West England represents a finite sample of the wider UK manufacturing and SME populations. While this prescribed sample of participants and indeed initial survey constructs addresses Brunsson's (1982a, p. 11) suggestion 'to generate theories formulated for and based on specific situations which have been studied empirically', further research could investigate if the proposed methodology is appropriate for alternative capital frameworks and organisational constructs, and potentially generate the capital categories as part of the methodology.

## **Chapter Seven - Conclusion and overall findings**

The purpose of this thesis is to develop an empirically grounded and theoretically conceptualised understanding of organisations as connected praxeological multi-capital value systems. This (re)framing goal is achieved by examining the capitals and their significant praxis-elements (praxis-accumulators) that are important to organisations, surfacing an organisation's capital praxis interactions, and confirming how value dynamics are determined by the connections of capitals and praxes. Consequently, the research broadly investigates both the notion and flow of what could be termed value. In this research context, value is determined by fulfilling the diverse needs of modernity as a connected community of stakeholders, and thus leveraging multiple capitals.

Findings have revealed that organisations can be (re)framed from profitable operations practice into a connected system of multiple capitals whose dynamic interactions are determined by related praxes. Such a conceptualisation provides novel insights into organisational behaviour, and identifies significant opportunities for value realisation and optimisation. The study further indicated that means-ends configurations orchestrate dynamic and complex inter-capital operations, which form pan-organisational journeys. In essence, this thesis demonstrates that value realisation and optimisation depend upon how well an organisation orchestrates its capital praxis interactions. This phenomenon was evidenced by modelling selected pan-organisational and multi-capital value journeys with the organisational design blueprint, findings revealing that patterns of capital praxis interactions form generalisable value archetypes.

The primary theoretical foundations are provided by (re)framing, praxeology, multi-capital value, and systems dynamics theory, and were introduced in Chapter Two. Within this framework, specific perspectives from configuration, complementarity, contingency, and finality theories provided supporting insights into the capital connections of organisations. As illustrated in chapter three, the data collection and analysis spanned a longitudinal case study and therefore the study followed an empirically grounded and iterative knowledge refinement life-cycle. The overall research area of interest logically formed three streams, rather than three rigid and sequential phases, and each stream addressed a relevant sub-area of the broad area of interest. Findings from each stream were documented in papers suitable for dissemination in peer-reviewed journals, and the complementary findings from

each stream are presented in this chapter as an integrated perspective on potential future generations of multi-capital organisations.

The purpose of this chapter is to summarise both the individual findings of the three streams, and also to present thematically aggregated perspectives of the overall contribution to the research area of interest. To restate, the overarching research question that this chapter discusses is: -

*‘How can organisations grounded in scientific management theory and profitable operations practice meet the diverse needs of modernity, and generate value by (re)connecting capitals and (re)framing as connected praxeological multi-capital value systems’*

This section, firstly, re-articulates the empirical observations and theoretical contributions of each stream. Secondly, the practical ramifications of each set of theoretical contributions is highlighted. Next, an alternative perspective of the overall integrated findings is presented in the form of a set of pan-research themes. Finally, the totality of findings, and their relations are visualised using a common systems dynamics theory analogy, namely the organisational iceberg. Before discussing these contributions in detail, a summary of the research area of interest, key questions, and findings is presented in Figure 7.1 below: -

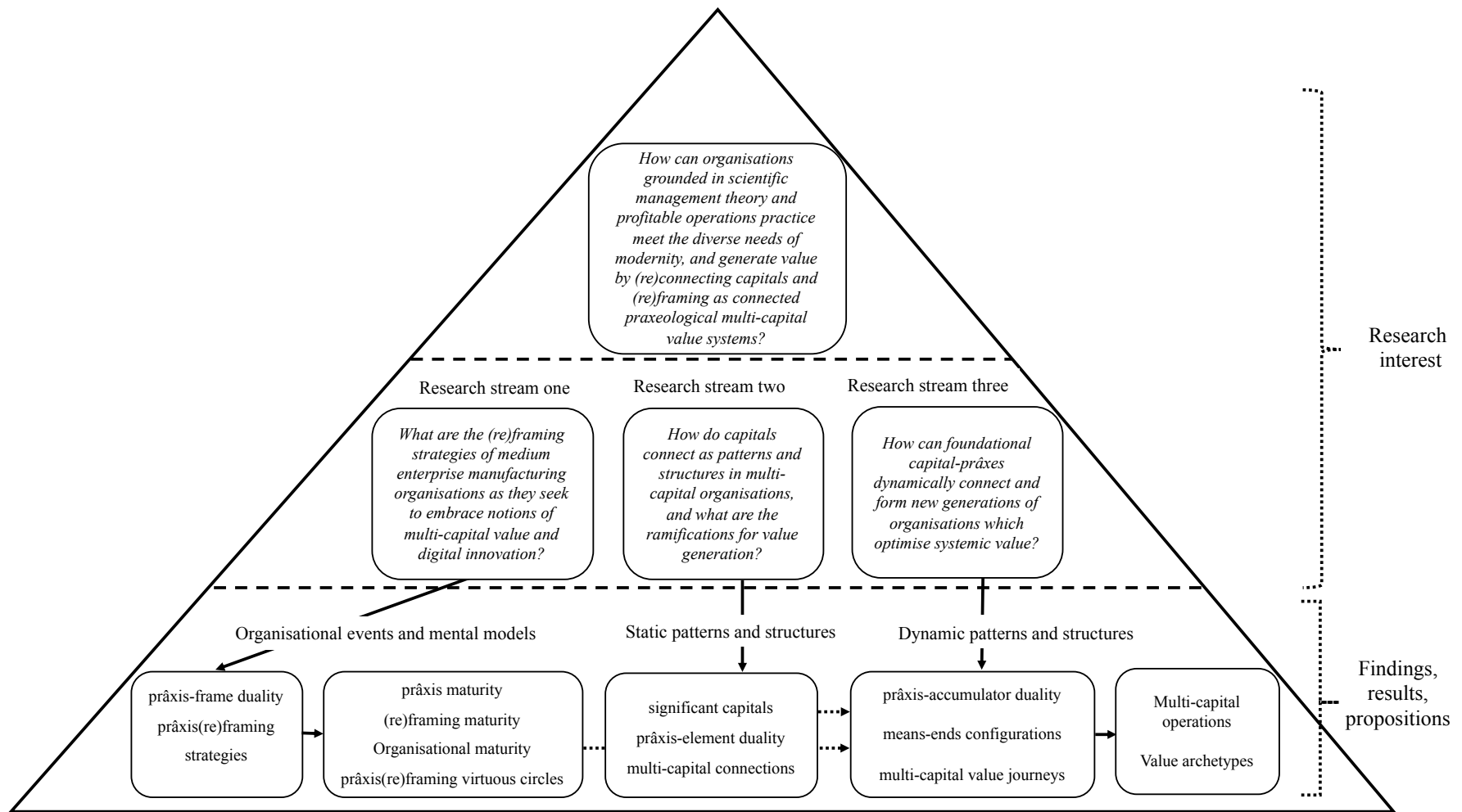


Figure 7.1: Research summary

## **7.1 Empirical observations, theoretical contributions, and practical implications**

This section presents the collective findings in the form of empirical observations, theoretical contributions, and practical implications of individual research streams. Empirical observations were surfaced through enacting grounded theory analysis, structured equation modelling, and systems dynamics modelling. Empirical observations were further abstracted through injections of theory to produce a set of theoretical contributions. Practical benefits are generated by transforming the empirical and theoretical contributions into artefacts that are value-adding to specific stakeholder practitioners, specifically, but not limited to leaders, strategists, organisational designers, and change agents. Practitioner applications could have wide ranging impact, examples being: reflective instruments that trigger dialogue and surface (re)framing opportunities; organisational health-checks; benchmarks that compare current against aspirational states; pan-organisational measurement dashboards; and strategic planning tools.

Collectively, the research's findings deliver novel insights on the latent capital factors and their constituent prâxis elements that are significant to organisations, the connections of such capitals and prâxes, and how pan-organisational value can be realised and optimised ultimately as generalisable value archetypes.

### **7.1.1 Stream one – Prâxis (re)framing an onto-epistemological organisation**

This stream ethnographically examined the sense-making journeys of manufacturing medium enterprise organisations, and how participant director/managers embraced relevant theory and practice in order to future proof their organisations. The study surfaced insights into extant profitable operations practice and aspired value frames, (re)framing priorities, and inductively generated organisational prâxis (re)framing strategies. The primary contribution of this stream is to conceptualise that prâxis and (re)framing interact as the basis of a novel onto-epistemological organisation. This onto-epistemological perspective specifically generated original insights on prâxis frame duality, organisational maturity, the dynamic interactions of prâxis and (re)framing as pan-organisational virtuous circles, and how such components form the onto-epistemological dynamics of an organisation.

**Empirical observations** surfaced a tension between extant macro-level discourse on the adoption of fourth industrial revolution technologies and the reality of resource-constrained and risk-averse medium enterprise organisations who seek to expedite value, if necessary, through an analogue practice means. Furthermore, waste, normally framed as an operational yardstick was reframed as a pervasive and multi-capital phenomenon. In the context of multi-capital value framing, embedded scientific management theory manifests symptomatically in such areas as: a lack of understanding of, and ability to articulate organisational purpose; an organisational value frame prioritised around the generation of financial capital and operational efficiency; routinised practice inertia that enables profitable operations and the exploitation of technical capability; measurement practice generally fulfils a reactive control and monitoring function, and reinforces organisational silos; bounded roles and identities; minimalist engagement and ownership; under-utilised and inflexible resources; and unnoticed prâxis outliers. Conversely, participants grasped the significance that connecting multiple capitals also connects value. This paradigm shift manifested in observations where participants reframed extant bounded practice transactions into pan-organisational and multi-capital value journeys, and surfaced their (re)framing priorities which were normalised into patterns of prâxis (re)framing strategies. Collectively, these observations suggested original theoretical perspectives of an onto-epistemological organisation.

### **Theoretical contributions**

Analysis yielded the prâxis (re)framing strategies of organisations which broadly clustered into three prâxis dimensions, namely: Surfacing the latent organisation; (Re)connecting the foundations; and Realising new value scenarios. The three aggregate dimensions are composed of nine second order themes, and 27 first order concepts, which were inductively constructed from 97 key points and 129 unique analysis codes. This structure also indicates that prâxis (re)framing strategies form a framing - (re)framing context - reframing meta journey. Findings further revealed that prâxis (re)framing strategies are based on prâxis-frame duality foundations. These dualities also combined as the building blocks of prâxis (re)framing virtuous circles which enact the dynamic interactions of framing and reframing broadly conceptualised as (re)framing, with the synthesis of theory and practice in the form of prâxis. A further conceptualisation of the intrinsic connections between prâxes and frames is that they form a prâxis (re)framing onto-epistemology. In this onto-epistemology, each prâxis (re)framing virtuous circle is comprised of a causal frame, relational prâxis, and foundational

prâxis. These relationships were examined in detail using a digital maturity perspective which connected the three prâxis (re)framing levels of digitisation (data), digitalisation (process), and digital transformation (model) into a set of connected pan-organisational (re)framing virtuous circles. The significant implication of this discovery is that a prâxis (re)framing virtuous circle as a unit of analysis contributes novel perspectives as both individual building blocks and connected pan-organisational virtuous value circles. The findings from this illustrative digital scenario were extended across the three aggregate prâxis (re)framing strategy clusters and their nine second order themes. Therefore, a prâxis (re)framing onto-epistemology was identified for each of the nine second order themes, and as a framework of causal frames, foundational prâxes, and relational prâxes, provides an organisational landscape of connected prâxis (re)framing virtuous circles. In essence, such connected insights provide transparency and the ability to optimise pan-organisational value dynamics.

A further novel theoretical abstraction implies that prâxis maturity and (re)framing maturity are significant considerations for organisations, and their complementary interaction provides a new conceptualisation of overall organisational maturity. In essence, prâxis maturity could be interpreted as the epistemological maturity of the organisation, (re)framing maturity as the ontological maturity, and thus their complementary interaction represents the onto-epistemological maturity of an organisation. In summary, this stream extends prior practice focused studies by reconceptualising novel theoretical relationships between praxeology and (re)framing, which can be used in the practical onto-epistemological design of organisations.

### **Practical implications for organisations**

This stream surfaced the practical workings of organisations in key areas such as waste, inertia, mental models, key events, and notions of value, primarily through an iterative and reflective participant-led process. Current and aspirational mental models, combined with routine organisational events collectively surfaced instances of pan-organisational and multi-capital value journeys. These value journeys (re)framed the existing bounded transaction culture, and provided the genesis for stream three's systems dynamics modelling both in helping to shape the organisational design blueprint and in creating operationalizable organisational value journeys and value archetypes.

The prâxis (re)framing foundations (Table 4.1) and the prâxis (re)framing relative parameters (Table 4.2) could be transformed into a self-assessment instrument which

would precipitate pan-organisational dialogue about prâxis (re)framing priorities, and also evaluate current organisational maturity levels. At a more fundamental level, these perspectives can be used to illustrate the potential benefits of prâxis as an elaboration of extant routinised practice, and ensure that prâxis as a concept is embedded in the organisational agenda. Reflective discussions and insights on prâxis (re)framing strategies will also provide tangible inputs for constructing organisational value roadmaps. Thus, stream one's theoretical framework has significant practical implications for organisational stakeholders, and provides direction to organisations in improving both their prâxis and (re)framing capabilities.

Some illustrative practical stakeholder benefits are now presented. Firstly, leadership teams could refine the prâxis (re)framing foundations (Table 4.1) into an organisational health-check. This health check would assess both current and aspirational states for the prâxis-frame dualities identified in Table 4.1. The practical focus of this instrument would also facilitate pan-organisational engagement and surface a multitude of latent and tacit constraints and opportunities. Common examples are waste, sources and forms of inertia, prâxis outliers, and critical organisational elements such as clarity of purpose. Secondly, the prâxis (re)framing relative parameters (Table 4.2) provide a quasi-quantification of onto-epistemological maturity. These parameters can be self-assessed and validated by organisational change agents and the outcomes prioritised as required. The paper in chapter four presented one specific onto-epistemological representation, namely Prâxis (re)framing visualisation (Figure 4.6), however, there are other potential ways to package these dimensions. For example, relative priority versus overall organisational maturity (items c and d in Table 4.2) would provide direction as a change roadmap. Further instances of related organisational stakeholder needs are: leadership teams who seek to understand and improve organisational maturity; organisational strategists who aspire to shape digital and multi-capital roadmaps; and change agents who need to create and operationalise alternative organisational designs.



### **7.1.2 Stream two – organisational capitals, configurations, and connections**

Legacy scientific management principles as espoused by thought leaders such as Taylor (1911) have created bounded disciplines and knowledge communities, and framed organisations as profitable operation practice. Based on an alternative hypothesis that an organisation is a set of interconnected capitals that are formed from configurations of praxis elements, this research stream investigated the significant latent capital factors in, elements of, and connections between the initial eight constructs as embodied in the Good Dividends Evaluation Audit framework (Kempster, Maak, and Parry, 2019). Analysis suggested that this framework was broadly representative of common conceptualisations of capital categories and thus provided a credible initial position for this stream's investigation. In addition, as the GDEA is broadly in line with commonly identified capital categories, this finding mitigates the risk of researcher bias in the GDEA. The primary contribution of this stream is in transforming the initial eight constructs and their raw data elements into a set of organisational models based on the capitals and their praxis elements that are significant to organisations. Furthermore, the analysis quantified the nature, strength, and direction of the connections between capitals, refined the role of digital innovation, and provided an understanding of the purpose of organisational oversight in the form of responsible leadership and governance. Ultimately, this quantitative analysis confirmed that an organisation could be represented as a connected praxeological multi-capital value system.

#### **Empirical findings**

Results obtained from structured equation modelling confirmed the patterns of significant praxis elements (configurations) that form latent capital factors. This detailed modelling reduced the initial eight constructs (six capitals - financial, institutional, social (Innovation), reputational, human, natural; and two oversight constructs - responsible leadership and governance) to six capital factors. The significant capital factors were: relational value optimisation formed from human capital and responsible leadership; value governance formed from financial capital and governance; digital innovation formed from social (innovation) capital, and the digital praxis elements embedded in each of the eight GDEA constructs; institutional; reputational; and natural capitals. Furthermore, the original 40 GDEA survey elements were reduced to 20 significant data elements, and the ten demographic elements and additional analysis indicators reduced to two demographic elements, the latter being of extremely low significance. Most importantly, modelling

suggested that all capitals are systemically correlated, and form causal paths through the relations between independent factors (relational value optimisation), mediating factors (digital innovation, value governance), and dependent factors (institutional, reputational, and natural).

### **Theoretical contributions**

While correlations can be mere coincidences, results indicated a systemically correlated set of capitals, and the observed level and strength of correlations between all capitals suggested that capitals systemically connect to form an organisation. Analysis also suggests that significant inter-capital causal relations fit together as a structure, in which: relational value optimisation formed the people-centric explanatory (independent) capital factor, which shapes values, and thus value direction within an organisation; digital innovation and value governance (comprised of original constructs Finance and governance) are mediating engines which enable the translation of values and value direction into tangible outcomes; and reputational, operations, and natural capitals are expected and intended value outcomes. These quantitative contributions extend prior multi-capital research by Bourdieu (1986); Kaplan & Norton (1996); Roland (2011); Lev & Gu (2016); Adams et al. (2017); and Kempster, Maak, and Parry (2019), as highlighted in Table 6.1, and indeed transform prior conceptual descriptives into the realm of empirically validated models. Most importantly, this research presents a thought-leading perspective, where an organisation has been quantitatively modelled as a (re)connected praxeological multi-capital system. In this sense, the confirmed capital-factors, their patterns of significant praxis elements, and inter-capital connections identify the value dynamics in a multi-capital organisation.

Furthermore, a theoretical stew of configuration, contingency, and complementarity theories, introduced by authors Meyer, Tsui, and Hinings (1993), Miller (1996), Nadler and Tushman (1999), Donaldson (2001), Naman and Slevin (1993), and Milgrom and Roberts (1995) was applied in novel ways to further conceptualise the interconnectedness of multi-capital organisations. Specifically, by examining the intersections of these theories, additional (re)framing perspectives were surfaced. In essence, the theoretical propositions propose that associations (correlations) and relations (causal effects) be co-analysed to fit with the wider stakeholder community's needs and expectations, and

consciously codesigned as patterns of elements that connect within an organisational whole.

In summary, the primary contribution of this study is to reconceptualise an organisation as a quantified praxeological multi-capital value system, evidenced by empirical measures of an organisation's capitals and their systemic connections. Such an approach would provide scholars and practitioners with new units of organisational analysis based on the connections and interactions within, and between capitals, rather than the dominant legacy profitable operations narrative. The study also reveals that an alternative view of organisational success, based on inter-capital connections, would be enabled by analysing the direct and indirect flow of value between different capital factors.

### **Practical implications for organisations**

Grounded in diverse pan-organisational data the research confirmed credible and quantified models which defined: the prâxis elements that are significant for organisations; how such elements combine as configurations (connected patterns) of elements and form capital factors; and the key connections between these key factors in the form of inter-capital correlations, and causal influences between capital factors. Thus, stream two's theoretical framework has significant practical applications for organisational stakeholders, namely: leadership teams who want to better understand, measure, and thus exploit organisational capitals and their connections; change agents who seek to (re)connect organisations and negate the bounded constraints of legacy scientific management principles; strategic innovators who aspire to improve value flows across their organisations through digital and other enablers. Again, selected practical stakeholder applications are now presented.

The first important consideration for leadership teams and organisational designers, concerns the commonalities of both measurement (correlations) and structural (causal) models. The common components of both models in the form of the latent capital factors and their prâxis elements, represent the significant underlying structures that form the organisation, and highlight a one-organisation perspective. The models also provide pragmatic insights into how existing bounded roles such as followership and responsible leadership could form a more relational value optimisation approach which pivots around optimising stakeholder relationships. Finance and governance could combine to form a wider value governance function, and digital innovation could be a centre of excellence for

understanding and optimising needs-based value. Collectively, they can mediate effective change and optimise the operating model. Moreover, three capitals in the form of institutional, natural, and reputational are identified as tangible value outcomes. The identification of the latent foundations of an organisation, would clearly improve organisational design in the form of new hybrid functions and roles, multi-capital measurement dashboards that provide connected pan-organisation insights rather than disparate functional measures, and new resource pools and skills which generate more meaningful work across the organisation.

The second important practical implication concerns operationalising the connections between capital factors. The systemic, and statistically significant positive correlations between all capital factors, measure the degree to which movement of two different capitals are associated. In a practical sense, if the correlation between capital A and capital B is 0.9 then in simple terms if there is a positive increase in A, there is a 90% probability that B will positively increase as well. This fundamental is important in optimising value in organisations, and thus provides direction on investment and change priorities. For example, a capital that is strongly correlated with all other capitals suggests that an improvement in the praxis maturity of that capital should have similar positive outcomes on all other correlated capitals. Furthermore, the causal relations between capital factors indicate that a change in capital A will drive a change in capital factor B, where the degree of the change in B is based on the strength of the regression estimate from A to B. The causal paths between capitals identify the value flows from determinants, through mediators, and ultimately to outcome capitals. This has important ramifications for organisational design, investment priorities, change focus, and construction of pan-organisational measurement dashboards. In contrast to specialised legacy functions and their bounded metrics, these novel insights provide a connected relational view, and alternative functional and measurement structures.

### **7.1.3 Stream three – (re)connecting and (re)framing value organisations**

Taking direction from seminal mixed-method researchers such as Bourdieu and Wolstenholme, stream three leverages the complementarities of mixed methods research to elaborate on the prior stream's empirical findings of a connected organisation.

Stream one's contribution comprised prâxis (re)framing strategies, pan-organisational value journeys, significant events and elements, and current and aspired mental-models. While stream two provided a connected structure of six capital factors, connections in the form of correlations and causal relations, and each capital factor comprised of a configuration of significant prâxis elements. This modelling leveraged a synthesis of qualitative and quantitative empirics with sense-making systems dynamics theory, and produced contributions in the form of both empirical findings, and a generalisable methodology.

#### **Empirical observations**

The primary goal of stream three was to elaborate prior foundational insights into a dynamic conceptualisation of an organisation by the application of systems dynamics theory. To achieve this goal, the six capital factors and 20 significant prâxis elements identified in stream two were reconnected as dynamic prâxis-accumulators within capital factor feedback loops. This provided an interesting finding, in that, these originally static structures could be (re)framed into dynamic capital factor feedback loops, and most importantly, this (re)connection made organisational sense. Individual capital factor feedback loops further inter-connected as an organisational system of reinforcing and balancing feedback loops. To complete the organisation, inter-capital connections were formed by interfaces constituted from means-ends dynamics that aligned with extant configurations from finality theory. Such means-ends configurations orchestrated the complex capital prâxis operations across pan-organisational value journeys.

These empirical observations were constructed by reflecting on, and surfacing a systematic understanding of the relationship between capital factors, their constituent prâxis-accumulators, and their related prâxis dynamics. Consequently, a further finding suggested that the research's analysis journey is in essence a generalisable methodology that organisational practitioners and indeed other researchers could enact. This proposed methodology is conceptualised as five steps, namely: shape the high-level context; define

the individual building blocks; connect the organisation; surface the organisation's prâxis dynamics; and understand the implications of the new design.

### **Theoretical contributions**

The elaboration of stream two's empirical observations confirmed the reconceptualisation of a static structure into a dynamic system. From a theoretical perspective, the connections between prâxis-accumulators manifest into two significant ways. Firstly, from a sense-making perspective, as the building blocks of capital factor feedback loops they logically combine to form dynamically connected structures rather than static objects. Secondly, the interactions of prâxis-accumulators also enable multiple capitals to connect, and in this sense, they are the conceptual interfaces between capitals. Findings further suggest that specific prâxis-accumulators can: act as primary accumulators within capital factor feedback loops; and function as points of intervention and enable sustainable change as key leverage points. This suggests that key prâxis-accumulators are synonymous with the concept of start points in means-ends dynamics highlighted in praxeology, finality, and framing theories.

Analysis of the organisational design blueprint in Figure 6.6 also implies that these multiple capital prâxis interactions connect as pan-organisational value journeys. Such journeys are enabled by dynamic means-ends configurations, specific configurations being identified in finality theory. Furthermore, means-ends configurations orchestrate complex capital operations which this study elaborated as convergence, conversion, conservation, diversification, and transformation. Specifically, the research identified the need for the concept of omnifinality or a many-means to many-ends configuration, as a new contribution to finality theory. This original contribution extends the work of Buckley (1967), Von Bertalanffy (1968), Sinha and Van de Ven (2005), Zhang, Fishbach, and Kruglanski (2007), and Kruglanski et al. (2015). A further significant contribution of the research identified means-ends dynamics as a common theme of prâxis, finality, and framing theories. Consequently, means-ends dynamics as a theoretical utility is a critical foundation for the conceptualisation of an organisation as a praxeological multi-capital value system.

In addition, while stream three's analysis produced a set of empirical findings in their own right, the findings can also be generalised as a conceptual design methodology which can be used to reflect on notions of multi-capital value, understand legacy constraints and

inertia, and design dynamically connected multi-dimensional organisations. Most importantly, enacting this methodology necessitates a detailed understanding of how capitals and their significant prâxis elements continuously interact across the organisational whole, this a conceptual (re)framing of existing value dualisms and causal and value dead-ends.

In summary, capital interactions provided deeper understanding of value dynamics within an organisation and confirmed that categorising value prâxis as destruction and creation is an over-simplification. Furthermore, creating a viable model of an organisation as a set of dynamic praxeological multi-capital interactions has challenged the myth of linear value flows and causal and value dead-ends in organisations.

### **Practical implications for organisations**

Stream three theoretically abstracts the empirical observations from streams' one and two into a systems dynamics model and methodology that provides a dynamic framing of the inter-capital connections and value journeys that form an organisation. A primary contribution of this research stream is the organisational design blueprint which connects capital prâxis interactions and was constructed using a five-step methodology. However, the process of constructing such a blueprint is also insightful, as practitioners need to (re)frame their current mental models and linear profitable operations practice lens into a non-linear and indeed (re)connected multi-capital value perspective. Further analysis, of the patterns and structures in the organisational design blueprint, implied that there are no causal and value dead ends in multi-capital organisations, rather means-ends configurations orchestrate the complex inter-capital operations, and interact to form pan-organisation finality journeys. Thus, stream three's theoretical framework could have significant practical benefits for organisational stakeholders, namely: leadership teams who seek to develop new operating and business models through implementing digital enablers and optimising capital operations; strategists who aspire to (re)frame organisational value direction around dynamically connected value journeys and value archetypes; change agents who seek to leverage alternative organisational dynamics around multi-capital connections and specific points of intervention; value innovators who aspire to mitigate value dualisms and value and causal dead ends. Again, selected practical stakeholder applications are now presented.

From a leadership perspective, the organisational design methodology could function as a reflective benchmarking instrument. By following the proposed methodology practical benefits would be realised as follows: significant prâxis-accumulators in the organisation are identified, examined in detail, and their role fully understood; the dynamic relationships between individual prâxis-accumulators would be evaluated as part of constructing capital factor feedback loops and previously unnoticed links between such accumulators would be identified; the connections and interfaces between capital factor feedback loops would be surfaced, mostly likely for the first time, leading to the realisation that multiple capitals dynamically and continuously interact. In essence, extant functions and departments could be redesigned around capital factors and their interfaces, and the significant prâxis-accumulators used as assessments of value. Consequently, the contribution is that this original sense-making approach would surface profitable operations practice myopia, and facilitate efforts to (re)frame and (re)connect organisations.

Secondly, the three (re)framing scenarios presented in section 6.5 demonstrate that the organisational design blueprint could function as a directional tool, similar to the Balanced Scorecard (Kaplan and Norton, 1996) and inform leadership, policy makers, and change agents with alternative multi-capital design frames. By adding further prâxis means-ends goals in Tables 6.6 and 6.7 to each of the numbered interactions in Figures 6.9 and 6.10 multi-capital value journeys can be shaped and operationalised. A further consequence of enacting pan-organisational multi-capital value journeys is that it generates significant improvements in areas such as strategy, meaningful work, and digital maturity. For example, stream one highlighted that many participants acknowledge the importance of adaptive concepts such as meaningful work and well-being, yet are unsure how to operationalize and evaluate the value-add of such items. The organisational design blueprint, would enable organisational decision makers to conceptually shape meaningful work through robust dialogue, and position it in terms of dynamic capital prâxis connections and key-leverage points. In addition, operationalising such value journeys also facilitates the creation of dashboards of connected multi-capital measures which further improves organisational practioners' ability to understand and manage value in the organisation.

Thirdly, the three value (re)framing scenarios surface common patterns and sub-patterns, which in essence represent generalisable value archetypes, that is common value journeys



that could be extended into other organisational contexts and industries. For example, an organisation that has multiple autonomous business units, and even subsidiaries would benefit from the insights of such generalisable value archetypes. In essence, the value archetypes could provide an enterprise wide direction for internal policies and standards that facilitate value realisation and optimisation. From a scholarly perspective, researchers could apply the value archetypes to other organisational types and industries.

Finally, omnifinality is a many-means to many-ends relationship, which in many analytical methods is often resolved into simplified combinations of one to many, and many to one relationships. However, modern platforms such as Google Maps have recognised that complex location and spatial data are interconnected, and realised the benefits, and indeed necessity of enacting such relationships. Consequently, Google has conceptualised these complex elements and their many to many relationships in practical visualisations. The ability to understand and operationalise many to many relationships in a multi-capital organisation, while challenging, would enable organisations to manage the complex behaviours of capital prâxis interactions as they enact in empirical value scenarios.

## **7.2 Overall research contribution**

The combined outcomes of this research are significant in multiple theoretical, methodological, and practical ways. This research's findings indicate that the notion of causal and value dead-ends, and categorising value prâxis into a creation and destruction dualism is an oversimplification of organisational value flows. Therefore, the research's primary theoretical contribution is that an organisation's value realisation and optimisation are dependent upon being able to orchestrate its dynamic multi-capital means-ends finality journeys, and operationalise a deeper understanding that value is provided by meeting the diverse and connected multi-capital needs of modernity. In essence, this research aspired to better understand organisations as connected praxeological multi-capital value systems, and consequently, to design credible future organisations. These new insights also providing practical direction to organisational decision makers such as leaders, managers, strategists, and change agents in operationalising such organisations.

Drawing on complementary mixed methods research approaches, a novel onto-epistemological perspective of an organisation was conceptualised. Onto-epistemological,

in this sense, emphasising the interconnectedness of the ontological and epistemic dimensions, manifesting in such findings as prâxis (re)framing strategies; prâxis-frame, prâxis-element, and prâxis-accumulator dualities; and an original conceptualisation of organisational maturity. The further contribution of this study is in identifying and quantifying connected structures of capital factors and their significant prâxis-accumulators, and evolving static structures with prescribed causal start and end points into a dynamic system of interactive capital feedback loops.

Legacy organisational priorities have tended to focus on problem resolution, this inherited from scientific management principles and evident in the high profile of such frameworks as lean, six-sigma, process re-engineering, and traditional systems thinking. Conversely, this study equally focuses on the positive value realisation and optimisation opportunities for future organisations. These opportunities arise from an emerging cognisance of connecting multi-capital needs and the importance of digital maturity in (re)integrating previously bounded organisational functions, structures, and stakeholder communities. Within this overarching perspective of theoretical and practical interconnectedness, four thematic-level perspectives which aggregate individual stream level contributions into complementary perspectives are now presented.

### **7.2.1 Organisation - an onto-epistemological duality**

This research developed a novel onto-epistemological perspective of an organisation through the intersection of prâxis and (re)framing, and (re)connecting capitals through prâxis accumulators. Early praxeology theory highlighted the relevant concepts of prâxis and phrônêsis, however recent research has focused more on ‘routinized practice’ (Reckwitz, 2002) and the practice turn movement which specifically proposed practice as a unit of analysis. The practice turn manifested as ‘a diverse, complex, and sometimes contradictory set of approaches, in which there is no such thing as the theory of practice but a variety of theories focused on practices’ (Cornut, 2015, p. 4). Significant to this research, praxeological inertia reinforces profitable operations practice and manifests as unrealised value. Furthermore, organisational scholars have identified praxeological dichotomies. Using organisational modularity as an example ‘for a practitioner, a modularity problem could be that of deciding at what points to cleave work systems into components for allocation among subunits...For a scholar, a modularity problem could be

that of choosing the appropriate unit(s) of analysis for examining the architecture of a work system' (Sinha and Van de Ven, 2005, p. 391). Consequently, the confirmation of prâxis as a core tenet of this study is a novel mitigation for the practice-theory dichotomy, and the dominant profitable operations practice narrative.

From a wider praxeological theory perspective, (Kuepers, 2013) advised that the reintegration of prâxis, practices, actions, and practical wisdom could be a possible response to the constraints imposed by neoliberalization (e.g. corporatization, commodification and privatization of public assets and domains) and also could open up new fields for capital accumulation. This study's findings extend this perspective by both reintegrating praxeology-based epistemological concepts, and further complementing them with an ontological perspective in the form of (re)framing. Some prior studies have connected epistemological and ontological positions into an onto-epistemological perspective. For example, Kemmis (2008, p. 158) elaborated 'in prâxis that we submit ourselves— that all of us are submitted— to the discipline of reality', thus connecting the ontological perspective of reality with the epistemological perspective of prâxis. Furthermore, (Golsorkhi, 2010) suggested that strategies are typically improvised and reinterpreted in particular moments of prâxis, in essence they are shaped by retrospective reframing rather than outcomes of prescribed corporate practice. Consequently, this research indicates that an onto-epistemological perspective provides alternative insights for the organisation of multi-capital value.

An organisation's capability to (re)frame enables it to generate novel ontological insights, while the capability to apply prâxis in optimising knowledge again surfaces original epistemological perspectives. In stream one, for example, prâxes and frames complement one another and form prâxis (re)framing strategies. Another specific conceptualisation was presented in stream one (Table 4.2, Figure 4.6) where the dual dimensions of prâxis maturity and (re)framing maturity combine in an onto-epistemological representation of organisational maturity. Stream two identified a further onto-epistemological phenomenon, in which (re)framing through empirical measurement practice confirmed a connected structure, thus posing a new ontological reality. This ontological structure is comprised of a set of capitals, each capital formed from connected prâxis-elements. Again, in each prâxis-element duality, prâxis provides the epistemological position and the related element represents the associated ontological position. As illustration, in the research

context, fulfilling / meaningful work represent a prâxis-element duality, in which the prâxis of fulfilling provides the knowledge about the extent work is meaningful and thus influences the ontological reality that is meaningful work. In this sense, meaningful work represents an ontological end, and meaningful work as a means to the same end is determined by the prâxis of fulfilling. Stream three further elaborated the notion of an onto-epistemological organisation. In this instance, prâxis-element dualities were repositioned as prâxis-accumulator dualities, and while they have the same underlying entities, the subtle nuance is that prâxis-accumulators are dynamic, and dynamically connected to other prâxis-accumulators. In this elaboration, prâxis still provides the epistemological foundation, yet in a context of dynamically connected prâxis-accumulators. Similarly, (re)framing stream two's static structure through sense-making systems dynamic theory surfaces an alternative dynamically connected ontological structure. Most importantly, this dynamic ontology provides an alternative reality to structures that exhibit causal and value dead-ends, and oversimplify the epistemological value prâxis into creation and destruction.

In summary, the onto-epistemological basis of dynamic multi-capital organisations is grounded in complementary ethnographic observations and empirically measured connections. This modelling indicates that capitals comprised of prâxis-accumulators and their interfaces relate to a dynamic onto-epistemological structure of means-ends configurations which connect as pan-organisational value journeys, and ultimately value archetypes. In essence, onto-epistemological (re)framing is supported by both the study's empirical findings and theoretical conceptualisations, and enables new ways to understand and (re)connect organisations. In this research context, specific areas of interest are organisational maturity, value realisation and optimisation, and connections as dynamic enablers of multi-capital systems.

### **7.2.2 Connecting capitals also connects value**

The drivers of organisational performance are often causally ambiguous. For example, findings in a manufacturing context indicated that ‘changes in workers' actual activities had tiny effects, whereas the differences in the plant managers' expectations seemingly had much larger effects’ (Dunbar and Starbuck, 2006, p. 174). Brunsson (1982a, p. 4) also explaining that ‘when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations.’ March and Simon (1958, cited in Sinha and Van de Ven, 2005, p. 400) have a further perspective on such ambiguity, challenging the reductionist approach to assessing value ‘the notion that conflicting selection pressures can somehow be aggregated into a single measure of performance is presumptuous, when in reality, organizations and the individuals in them juggle a host of conflicting expectations and assessments that create a payoff function too difficult to assess and optimize’. These insights are synergetic with the research’s findings that value represents fulfilling needs, needs are encapsulated in capitals, which in turn are connected in complex multi-capital operations that dynamically enact as pan-organisational value journeys.

A common theme of prior organisational studies is that discrete components in the form of practices and events often seem to have limited impact on organisational performance. In response, a key tenet of systems dynamics research is that behaviour cannot be understood by examining components in isolation, rather, the system as a connected whole is more than the sum of the parts. However, Albert (2018) clarifies it is also important to study organizational change from a micro-level perspective such as a module rather than only focus on the aggregated system. In order to resolve this paradox, this study proposes that an organisation is a system of multiple capitals, each comprising a configuration of praxis-elements, and connected by a set of dynamic praxeological interactions. In this sense, micro level structures are (re)framed as dynamic capital factor feedback loops, and (re)connected within an organisational whole. Yet, they retain their purpose and identity as individual capital factor feedback loops within pan-organisational value archetypes.

In practice, systems dynamic theory is often applied to mitigate value destroying problematic behaviour. This scope of application is extended within the study by elaborating the concept of systems archetypes into a set of generalisable value archetypes grounded in the empirical observations of MSLP participants’ reframing journeys. Value

archetypes use a more holistic value realisation frame, in essence also encapsulating value optimisation, and thus mitigating the value creation and destruction dualism.

### **7.2.3 Means-ends dynamics as a common theoretical utility**

Means-ends dynamics were identified as a common conceptual thread running through the theoretical and empirical dimensions of this study, and indeed multiple genres of theory. From a praxeology perspective, Aristotle highlighted ‘the relationships between starting points, means and ends for the three ways of knowing and forms of wisdom, namely episteme, phrónêsis, and téchnê’ (Eikeland, 2014, p. 654). Similar to the concept of starting points, key leverage points, are places within a complex system where a small shift in one thing can produce big changes in everything (Meadows, 2008). The study’s findings enabled the identification of key leverage points which can determine initial conditions and then trigger ‘butterfly effects’ (Lorenz, 1972) across the connected multi-capital organisation with significant ramifications for value realisation and optimisation. Such ‘butterfly effects’ create uncertainty in an organisation and undermine the rigid routinised practice (Reckwitz, 2002) and psychological safety inherited from long gone eras. When an organisation faces an uncertain situation, it is not clear what the best means are to deal with the situation, nor is it clear what the appropriate ends are in the situation. In such means-ends ambiguity, phrónêsis is essential and constitutes:

‘a preparedness to understand a given situation in different ways, and not to accept immediately that the situation is what it appears to be; an openness to experience - simply to experiencing the world in new ways, by trying out a new way of being in the world; the readiness to act in uncertainty and to use and learn from experience’ (Kemmis, 2012, p. 155).

However, it is ‘prâxis that allows phrónêsis to develop therefore phrónêsis follows prâxis, and not vice versa’ (Kemmis, 2008, p. 158), which reinforces the primacy of prâxis as a robust foundation of this study’s investigation of means-ends dynamics within multi-capital value journeys. Analysis of causality and particularly finality theory is inherent to understanding means-ends dynamics. Finality can be conceptualised as configurations that represent means-ends dynamics (Kruglanski et al., 2015). Pivotal to this research, finality theory addresses the ‘epistemic uncertainties and hence modelling limitations of a system

that displays myriad (ever evolving and dynamic) paths by analysing the different means-ends configurations' (Khatami, 2019, p. 8935). Previous studies have proposed a variety of finality or means-ends configurations, namely: unifinality, equifinality, multifinality, and counterfinality (Buckley, 1967; Von Bertalanffy, 1968; Kruglanski et al., 2015; Zhang, Fishbach, and Kruglanski, 2007). This study's findings indicate that extant manufacturing organisations exhibit equifinality and counterfinality, ensuring the dominance of profitable operations practice and framing value as a zero-sum game. However, omnifinality emerged as a further novel configuration, in which many to many capital relationships are enacted. Similar to the concept of means-ends dynamics in praxeology, finality theory and its specific means-ends configurations orchestrate complex inter-capital operations, and thus explain the value dynamics of a multi-capital organisation.

Framing is another area relevant to this research that is founded on an intrinsic means-ends dimension, Kaplan (2008, p. 744) suggesting that 'introduction of new frames is a means to transform interests through a collective effort of meaning making'. Kaplan further elaborates that framing is not a set of symbolic actions (means) distinct from substantive outcomes (ends), but instead a process by which means-ends are constructed in virtuous circles 'interests shaped ideas, but frames also created contexts for action, contexts that then reciprocally shaped the interests that participants came to have' (Kaplan, 2008, p. 747). As a core theoretical perspective for this research, framing further endorses the significance of means-ends dynamics, and suggests that meaningful organisational transformation is enabled by virtuous circles of means-ends interactions.

In summary, the study's findings indicate that pan-organisational means-ends journeys orchestrate dynamic and complex inter-capital operations, and thus the realisation and optimisation of value. The novel finding of this study identifies that means-ends dynamics are a significant common theoretical (and practical) building block of a (re)framed praxeological multi-capital system. Moreover, a specific elaboration of extant finality theory is the proposal of omnifinality to address the situations where many means to many ends capital interactions are at play in an organisation.

#### **7.2.4 Connections as dynamic enablers of multi-capital systems**

Many studies have conceptualised connected value systems descriptively. In contrast, this study has produced an original, empirically grounded, and mixed methods representation of such an organisation in which complementary quantitative and qualitative findings are transformed into an organisational model ontology. A common component of this ontology is the enabling concept of connections.

One of the initial observations of connections in this research surfaced during stream one's analysis of praxis (re)framing strategies. Findings suggested that praxis (re)framing strategies follow a connected meta level journey from framing, through establishing the (re)framing context, to enacting reframing. However, at the micro level, praxis (re)framing enacts as dynamic systems which connect theory-practice-praxis-framing-reframing within virtuous circles. These connected praxis (re)framing virtuous circles are proposed as foundational building blocks of a dynamic multi-capital organisation, both at an individual level and further connect to form relational praxis-frame structures at differing levels of organisational abstraction. For example, in a digital context, the praxis-frame pair, namely (Re)connecting through digital innovation-digital maturity are comprised of multiple connected praxis (re)framing virtuous circles across digitisation-data, digitalisation-process, and digital transformation-organisational model. This novel conceptualisation produces a connected perspective of how digital innovation enacts at various levels of abstraction across pan-organisational virtuous circles. The onto-epistemological connections between foundational building blocks that ultimately form pan-organisational virtuous circles were illustrated in Figures 4.3 and 4.4.

As part of stream two's findings, this study confirmed a connected organisation as comprising six organisational capital factors in the form of connected patterns (configurations) of significant praxis-elements. Capitals connect with other capitals, and these foundational inter-capital connections were quantified as standardised correlations and standardised regression estimates (causal relations), thus providing evidence of the nature, strength, and direction of inter-capital relations. In essence, these relations could be considered as static connections in that they encapsulate causal and value dead ends, and classic cause and effect and association logic. This quantified model of multi-capital interactions appears to be thought-leading as a method of analysing multi-capital organisations. Stream three's findings further elaborated these foundational notions of



inter-capital relations into a dynamically connected value system of praxeological multi-capital feedback loops. The transformation of complementary qualitative and quantitative empirical foundations into a (re)connected and dynamic conceptualisation of an organisation also appears to be ground-breaking research, both in its specific findings and the generalisable methodology used to construct such findings.

A significant and often-unnoticed organisational phenomenon is the tension between static and dynamic forces, Senge (1994, p. 132) highlighting that ‘we do not notice what keeps things stable rather we notice dramatic growth or decline’. Thus, a further original contribution of this study is to examine and transform the static dimensions of organisations, into a set of dynamically connected feedback loops. Dynamic feedback loops are a core concept in systems dynamics theory, and take the form of reinforcing (amplifying) feedback loops that act as engines of rapid growth or decay, or balancing (stabilising) feedback loops that enforce a goal (Forrester, 1961; Meadows, 1982; Senge, 1990; Kim, 1994; Lane, 1998; and Wolstenholme, 2004). Governance, for example, in a profitable operations practice is most likely operationalised as a control and monitoring practice, a balancing loop that maintains stability with an intrinsic goal of preserving financial capital and ensuring operating efficiency. In this research context, governance forms value governance which is reconceptualised as a reinforcing loop, this (re)framing as prâxis based on its fundamental role of providing direction to do the right thing in line with the business purpose.

Prior studies have examined the role of connections in organisations. Kauffman (1993) analysed how the number of connections between agents within a system determines its dynamics. Findings suggested that few connections between agents encourage repetitive patterns and thus, stability, or a static organisation, while many connections introduce competing constraints and lead to instability. Conversely, Belbin (2010) examined connections between team members in the form of strong and sustained patterns of interlocked behaviour called nexi. High performance teams displayed a higher level of interactions with one another. Kauffman’s (1993) analysis is in a sense synergetic with Zhang, Fishbach, and Kruglanski’s (2007) proposed ‘dilution effect’ in finality theory, both theories indicating that too many connections introduce destructive competition. Billio et al.’s (2012) analysis of the 2008/9 Financial Crisis provided further evidence of the enormous significance of connections within a systemically interactive structure.

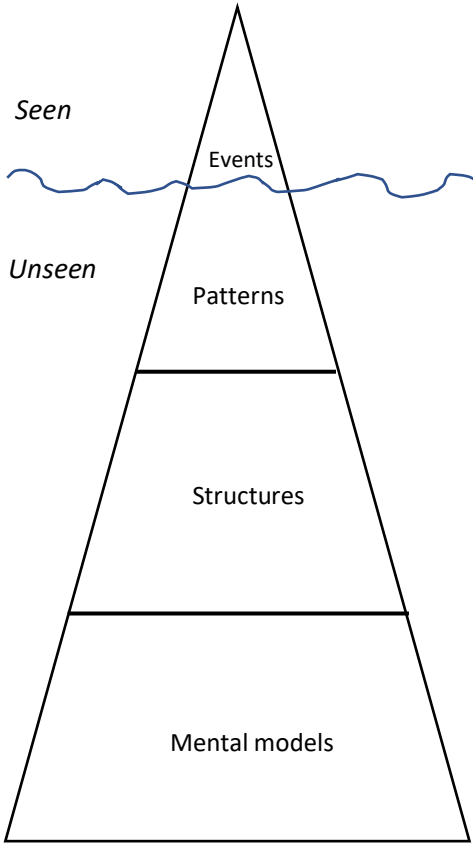
Consequently, this research provides design guidelines with which to optimise the type and number of organisational connections through the fundamentals of correlations, causal relations, and sense-making accumulations and dissipations. The research also demonstrates that both static and dynamic connections provide individual, yet complementary insights of a praxeological multi-capital value system.

In summary, an original insight of this research is that connections are differentiating organisational resources, and can provide novel insights for value realisation and optimisation, and thus strategic advantage. However, as mentioned the optimal number and type of connections needs to be evaluated, and in a value and performance sense, connections provide an elemental dynamic of organisations. To recap, the research's mixed methods approach achieved its goals by creating a set of complementary qualitative and quantitative organisational models which ultimately combined to provide empirical insights, and a generalisable multi-capital design methodology. Furthermore, the modelling journey also develops an iterative sense-making frame of pan-organisational and praxeological multi-capital value connections. These multi-capital value journeys are positioned as fundamental building blocks of modern needs-based organisations, and ultimately form generalisable value archetypes. The visualisation of the model ontology as developed during the research life-cycle (chapters four, five, and six) is presented in Appendix B, which also indicates the flows and connections between the different models.

### **7.3 Summary, contribution of multi-capital models to organisational design**

This thesis' investigation of an organisation as a praxeological multi-capital value system surfaced key organisational events, patterns, structures, and mental models as important considerations in understanding and indeed shaping such connected systems. The primary contributions of each of the three streams can be integrated and visualised in the concept of an organisational iceberg model. Hall (1976) originally metaphorized organisations as cultural icebergs, and Senge (2006) evolved the concept as a set of four sequential layers, starting at the top with seen events; and then through unseen patterns, structures, and ultimately mental models. Organisational iceberg layers are more intangible, yet more influential as we move from the visible top (events) to the submerged bottom (mental models). An overall systemic (re)framing of an organisation as a praxeological multi-capital system is presented as the integrated set of research findings in Table 7.1 below.

Table 7.1: The organisational iceberg

	Stream one: Prâxis (re)framing strategies	Stream two: Static (re)connection of capital prâxes through empirical measurement	Stream three: Dynamic (re)connection of capital prâxes through sensemaking system dynamics theory.
	Profitable operations practice Digital innovation initiatives Prâxis (re)framing priorities	Significant capital and prâxis elements (retained) Insignificant elements (discarded)	Significant prâxis-accumulators Exogenous constructs Key leverage points
	Prâxis-frame dualities Prâxis (re)framing strategies	Prâxis-element dualities Patterns of elements as capital factors Inter capital factor correlations Inter capital factor causal relations	Prâxis-accumulator dualities Capital factor feedback loops Inter-capital interfaces
	Multi-capital value journeys Prâxis (re)framing virtuous circles	Measurement model (correlations) Structural model (causal relations) Capital factor connections (configurations complementarities, and contingent fits and misfits)	Organisational design blueprint Means-ends finality journeys Pan-organisation value journeys Value archetypes
	Scientific management principles Assumptions of value realisation Bounded roles, identities, and behaviours Expediting value through analogue means	Bounded profitable operations practice (re)framed to systemically connected, co-analysed, and co-designed multi-capital structures Practitioner relationships between leadership and followership orchestrates the organisation's values with respect to value direction	Causal and value dead-ends and a value creation & destruction dualism (re)framed to connected pan-organisational multi-capital value journeys Value archetypes can provide generalisable standards and policy direction on value dynamics

In summary, this research revealed novel empirical findings, theoretical contributions, and practical implications achieved by enacting mixed methods modelling grounded in rich complementary insights from ethnographic observation, survey method, and sense-making systems dynamics modelling. Significant deliverables in the form of an organisational model ontology provided alternative (re)framings of, and ways to (re)connect organisations, specifically highlighting often unnoticed aspects such as connections, and capital prâxis dynamics. This modelling also surfaced that common capital categories such as financial, social (innovation), and human, could fuse with other concepts such as leadership and governance to form new dynamic capital factor structures. Prâxis based dualities were identified as core to this (re)framing, and underpinned the iterative and cumulative findings of stream one's prâxis (re)framing strategies, stream two's static capital prâxis connections, and stream three's dynamic capital prâxis interactions.

The empirical, theoretical, and practical insights of this research have been advocated in detail, however analysis also surfaced a reflective inquiry dimension. While the potential considerations for organisations are too many to mention, indicative value-adding reflections are: where do leaders need to synthesise theory and practice; what are the potential new pan-organisational multi-capital value journeys that could be used to (re)connect the organisation; what kinds of 'purposeful actions' do organisational policies encourage or discourage; which methods and tools do managers need to help them realise and optimise value. The research's findings indicate that future organisations can mitigate embedded scientific management theory, value creation and destruction dualisms, and legacy causal and value dead-ends. These outcomes are achieved by (re)framing profitable operations practice and (re)connecting capitals and prâxes as dynamic interactions which are orchestrated by means-ends configurations. Ultimately, these onto-epistemological dynamics form pan-organisational multi-capital value journeys and generalisable value archetypes that enable new value strategies and operating models.

## **7.4 Limitations and opportunities for future research**

### **7.4.1 limitations of this research**

There are approximately 248,000 SMEs (excluding micro businesses) and 276,000 manufacturing organisations in the UK (UK Parliament, 2021). The data collection for the study comprised 37 organisations, and 207 survey respondents from manufacturing medium enterprises in North-West England. These participating organisations were based on a pre-defined set of selection criteria. Hence, the study represents a specific sampling of both the overall UK SME population, and the wider UK manufacturing business segment. Consequently, further research could evaluate the research's model ontology and findings in organisations of: different size, maturity, or purpose; non-manufacturing industry segments; or alternative geographies.

MSLP delivered broad theoretical and practical content across change, leadership, strategy, measurement, digital project delivery, and organisational purpose. There are no prescriptive mechanisms that determine how participants interpreted and applied such knowledge, and equally no predetermined links between the programme content and research scope, however, there is the possibility of reflexivity where self-referencing content can overly influence the observed phenomena.

While its implicit in the research's lifecycle, the analysis did not specifically focus on the significant exogenous shocks in the form of Covid-19 and BREXIT, and their overall implications for such manufacturing organisations. However, by applying the following definitions: Covid19 as the start of UK lockdown approximately Q1 2020; and BREXIT as the U.K formal exit from the EU on 31<sup>st</sup> January 2020, a set of analysis indicators were constructed as inputs to quantitative modelling. As the three cohorts broadly spanned these exogenous events, the following indicators were added to each participant organisation's data, namely: cohort number; Covid19 indicator with pre- and post- values; and BREXIT indicator each with pre- and post- values. This ensured that the modelling assessed their significance in the construction of both the measurement and structural models, and by implication any influence on capital factors and their patterns of significant elements. Results indicated that neither Covid19 and BREXIT, nor the cohort number were significant elements in model construction. Similarly, there was no identified pattern in

stream one's qualitative ethnographic observations. However, they could be a common exogenous impact on: business activity levels; the appetite for, and investment in digital innovation as a survival necessity rather than a future-proofing aspiration; and the profile of individual capitals and prâxes, by contextually raising some profiles while reducing others. In summary, while the severe exogenous shocks may have influenced participant's prâxis (re)framing journeys, the overall findings appear to transcend such events and represent a more fundamental essence of organisations.

Another observation suggests that key configuration, contingency, complementarity, and systems theories have been researched primarily in analogue contexts without fully evaluating the relevance and operationalization of such concepts in a digitally enabled environment.

While the Good Dividends framework (Kempster, Maak, and Parry, 2019) represents the research of a global community of academics and practitioners, it is but one framing of the complex theoretical and practical domain of multi-capital organisations. The foundational constructs and their constituent elements which provide the reflective context for stream one's (re)framing strategies, stream two's respondent data for the modelling of an organisation's capitals structures and their significant prâxis-elements, and ultimately stream three's systems dynamic model are thus dependent upon the accuracy of the Good Dividends Evaluation Audit framework (Kempster, Maak, and Parry, 2019). However, a level of confidence is provided by Table 6.1 which compared multiple capital frameworks, and the GDEA is broadly aligned with common capital categories. Therefore, the GDEA was considered a comprehensive starting position for the quantitative modelling. As with many measurement surveys, confidence that the framework accurately measures what it says it measures, and biases in survey construction and respondent responses are unknowns. To mitigate bias, the actual survey was iteratively reviewed and refined by an objective review group which ensured the clarity and focus of all questions, and that the overall survey was fit for purpose. In addition, there was a broad critique of stream three's organisational design methodology by faculty and subject matter experts. However, both the GDEA and the output organisational design components could be assessed by a wider audience of theoretical domain experts, and diverse practitioners as knowledgeable agents from additional industry segments, and other organisational types and sizes.

In summary, while diverse data was collected and analysed in the research's multiple methods which negated the significance of individual cohort, Covid-19, and BREXIT influences on the findings, further analysis of similar organisations in non-MSLP and non-BREXIT contexts, and indeed contexts with different approaches to Covid-19 could be performed.

#### **7.4.2 Opportunities for future research**

The research surfaced the pivotal roles of practice and prâxis, and prâxis in a fundamental sense is practitioner agnostic. This position reinforced by ethnographic narratives that supported an organisation as the unit of analysis and observation, and survey data that represented a diverse pan-organisational perspective. However, a further consideration could be a more detailed examination of the role of practitioners in organisational (re)framing, and indeed the wider implications for practitioners' roles and identities. Specifically, one potential implication of the research's models lies in the relational value optimisation capital factor, which was formed from the original GDEA constructs of human capital and responsible leadership. In essence this capital factor could be interpreted as the micro interaction of leadership and followership as organisational practitioner relations. Therefore, the contextual role of multi-capital practitioners within an organisational value system could be further researched against extant leadership-followership theory and as-practice paradigms.

Given ever-increasing and diverse stakeholder needs, and emergent business sectors such as FinTech (a fusion of financial services and technology industries), and multi-discipline functions such as DevOps (a synthesis of technology development and operational knowledge), similar studies could be undertaken in these emergent industries and disciplines, and indeed broader: industries; geographies; and firms of different sizes, purpose, profit-orientation, and structures to generate research comparatives.

The initial organisational constructs could also be more granular. For example, in the Good Dividends framework, Kempster, Maak, and Parry (2019) position the planetary/community dividend within the natural capital, broadly arguing that they are tightly coupled. However, it could be reframed as two discrete capitals, namely natural (planetary / environmental) and community (connected humanity). While such a focused

and homogenous sample of respondents and initial survey constructs addresses Brunsson's (1982a, p. 11) suggestion 'to generate theories formulated for and based on specific situations which have been studied empirically', deeper research could provide broader insights, and alternative frames with which to construct and analyse capital categories. Therefore, further research could investigate if the overall organisational model ontology and the sense-making modelling journey, are appropriate for alternative capital frameworks, and therefore, a different set of initial organisational constructs. An alternative and perhaps more sophisticated approach would be to potentially generate the capital categories, from an initial omni-capital position as part of the modelling journey.

Chapter seven outlined a wide set of practical applications for the findings of this research, and further research could investigate the operationalisation viability and success of the research's theoretical models within real organisational scenarios. Future research opportunities for stream one could evaluate: multi-capital value realised over time from such prâxis (re)framing strategies; operationalisation priorities and patterns of (re)framing strategy selection; and whether prâxis (re)framing components fulfilled permanent or transient roles. Stream two's research indicates that the systemic capital prâxis interactions of a multi-dimensional organisation can be quantified as standardised correlation coefficients, and causal influences in the form of multi-variate regression estimates. Such industry standard measures have implied predictivity and could yield further empirically derived models of the operationalisation of multi-capital value prâxes. Finally, stream three's pan-organisational multi-capital value journeys could be further investigated, both to test the operational potential and the expected benefits of a connected multi-capital value system, and confirm their generalisability as value archetypes in wider contexts.



## Appendices

### Appendix A: Good Dividends Evaluation Audit (GDEA)

Dividend	Score (1-6)
<b>Responsible leadership: In our business, our leaders ...</b>	
Create an enjoyable and a rewarding working environment, where everyone takes responsibility for their personal contribution and the wider organisation's performance	
Are highly respected and trusted for their responsibility, integrity, decision making and actions towards the stakeholder community (employees, customers, owners and partners)	
Regularly communicate a clear sense of purpose (why the business exists) which generates passion, excitement and commitment and makes sense and meaning consistently throughout the organisation	
Adopt a responsible approach to the necessity of digitalisation in order to advance the business purpose.	
Act responsibly – in the short-term and long-term – in their decisions and actions towards their stakeholders (employees, customers, owners and partners)	
<b>Total Responsible Leadership Score</b>	
<b>Total Responsible Leadership %</b>	
<b>One Planet Community Dividend: In our business, we ...</b>	
Have a clear understanding of the business purpose (why we do what we do) that is enabled through being profitable	
Have aligned our business model to deliver our purpose and be profitable	
Engage customers, suppliers and communities to understand our purpose	
Work with customers, suppliers and communities to deliver our purpose	
Use digitalisation to responsibly utilise all resources ( materials, people and energy )	
<b>Total Planetary and Community Dividend Score</b>	
<b>Total Planetary and Community %</b>	
<b>People Dividend: In our business, employees ...</b>	
Feel that their well-being is highly valued	
Are proud to be associated with the business for the valuable work we do	
Are seen as one of the most important assets of our business and are being invested in for their self-development and for the business	
Value the work they do and feel responsible and accountable for it	
Recognise the relevance and necessity of digitisation	
<b>Total People Dividend Score</b>	
<b>Total People Dividend %</b>	
<b>Innovation: In our business, employees ...</b>	
Learn about the business purpose and how this can be advanced through our products and services	
Take the lead in innovating and continuously improving our products, services and business processes	
Actively engage with the wider community of stakeholders ( suppliers, partners,customers ) to enhance our products, services and business processes	
Are encouraged to experiment with new ideas	
Are enabled to apply digital technology in seeking to innovate	
<b>Total Social Innovation Dividend Score</b>	
<b>Total Social Innovation Dividend %</b>	
<b>Operations Dividend: In our business, employees ...</b>	
Actively seek to understand where value is generated and lost in our business processes and take action to enhance value	
Evaluate and implement improvements to our products, services, and business activities to be more sustainable and responsible	
Are proactive in adopting technology to enhance product quality, customer satisfaction and limit impact on the environment and communities	
Work to enhance productivity through optimal utilisation of resources	
Readily utilise digital data in value creation	
<b>Total Operations Dividend Score</b>	
<b>Total Operations Dividend %</b>	
<b>Brand Dividend: In our business, our employees believe our customers ...</b>	
Appreciate our orientation to the business purpose	
Provide feedback to help develop our products or services and advance the purpose (e.g. reduce impact on the environment)	
Actively promote us to other customers	
Are loyal to our products or services and to our business	
Feel connected to our brand through our digital engagement	
<b>Total Brand Dividend Score</b>	
<b>Total Brand Dividend %</b>	
<b>Financial Dividend: In our business, we ...</b>	
Actively plan and measure our financial goals and Key Performance Indicators (e.g. Cash flow, P&L, gearing, debtors) with responsible financial systems and governance	
Identify and address financial performance measures	
Understand which products, services, and groups of customers are most profitable	
Are accountable to all employees on the performance of the business	
Make informed digital technology investment decisions	
<b>Total Financial Dividend Score</b>	
<b>Total Financial Dividend %</b>	
<b>Governance: In our business we -</b>	
Provide transparency with regard to strategic execution and organisational performance	
Have necessary scrutiny and evaluation of board and management performance in pursuance of stated business purpose, objectives and values	
Actively pursue fairness and equality in employment conditions and policies	
Have well communicated and enacted ethical and misconduct policies	
Ensure the board has visibility on organizational risks and actively manages them including the impact of digital technologies.	
<b>Total Governance Score</b>	
<b>Total Governance %</b>	

# Appendix B: Organisational model ontology

## Stream 1: Qualitative ethnography

Reframing organisational prâxis  
Grounded theory analysis data ontology

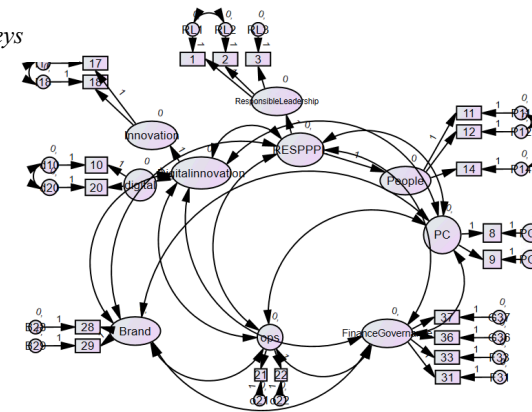
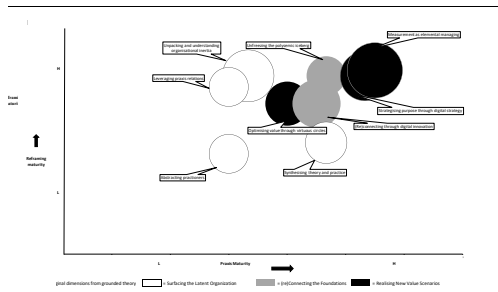
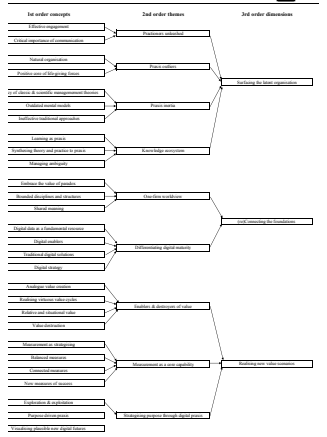
## Stream 2: Quantitative structural equation modelling

Examining capital prâxis connections  
Measurement (correlation) -> structural (causation) models

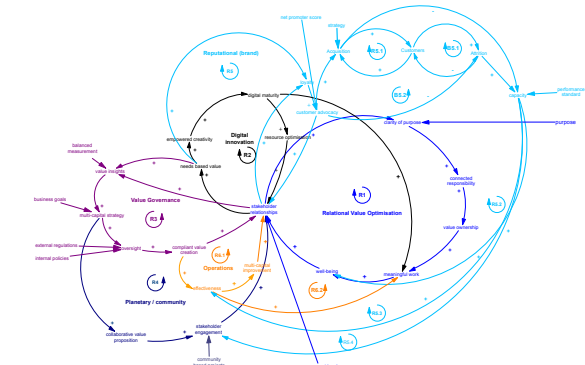
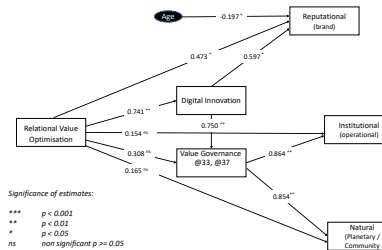
## Stream 3: Qualitative and inferential systems theory

Connecting an organisation through value prâxes  
Value archetype and praxeological iceberg models

*Prâxis-frame dualities*  
*Prâxis (re)framing virtuous circles*  
*Organisational events and elements*  
*Organisational mental models*  
*Pan-organisation value journeys*



*Significant prâxis-elements*  
*Capital factors*  
*Capital factor correlations*



*Significant prâxis-elements*  
*Capital factors*  
*Capital factor correlations*  
*Capital factor causal relations*

## Appendix C: MSLP participant and organisation profiles

Cohort	Function	Responsibility level	Gender	Industry	Company size		Age of company
					£ turnover	# employees	# years
1	Production	Department/Function Head	Male	Textile	4,500,000	34	10
1	Governance	Director/'C' Level	Male	Timber	2,000,000	27	32
1	Product and Service	Director/'C' Level	Male	Metal	30,000,000	205	4
1	Production	Director/'C' Level	Male	Electronics	6,000,000	36	34
1	Governance	Management	Male	Machinery	6,000,000	35	27
1	Governance	Director/'C' Level	Male	Timber	3,000,000	28	19
1	Research and Development	Management	Male	Equipment wholesaler	2,700,000	33	20
1	Governance	Director/'C' Level	Male	Equipment wholesaler	1,800,000	17	37
1	Governance	Director/'C' Level	Male	Equipment wholesaler	6,000,000	61	39
1	Process	Management	Male	Technical engineering	550,000	5	23
1	Production	Management	Male	Technical engineering	2,000,000	12	40
1	Governance	Department/Function Head	Male	Service	1,600,000	17	13
2	Governance	Director/'C' Level	Male	Food & Beverage	7,500,000	35	12
2	Governance	Management	Male	Food & Beverage	1,000,000	12	8
2	Sales	Director/'C' Level	Male	synthetics	3,100,000	11	18
2	Product and Service	Director/'C' Level	Male	Metal	12,000,000	111	24
2	Research and Development	Director/'C' Level	Male	Metal	4,000,000	42	31
2	Governance	Director/'C' Level	Male	Electronics	2,500,000	26	8
2	Production	Director/'C' Level	Male	Machinery	2,500,000	39	7
2	Production	Management	Male	Machinery	4,500,000	54	20
2	Production	Department/Function Head	Male	Technical engineering	6,000,000	43	17
3	Production	Management	Male	Food & Beverage	8,000,000	13	11
3	Finance	Management	Female	Food & Beverage	2,000,000	45	17
3	Production	Management	Female	Textile	3,000,000	25	51
3	Production	Director/'C' Level	Male	Timber	4,000,000	38	66
3	Governance	Director/'C' Level	Male	synthetics	1,000,000	18	35
3	Production	Director/'C' Level	Male	synthetics	2,500,000	49	3
3	Production	Management	Male	Metal	3,000,000	46	32
3	Product and Service	Director/'C' Level	Male	Metal	1,300,000	28	10
3	Governance	Operations	Female	Metal	10,000,000	122	57
3	Production	Director/'C' Level	Female	Electronics	5,300,000	49	24
3	Production	Director/'C' Level	Male	Electronics	4,000,000	43	23
3	Governance	Director/'C' Level	Female	Machinery	1,200,000	5	18
3	Production	Management	Male	Machinery	1,000,000	29	12
3	Production	Management	Male	Agriculture	17,000,000	121	2
3	Process	Management	Male	Technical engineering	12,000,000	80	19
3	Governance	Director/'C' Level	Male	Technical engineering	1,300,000	14	31
<i>Average</i>					<i>£ turnover</i>	<i># employees</i>	<i># years</i>
					5,022,973	43	23.1

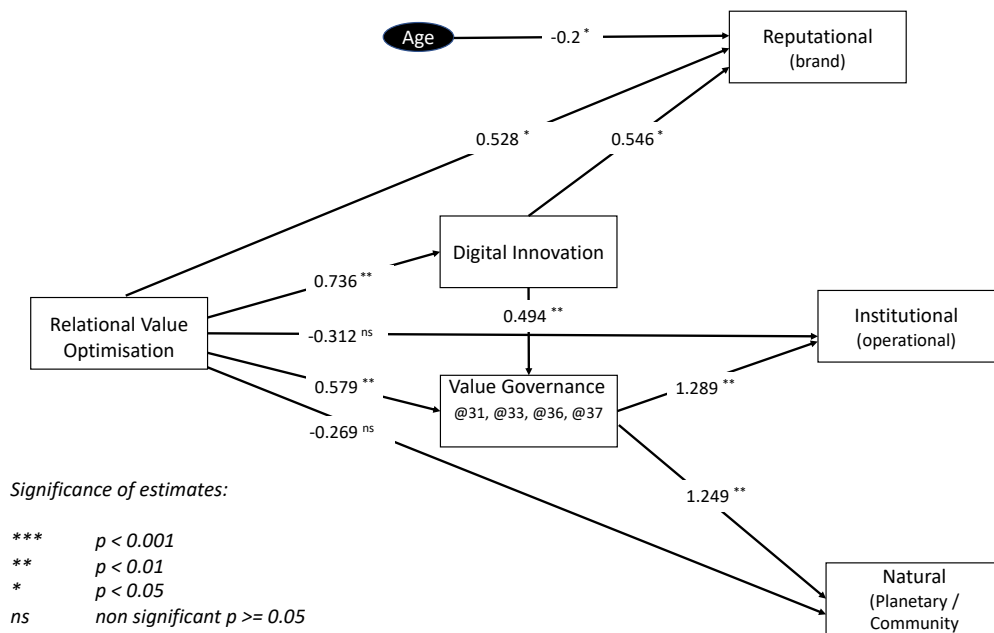
Appendix D: United Nations Sustainable Development Goals



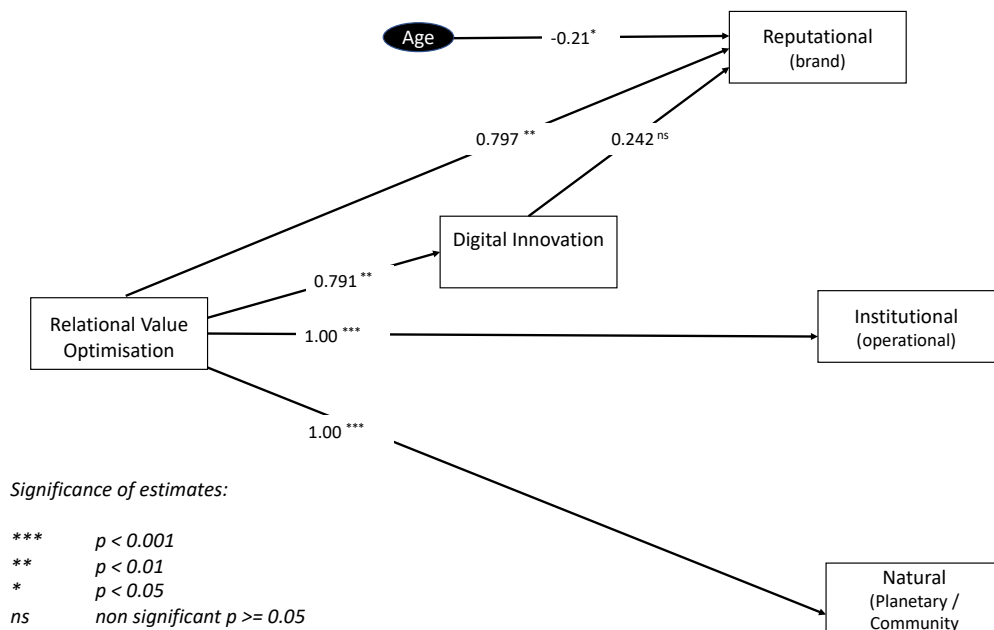
## Appendix E: Alternative structural models

This section presents an investigation of various alternative configurations of the Value Governance factor.

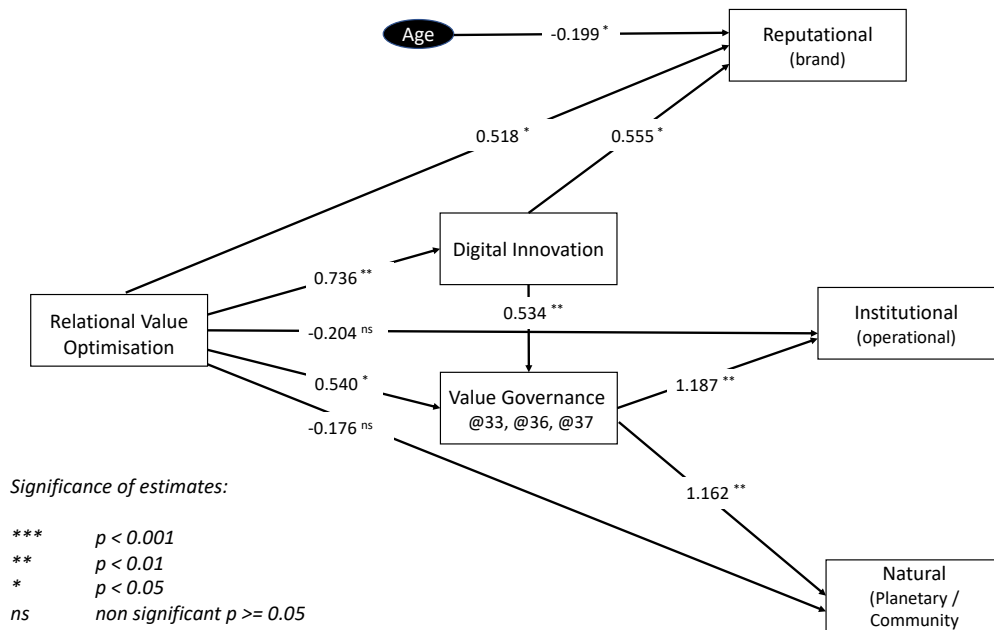
### Model with all retained variables @31 @33 @36 @37 in Value Governance



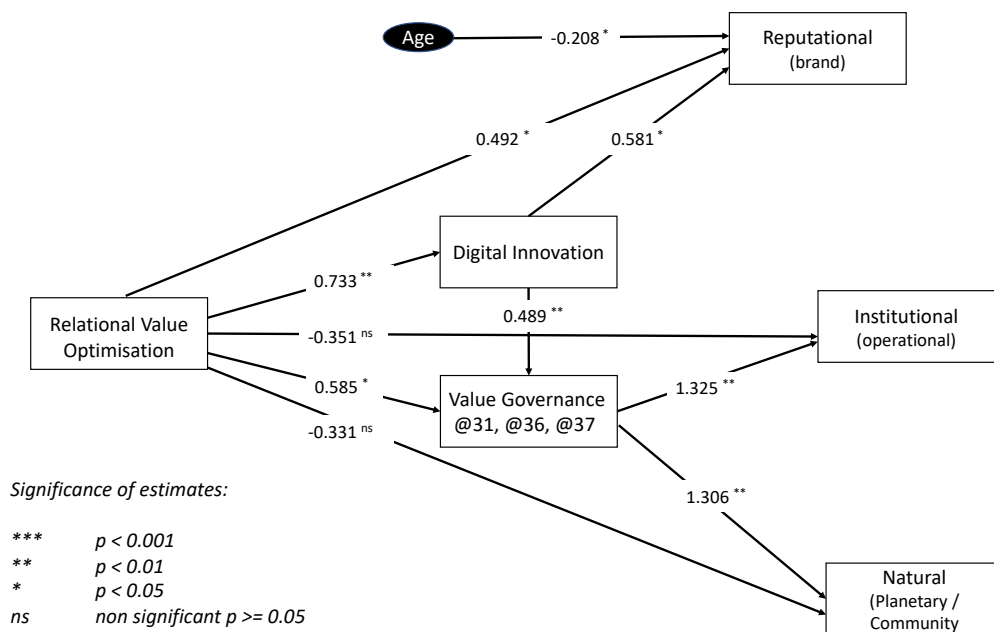
### Model with Value Governance factor removed



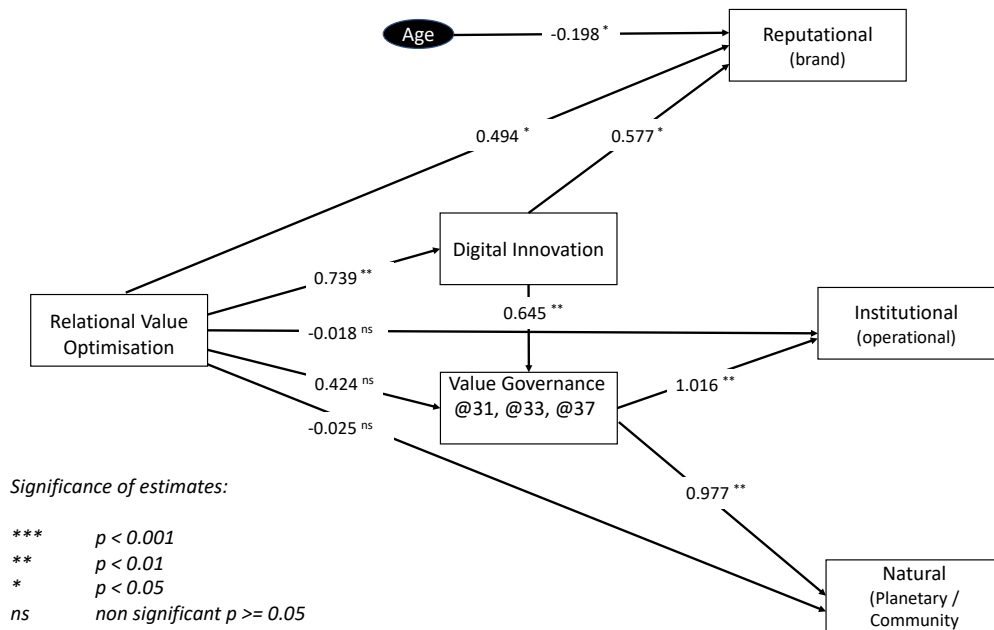
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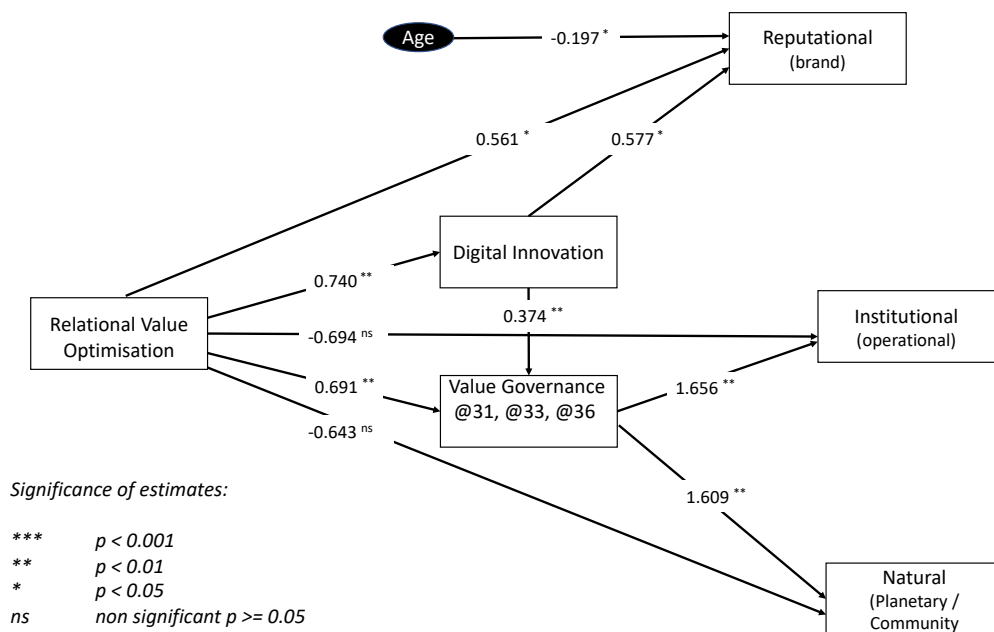
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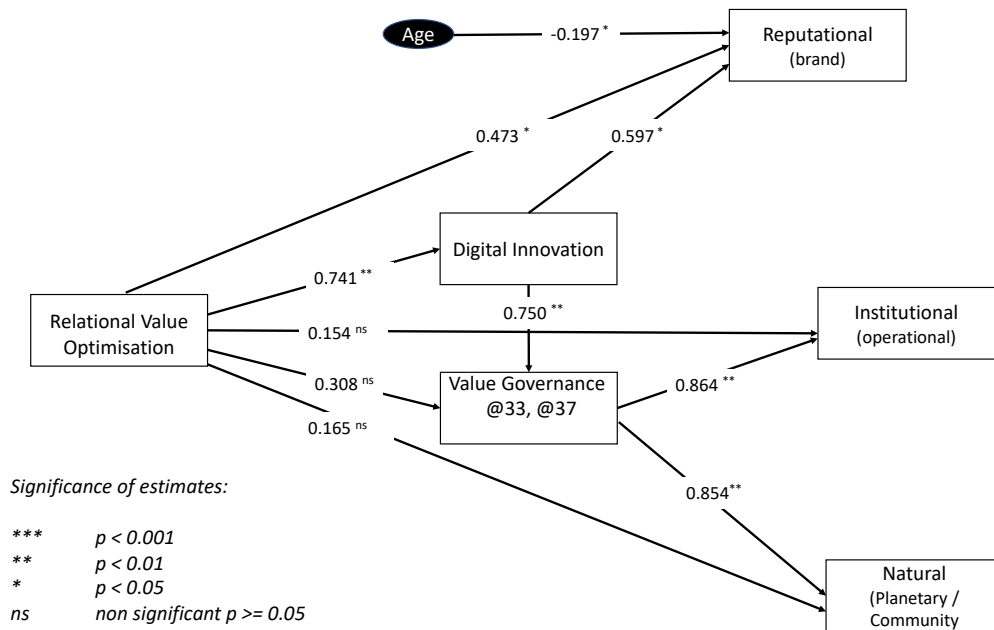
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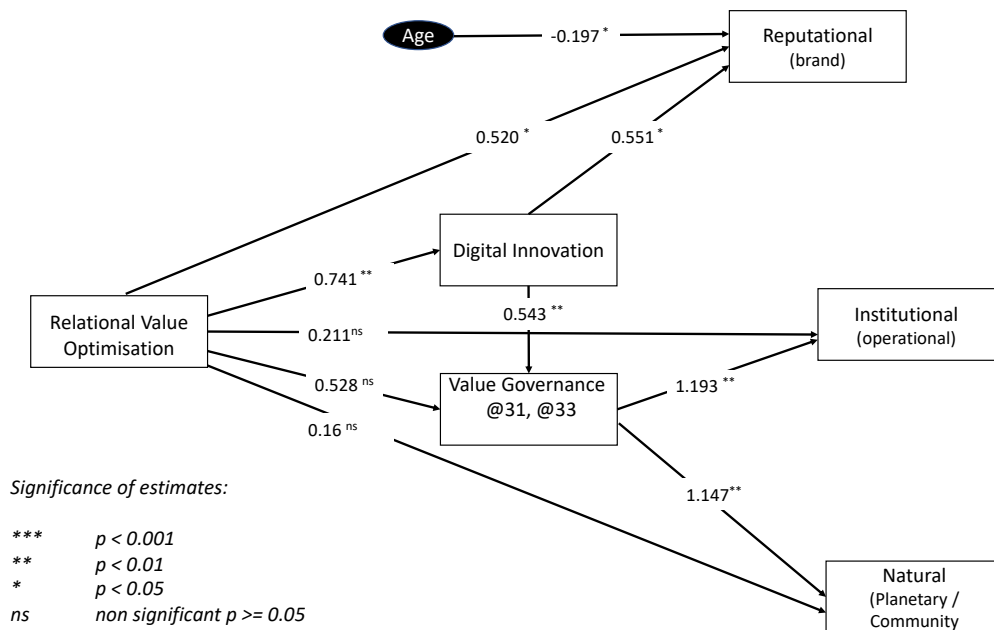
### Model with variable @37 removed from Value Governance



### Model with variables @31 and @36 removed from Value Governance

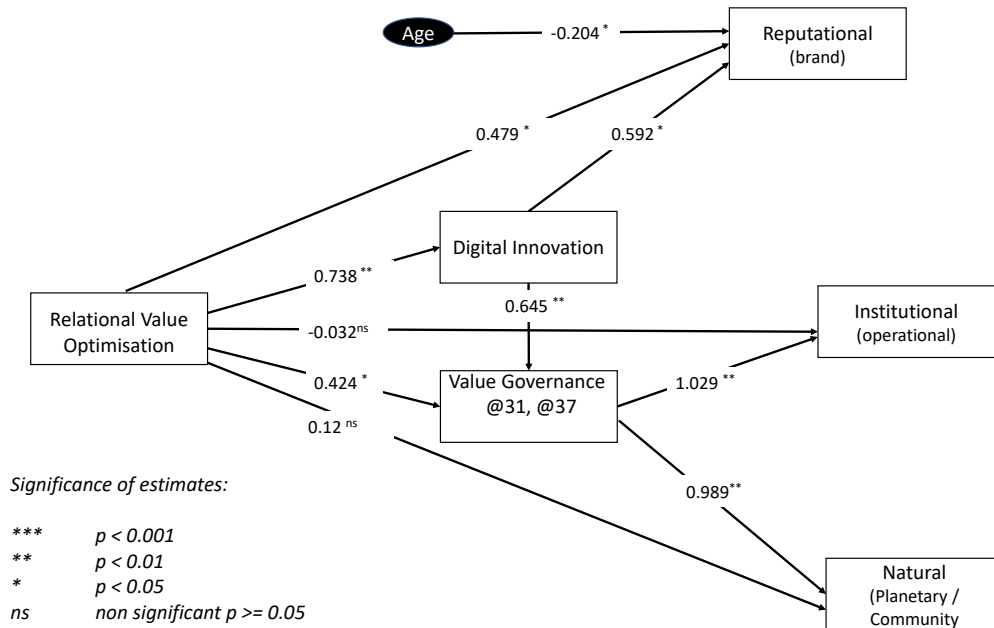


### Model with variables @36 and @37 removed from Value Governance

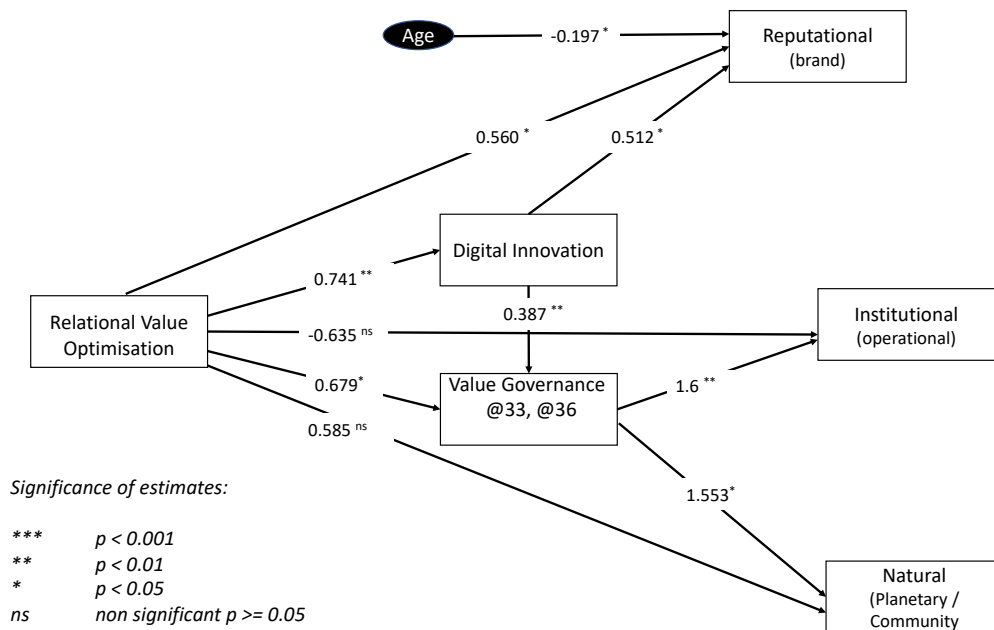




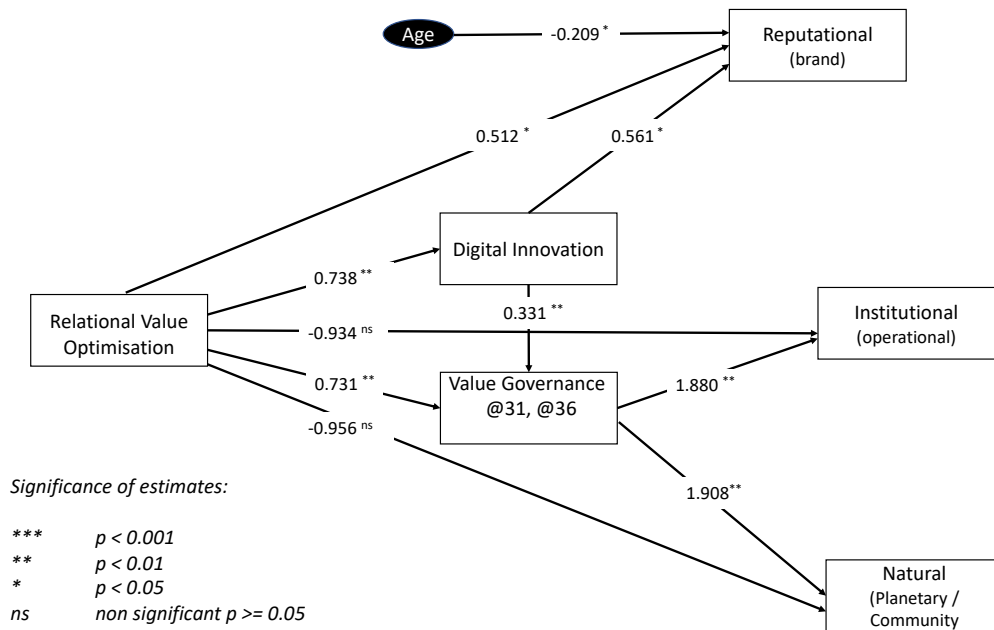
### Model with variables @33 and @36 removed from Value Governance



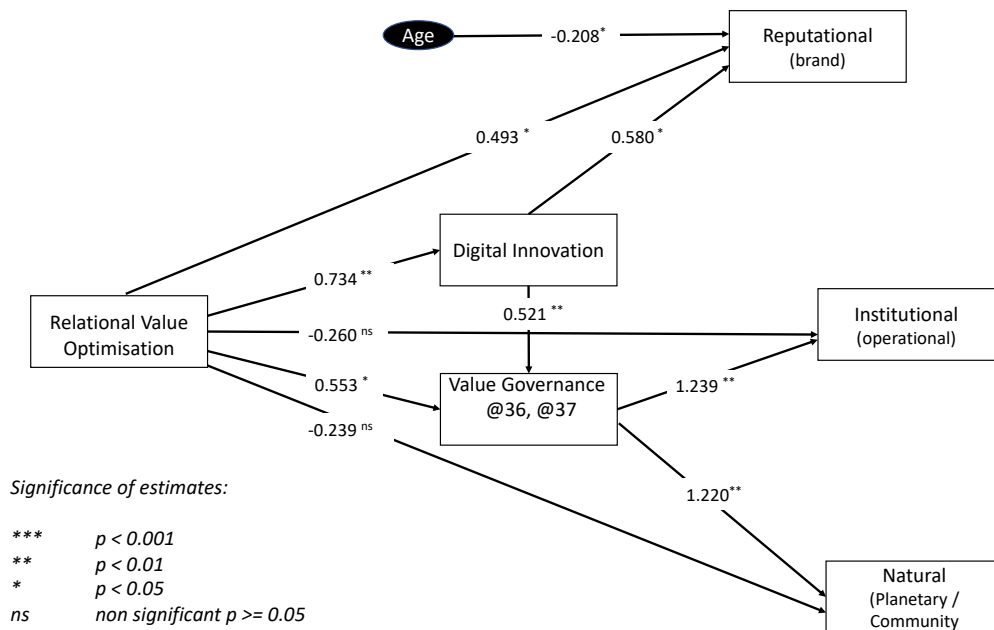
### Model with variables @31 and @37 removed from Value Governance



### Model with variables @33 and @37 removed from Value Governance



### Model with variables @31 and @33 removed from Value Governance



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