

3. Entrepreneurship, Start-Ups and Small Business

Competitive Session

The Dynamic Capacity of Design in the Entrepreneurial Organisation

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Abstract: *Organisations are now adapting a design approach to strategic decision-making. Yet, this is constrained by an undeveloped understanding of design thinking processes within the strategy context. We address this context; exploring the theoretical linkages between the dynamic capabilities literature and design thinking. Through a qualitative study of eight Australian innovation managers utilising a design approach, we synthesise dynamic capability literature with design thinking practices. We find that design thinking entails the routines that constitute a dynamic capability. In this paper we discuss how design thinking incorporates sensing and seizing loops, which enable managers to identify entrepreneurial opportunities, strategic threats, develop new business models, and how design instigates effective, collective resource reconfigurations that help adapt to changing circumstances.*

Key Words: Design Thinking, Dynamic Capabilities, Design-led Innovation, Corporate Entrepreneurship, Innovation Capabilities, Innovation

Innovation continues to be a pressing concern for managers, who are confronted by increasingly dynamic environments and significantly shortened, strategic life-cycles (Hamel & Breen, 2007). These dynamic markets place increased pressure on firms to innovate and identify entrepreneurial opportunities, particularly as ‘sustainable’ competitive advantages aren’t as achievable through the accumulation of new, valuable and inimitable resources alone (Teece, 2007). Hence, firms need dynamic capabilities to enable them to routinely innovate, adapt and improve resources to suit changing environmental constraints.

There has been increased advocacy for design as an integral capability for firm innovation and adaptation (Dodgson, Gann & Salter, 2005). Design has typically been associated with improving the aesthetic qualities of products (Brown, 2008), but design thinking has emerged to describe the way in which designers work and approach problems. Dunne and Martin (2006) describe design thinking as the productive combination of the inductive and deductive logic of analytical thinking with the abductive logic of intuitive thinking. Design thinking builds upon traditional analytical thinking to include the intuitive thinking required to find creative solutions to match changing environments. Thus, in this study we synthesise the nature of Australian organisational design thinking practices

with the formative routines of a dynamic capability in order to assess the potential of design as an important, strategic and entrepreneurial capability. The synthesis of design thinking practices with dynamic capability literature aims to articulate, from an innovation and strategic management perspective, how design thinking processes can enable firms to adapt and maintain strategic fit within changing constraints.

THEORETICAL BACKGROUND

Dynamic Capabilities

Miles and Snow contend, “Successful organizations achieve strategic fit with the market environment and support their strategies with appropriately designed structures and management processes” (1984, p. 10). Firms operate in environments that are not static, complicating the ability of organisations to maintain fit. Fluctuating markets make the process of sustaining fit a dynamic search to align the organisation with its environment and reconfigure resources to support the alignment (Miles & Snow, 1984). Thus, to maintain fit, firm resources must be changed and improved. The dynamic capabilities framework is a recent paradigm in strategic management that seeks to study organisational capabilities that enable firms to create, develop and reconfigure their resources to maintain fit within changing circumstances (Teece, Pisano & Shuen, 1997).

Teece, Pisano and Shuen’s seminal work elaborates dynamic capabilities as “The firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (1997, p. 516). Further, Teece, Pisano and Shuen (1997) contend that, through dynamic capabilities, firm resource bases can be continually developed in order to achieve competitive advantage within changing constraints. Teece (2007) likens dynamic capabilities to a neo-Schumpeterian paradigm, in the essence that firms need to be able to adapt and change current asset configurations in order to survive and thrive in rapidly changing environments.

While Teece Pisano and Shuen’s (1997) initial construction of dynamic capabilities remains influential, it has been suggested that their conceptualisation incorporates some ambiguities leading to

the development of multiple definitions (Ambrosini & Bowman, 2009; Eisenhardt & Martin, 2000; Peteraf, Di Stefano & Verona, 2013; Wang & Ahmed, 2007; Winter, 2003; Zollo & Winter, 2002) and significant problems for practitioners. However, in Ambrosini and Bowman's review of dynamic capabilities, they suggest that the core purpose of dynamic capabilities is to "... impact on the firm's extant resource base and transform it in such a way that a new bundle or configuration of resources is created so that the firm can sustain or enhance its competitive advantage" (2009, p. 25). Additionally, Teece (2007) argues that the core purpose of dynamic capabilities can be disaggregated into three routine types; sensing, seizing and reconfiguring, which are summarised in *Table 1*.

Place Table 1 about here

Thus, dynamic capabilities are a multidimensional construct, meaning a capability must be comprised of all three routine-types if it is to be classified as a dynamic capability and no single routine-type is a dynamic capability (Ambrosini & Bowman, 2009; Barreto, 2010). By establishing that a dynamic capability must be comprised of sensing, seizing and reconfiguring routines, there is greater capacity to identify specific dynamic capabilities. Through the identification of specific dynamic capabilities, greater clarity of the framework can be achieved (Eisenhardt & Martin, 2000). Dynamic capabilities have largely been assumed based on logical discourse (Zollo & Lomi, 2009), and the identification and empirical investigation of specific, dynamic capabilities can act as a process which connects and confronts dynamic capability theory with established literature on those capabilities (Danneels, 2010). Research has begun in identifying specific capabilities as dynamic (Danneels, 2002; Karim, 2006; Moliterno & Wiersema, 2007; Zahra & George, 2002), and design thinking has also been suggested for future research as a dynamic capability (Eisenhardt & Martin, 2000; Rosensweig, 2011).

Design Thinking

Providing a specific definition for design is a difficult task. The diverse nature of design, its concepts and branches render single definitions of 'design' inadequate (Buchanan, 1992). As Nelson and Stolterman elaborate, "When we create new things – technologies, organizations, processes, environments, ways of thinking, or systems – we engage in design" (2012, p. 1), this definition

highlights the encompassing and holistic nature of design. To move toward a more specific and salient definition; design, broadly, represents a third culture, distinct from art and science that integrates thought and action (Nelson & Stolterman, 2012). Buchanan (1992) contends that the emergence of design throughout the twentieth century and its future importance centred on its faculty as a third culture, connecting theory with practice for new productive purposes.

The integrative capacity of design is increasingly important to organisations due to its efficacy in dealing with the wicked problems facing organisations in contemporary environments (Buchanan, 1992; Coyne, 2005; Nelson & Stolterman, 2012). Design thinking is a term used to describe the way in which designers approach these complex problems and the principles they engage to manage their uncertainties (Brown & Katz, 2009; Cooper, Juninger & Lockwood, 2009). While design thinking has been around as long as design (Nelson & Stolterman, 2012), its articulation and development only began through the twentieth century (Buchanan, 1992; Rowe, 1987; Vogel, 2009). One important aspect still remaining to be developed is an understanding of design supporting routines for managers (Dunne & Martin, 2006); leaving managers disconnected from the ability to fully utilise design in solving complex, organisational problems (Clark & Smith (2008).

Design thinking has been increasingly suggested as an integral strategic management tool since the successes of prominent American design firm IDEO. Tim Brown, CEO and president of IDEO, relates in his book *Change by Design* (Brown & Katz, 2009) that in an attempt to maintain the relevance of his design company, they took to taking odd organisational design jobs, such as restructuring a health care company. Brown and Katz (2009) further elaborate that they were increasingly being asked to implement design as less of a down-stream, tactical activity and more in a strategic management way; implementing design into ideas and concepts at their conception. The design thinking approach to complex organisational issues was applied with great effect and resulted in IDEO becoming one of the champions of design thinking as a strategic and organisational capability (Brown & Katz, 2009).

Design thinking, has shown its power to evoke game-changing and disruptive innovation (Brown & Katz, 2009; Nussbaum, 2004). Organisations have been aware of the need to create revolutionary

change and competitive advantage by redefining the terms of competitive engagement for a long time (Hamel, 1996; Hamel & Breen, 2007; Hamel & Prahalad, 1989; Prahalad & Hamel, 1990). The competitive mimicry of advantages competitors already enjoy isn't going to grant the imitator advantage and, furthermore, the innovative company is unlikely to stand still while an organisation copies an advantage (Hamel & Prahalad, 1989, Leavy, 2010). Thus, to gain competitive advantage, firms need to implement innovation at the strategic and managerial level, which takes significantly longer periods of time for competition to imitate and mimic (Hamel & Breen, 2007).

The utilisation of design thinking at the strategic level for competitive advantage has also been explored by Leavy (2010), who examines the process and mindset of design thinking. Drawing upon Martin (2009a), he defines the design thinking process as the productive combination of the inductive and deductive logic of analytical thinking with the abductive logic of intuitive thinking (Leavy, 2010). This definition more precisely builds on design thinking's role as a third culture within the business management mindset by suggesting it combines analytical and intuitive schools of management. This description of design thinking essentially seeks to integrate 'management by gut' with the scientific and quantitative approach for the purpose of finding creative solutions (Martin, 2009b). Martin (2009a) suggests that design thinking managers and firms are willing to iteratively redesign their business, thereby creating a significant advantage and advances in innovation efficiency.

While the design approach to strategy and complex problem solving has been recognised as having the potential to provide significant advantage for organisations, managers and designers still remain disconnected. Clark and Smith (2008) urge executives to take on design thinking, but note the current disconnection between executives and designers, arguing "Designers tend to stay out of the domains of accounting, human resources and legal affairs, for instance, and this is a shame" (2008, p. 9). For greater engagement by executives and organisations in strategic design, increased dialogue between the fields of business and design is required (Clark & Smith, 2008). More specifically, the routines and processes through which design is engaged is, as yet, remains a largely unexplored area in organisational and design studies impeding managerial acceptance (Dunne & Martin, 2006).

METHODOLOGY

We adopt a qualitative approach to investigate the nature of design thinking as a dynamic capability. The explorative nature of this research best endears qualitative methodologies for the purpose of allowing theoretical synthesis, and new interpretations and ideas to emerge (Denzin & Lincoln, 1994). Studies in strategic management have typically been dominated by quantitative inquiry; focusing on large, cross sectional studies of quantitative data that is from secondary or survey sources (Ambrosini & Bowman, 2009; Barr, 2004). In taking a more socially oriented approach to strategy and innovation, we examined the micromechanisms of how and why firm resources evolve and generate competitive advantage and new opportunities (Ambrosini & Bowman, 2009; Barr, 2004). This research does not aim to extend the understanding of the dynamic capability typology, but does, enable a deep level connection to be made between the operations of dynamic capabilities and those in a design thinking process. The purpose of this paper is to identify and explore the potential of design thinking to be a dynamic capability, so that further research may assess and extend the understanding of dynamic capabilities through study of design. In order to do this, we conducted eight in-depth interviews with Innovation managers at six different, Australian firms, all of which conducted design thinking processes.

The semi-structured, depth interviews were aimed at understanding the purpose and nature of the use of design thinking within these organisations. Further, they elaborated and described in detail the phases and underlying routines that their design thinking process went through. The analysis of these interviews provided a rich description of design thinking as an organisational capability. By studying multiple organisations analysis was aimed at the macro-organisational level, as Burawoy (1991) argues, the use of different organisations minimises the idiosyncrasy of results and enables greater generalisation of the findings. Further, the firms were all from different industries, increasing the capacity to apply results to different industries. However, this does expose the findings to the potential that these firms are unique within their industry and may not be representative of the wider industry. The sample of organisations was necessary due to the formative nature of design thinking within the Australian environment. The in-depth understanding of the operation of design thinking capabilities

within Australian organisations enabled a detailed discussion of the parallels between how design thinking operates and the routines that form a dynamic capability.

DATA ANALYSIS AND DISCUSSION

To synthesise design thinking capabilities and dynamic capability literature, we first propose an organisational design thinking process, constructed from the processes examined in this study, which are summarised below in *Table 2*.

Place Table 2 about here

As has been established, for an organisational capability to be considered dynamic, it must incorporate sensing, seizing and reconfiguring routines (Barreto, 2010; Teece, 2007; 2009). Hence, we now draw parallels between design thinking phases and the foundation routines of dynamic capabilities, and discuss a new theoretical model that emerges from the combination and interplay of the dynamic capability literature and data collected on Australian design thinking capabilities.

Sensing as Framing, Discovering and Synthesising

Based on the collected data, we suggest that design thinking processes incorporate sensing routines into design phases. Particularly, the study of organisational design thinking indicates that the first three phases represent a sensing circuit intent to explore divergent possibilities before converging and synthesising potential opportunities. *Image 1* illustrates the sensing loop within a design thinking capability, consisting of the (1) framing, (2) discovering and (3) synthesising phases. While the phase boundaries in a design process are not finite and the process is not linear; we suggest that these three phases represent sensing routines that enable organisations to explore diverse possibilities and shape them into opportunity areas.

Place Image 1 about here

Sensing involves understanding the opportunities and threats facing organisations on a holistic level, that is, the fluctuations in relation to customers, markets, competitors and suppliers (Ambrosini &

Bowman, 2009; Teece, 2007). With contemporary markets becoming increasingly volatile and competitive, the opportunities and threats present within one division or silo of an organisation may not be immediately salient to managers or executives making strategic decisions in other business divisions. Thus, sensing activities must attempt to transcend the siloed nature of corporations, and filter environmental and organisational information toward those members capable of making sense of it (Teece, 2007). The framing phase begins the organisational design thinking process and acts to collect and filter diverse and siloed information into the design thinking process, engendering a more holistic and strategic outcome. Two facets of framing make the phase ideal for engendering a more holistic design frame and sensing process; broad stakeholder engagement and the removal of solution-based paradigms from the problem scope.

Broad stakeholder engagement in the framing process is the first attribute of framing that enables the development of a more holistic and organisation-wide design frame. Kirzner (1973) argues that entrepreneurs can have differential access to information which enables them to sense and take advantage of new opportunities. Framing seeks to overcome the siloed nature of information and filter diverse organisational knowledge into the design process through broad stakeholder engagement. The innovation managers in this research all emphasised the importance of involving as many of the organisation's diverse stakeholders as possible in the framing phase. Dorst and Cross (2001) similarly contend that the more time spent defining and understanding the problems and frame of reference, the more able designers were to find a creative solution. Innovation is inherently social and subjective, and everyone interprets information differently; the more emphasis and time spent defining the problem with a broad range of stakeholders, the more likely the design process is to develop a creative solution that addresses strategic, organisational problems (Dodgson, Gann & Salter, 2005; Dorst & Cross, 2001). Further, by funnelling all stakeholder knowledge into the initial problem scope, framing ensures that there is a greater pool of information, recreating Kirzner's (1973) differential access to information within organisational routines. The resultant frame has the potential to be more holistic and guide sensing activities to address an organisational problem at the strategic level.

The framing phase further aids organisational sensing routines by removing solution-based and hypothesis-driven paradigms from the design frame. During the framing phase, design teams seek to engender a divergent and open mindset. While, this seems contradictory as framing connotes the construction of boundaries, a divergent mindset is required so that the project scope is not limited by divisional boundaries, engendering the project frame at the strategic level so that solutions are much harder for competitors to mimic (Hamel & Breen, 2007). Framing aims to uncover the root problem that the organisation is facing, articulating the root problem into a statement that does not preemptively lead the organisation toward a particular solution. The problem is constructed to be truly open, allowing for a divergent sensing loop. By seeking to get to the organisation's root problem and removing solutions and hypotheses from the problem statement, the ensuing activities are oriented to explore diverse possibilities, customers, markets and technologies.

Combining broad stakeholder engagement with the development of an open design scope enables the ensuing sensing activities to explore diverse markets, technologies and customers. The process and interaction of the two facets are illustrated in *Image 2*, which shows the funnelling of siloed, knowledge into framing to get to the root problem and the broader, project scope that results.

Place Image 2 about here

The design process then moves into discovering, which explores the latent needs of customers and users. As we've established, discovering comprises research activities that are concerned with developing and accumulating the necessary understanding that informs design choices. Discovering seeks to accumulate deep holistic perspectives from which meaning and insight can be derived. While the research methodologies utilised vary to suit the problem, the majority of organisational design processes employ ethnographic methodologies designed to develop a deeper understanding of the customer/user, or if conducting internal research, the organisational subject. Customers, quite often, are the first to pick up on unmet needs in the marketplace (Teece, 2007) and for this reason design thinking methodologies seek to develop a higher degree of customer-centricity within organisations. The deep personal emphasis of research methodologies aims at putting the

organisational members outside of their own views and into the lives of the customer/user. Thus, the nature of inquiry is contextually and ethnographically founded, which delivers a deeper understanding of the customer/user life and, in doing so, allows the organisation to achieve a higher degree of customer-centricity.

Sensing also aims to shape opportunities into something the organisation can address. As Teece (2007, 2009) contends, much of the information gathered in a successful search venture may prove irrelevant to managerial decision making if sense and meaning cannot be made from the data. Hypothesis development and synthesis of meaning from accumulated data are critical functions, without which, the organisation will likely miss opportunities through an inability to assess market and technological developments (Teece, 2007, 2009).

The synthesising phase acts as the convergent part of the sensing loop that shapes opportunities areas for the organisation. Synthesising takes the accumulated customer and organisational data from discovering and, using design methodologies, begins to distil and cluster the data to form opportunity areas. A market-making opportunity, as Casson (2005) relates, consists of the interlinking of suppliers of inputs with consumers of outputs through a new market. The synthesising phase of design thinking seeks to make sense of data to form a new market for value that is currently not being delivered, or is insufficiently delivered by substitutable products. As Leavy (2011) suggests, the capacity of design thinking to create competitive advantage is linked to its ability to form new markets based on emotion rich innovations of product meanings. Leavy's (2011) point draws distinct similarities to the entrepreneurial, market-making process elaborated by Casson (2005). When properly conducted and embedded within organisational process, synthesising acts in an entrepreneurial capacity to form actionable, new markets from accumulated data.

Seizing as Ideating, Prototyping and Testing

The second formative component of a dynamic capability is the group of routines that enable an organisation to seize and take advantage of opportunities once they have been sensed (Teece, 2007; 2009). We suggest, similar to Barreto (2010), that there are two facets that underlie an organisation's

ability to seize an opportunity; capacity to make market-oriented decisions to develop new business models, and the ability to overcome risk aversion to make timely decisions.

Organisational design thinking processes enable organisations to take advantage of opportunities through the seizing loop that occurs when the organisation iterates between the ideating phase, and prototyping and testing phase, illustrated in *Image 3*. Similar to the divergence and convergence that occurs within the sensing loop, we argue that ideating seeks to utilise a divergent mindset and explorative methods to generate and accumulate diverse possibilities of products, services and processes to address the opportunity area. Then, through prototyping and testing, the organisation is able to converge and validate a model that can deliver mutual value, while at the same time enabling the organisation to overcome risk aversion to make timely and market oriented decisions.

Place Image 3 about here

The ideating phase we propose in this research aims to accumulate large amounts of ideas and solutions capable of delivering value to the insight developed from synthesising. An integral facet of the ideating phase is the engagement with a divergent mindset whilst engaging in ideating routines, and generating ideas to enable a broader search for ideas that challenge the existing, firm paradigms placed around solutions and processes. The expansive search for ways to capture value helps the organisation to develop new and novel ways to deliver value on unmet needs and create new markets.

New solutions must also align with the capabilities and competences of the organisation. The ideating phase seeks to engage broad and diverse organisational stakeholders in order to gain their input and insert their specialised knowledge into the idea generating process. Many firms also go through a form of ideating synthesis at the end, which involves utilising the diverse knowledge and skills of stakeholders to filter down the number of solutions to those that the organisation can execute, and will deliver the customer/user value. The point of synthesis represents the movement from divergence and exploration into convergence and analysis, and the organisation stops searching and begins to analyse and align the solution's potential value offering with organisational feasibility and viability.

Further, the engagement of stakeholders from all areas of the organisation enables the transference of knowledge and is vital for innovations to succeed and seize opportunities (Vanhaverbeke, 2006). Hansen and Nohria suggest that one of the advantages of collaboration is “Innovation through the combination and cross pollination of ideas ...” (2004, p. 23). Ideating seeks to capitalise on the idea generating potential that can be achieved through intraorganisational collaboration. Through involving diverse stakeholders and generating a large volume of ideas to address the opportunity area, the organisation develops a new business model that better links customers/users to a value proposition.

While seizing routines generate business models capable taking advantage of opportunities, seizing must also enable managers to overcome risk aversion and make decisions in a timely manner. When making innovative decisions the organisation will often encounter adversity to changes that challenge current organisational paradigms (Hansen & Nohria, 2004; Teece, 2007; 2009). Managers are more likely to exploit current certainties than risk the consequences of failed exploration (Danneels, 2008; Sitkin, 1992). As Casson (2005) relates, perceptions of risk are subjective; entrepreneurs seemingly take more risks because they process and perceive the risks of innovation differently to non-entrepreneurial managers (Casson, 2005; Nonaka & Toyama, 2007).

Design thinking seeks to minimise risk perception through customer and stakeholder validation, which is achieved in the prototyping and testing phase. The prototyping and testing phase puts a prototype solution into the hands of the customer/user. The interaction and feedback gained from testing the prototype, validates or disproves the solution or hypotheses. The validation of a solution serves to remove and mitigate some of the uncertainties surrounding the innovation. The minimisation of risk and validation of the solution helps managers to perceive less risk in the implementation of the innovation and helps to overcome the traditionally risk-averse nature of management.

The aim of prototyping is to generate tangible solution concepts that are low fidelity and low cost. The low cost and low effort nature of prototyping and testing, relative to piloting, enables the organisation to validate concepts in a way that doesn't impede or over burden the organisation's resources. Thus, prior to decisions on implementation, management have been presented with options

that have, to a degree, been validated and proven, which minimises the perceived risk associated with the innovation. With the risk perceived by management reduced, the organisation is able to make decisions faster, with less managers objecting to the implementation of new innovations.

Design thinking capabilities further enables timely and market oriented decisions through the prototyping and testing of multiple options. Ideating develops a large amount of ideas for the organisation to test and validate through prototyping and testing. As such, one of the aims of the prototyping and testing phase is to emerge with a portfolio of possible solutions that address the organisation's issue. If presented with multiple options to address a particular organisational problem, management are able to choose the option which best suits their risk profile, as well as one that suits the organisation and market situation. Thus, having a variety or a portfolio of options enables decision makers to choose the option that best suits their risk profile, as well as the options that they believe can be readily accepted by the market and delivered by the organisation.

Implementing Designs and Organisational Reconfiguration

Essential for a dynamic capability is the capacity to reconfigure organisational resources; that is, the capacity to leverage, integrate and transform the necessary resources to execute new or adapted business models. The ability to reconfigure organisational resources is a necessary formative component of dynamic capabilities as organisations must be able to execute new strategies and innovations. We focus upon two predominant aspects of reconfiguration routines; the capacity to reduce core rigidities, and the ability to cospecialise organisational assets and strategy. We propose that core rigidities can be minimised and cospecialisation achieved through the interactions of stakeholder collaboration and knowledge management within the design thinking process.

Path dependencies are an important feature in the dynamic capabilities framework. Path dependencies occur due to a firm's prior actions and history through which the firm acquires and accumulates certain assets and knowledge, in addition to going through situation-specific learning processes (Teece, Pisano & Shuen, 1997). The accumulation of assets and learnings result in quasi-irreversible commitments to certain organisational boundaries (Danneels, 2002). Organisations can, as a result of

path dependencies, face significant structural rigidities in the attempt to reconfigure the organisation, and implement innovations and adaptations (Danneels, 2002; Lewin, Long & Carrol, 1999). Incumbent organisations become efficacious at exploiting current certainties, but very few exhibit a willingness to explore and adapt. Thus, in order to consistently achieve strategic fit, organisations must be able to overcome rigidities and dependencies.

As illustrated in the seizing loop, the efficacious use of collaboration can enable quicker implementation of organisational adaptations. Design thinking processes emphasise the importance of stakeholder engagement and collaboration throughout the process phases. Within the sensing loop, stakeholder engagement was important to ensure that a root problem defined and formed the basis of explorative research routines. Throughout the seizing loop, stakeholder engagement enabled the cross pollination of ideas and alignment of the firm business model. Further, through stakeholder engagement a sense of ownership amongst stakeholders can be engendered, along with reassurance through the validation of potential solutions. The state of ownership and understanding that is created by stakeholder collaboration can also translate into market-oriented and timely action. The 'buy in', opens up organisational members to change, reducing the resistance to adaptive action and enhancing the efficacy of collective action, similar to Hansen and Nohria's (2004) arguments.

Teece contends "Good incentive design and the creation of learning, knowledge-sharing and knowledge integrating procedures are likely to be critical to business performance." (2007, p. 1339). In order for an organisational capability to be a dynamic capability, it must incorporate routines that assist in the management and utilisation of knowledge and learning, enabling the organisation to efficaciously reconfigure. Organisations conducting design thinking codify, articulate and communicate knowledge during and after each project, enabling the dissemination of new knowledge.

The final result of the interaction between collaboration and knowledge management is the cospecialisation of strategy and resources. Cospecialisation involves the marrying of organisational resources to strategy, or strategy to process, or even one asset to another (Teece, 2007). As related in seizing, the development of the solution in design thinking seeks to create a new business model; that

is, to realign organisational outputs with desired customer inputs. However, when that model is operationalised, reconfiguration routines must ensure that the relevant and adapted assets are effectively organised to achieve the new model and realise the associated value. More specifically, the assets and processes need to be cospecialised with organisational strategy.

Intraorganisational collaboration throughout design thinking helps engender understanding and ownership. Further, the successful transference and management of knowledge helps organisational divisions and stakeholders to understand how and why organisational assets and processes must be reconfigured. Augier and Teece relate that “To achieve the necessary coordination, decision makers need information on changing consumer needs and technology” (2009, p. 416). The understanding and ownership developed through collaboration and knowledge management facilitate quick and guided adaptive action that enables the achievement of the desired future state, and thus, strategic fit.

CONCLUSION

In this paper we have sought to bridge the current disconnection that exists between design thinking and organisations. Particularly, we aimed to draw comparisons between design thinking processes and the function of dynamic capabilities that enable entrepreneurial adaptation. Particularly, we demonstrate that through design thinking processes embed similar routines to those that dynamic capabilities must possess, that is, sensing routines, seizing routines, and reconfiguring routines. Through the phases of framing, discovering and synthesising, design thinking processes embed sensing routines which seek to explore diverse possibilities, and then shape actionable opportunities for the organisation to adapt and create new markets. Further, we contend that the phases of ideating, and prototyping and testing act as a seizing loop which formulates a feasible and viable business model, in addition to enabling market oriented and timely decisions. Finally, in this paper we posit a model of design thinking processes, which suggest that the necessary knowledge and collaboration routines required to facilitate routine and effective firm reconfiguration, are present within design thinking processes. Thus, we argue that design thinking has significant potential as a dynamic capability that acts in an entrepreneurial capacity to generate new markets and adaptation for firms.

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Dynamic Capability Routines (Microfoundations)	Description
Sensing	The sensing routines that form dynamic capabilities involve search activities that explore across technologies and markets, both local and distant, for the purpose of understanding customer needs and technological possibilities, uncovering latent demand and exploring the evolution of industries (Teece, 2007). These search activities seek to accumulate environmental and customer data, before interpreting, synthesising and formulating it into a strategic opportunity and desired future state (Nonaka & Toyama, 2007; Teece, 2007, 2009).
Seizing	Wilden, Gudergan, Nielsen and Lings (2013) suggest, involves “... the evaluation of existing and emerging capabilities, and possible investments in relevant designs and technologies that are most likely to achieve marketplace acceptance.” (2013, p. 74). In reviewing dynamic capabilities, two key elements to seizing emerge. Firstly, seizing routines must seek to explore and develop a business model capable of delivering upon the value or achieving the ideal state that the organisation seeks to achieve. Business models are a developed manner through which the organisation reconfigures its assets and competences to connect new value and customers (Chesbrough & Rosenbloom, 2002). Secondly, to commit to new business models, management must overcome risk aversion to make timely and market oriented decisions (Barreto, 2010). Seizing is the strategic insight and execution of the firm without which firms may have the competence to sense opportunities and threats, but lack the capacity to capitalise on potential advantages (O’Reilly & Tushman, 2007).
Reconfiguring	In order to execute business models and maintain fit, the organisation must be able to reconfigure its internal resources. The distinguishing element of reconfiguring is that it does not pertain to the decision, but to the physical integration, leveraging and transforming required to maintain value creation within dynamic environments (O’Reilly III & Tushman, 2008; Teece, 2007, 2009). Organisations must be able to reallocate resources away from the exploitation of declining businesses toward growth opportunities and the management of threats (O’Reilly III & Tushman, 2008). There are two significant outcomes that the extension and creation processes of reconfiguration must achieve, these being cospecialisation within asset orchestration and overcoming core rigidities (Teece, 2007, 2009).

Table 1: Routines that Form a Dynamic Capability

Phase	Definition
Framing	Framing encapsulates activities that are associated with achieving a design-scoped problem; it aims at developing and establishing a design oriented challenge that guides problem solving activities and design choices.
Discovering	Discovering comprises research activities that are concerned with developing and accumulating the necessary understanding that informs design choices. Discovery seeks to accumulate deep holistic perspectives from which meaning and insight can be derived.
Synthesising	Synthesising is distilling data and information into meaningful themes and patterns that are used to construct actionable opportunity areas.
Ideating	Ideating comprises activities aimed at generating ideas and developing potential solutions to the design challenge.
Prototyping and Testing	Prototyping and testing consists of developing models of solutions and utilising these to assess their validity and/or improve them. The outcome of the Prototyping and Testing phase is to have a final solution, or range of solutions, that are validated by the user and can be moved into implementation.
Implementing	The implementing phase is a more traditional organisation phase that comprises activities required to build and then deliver the solution to the market.

Table 2: Design Thinking Process

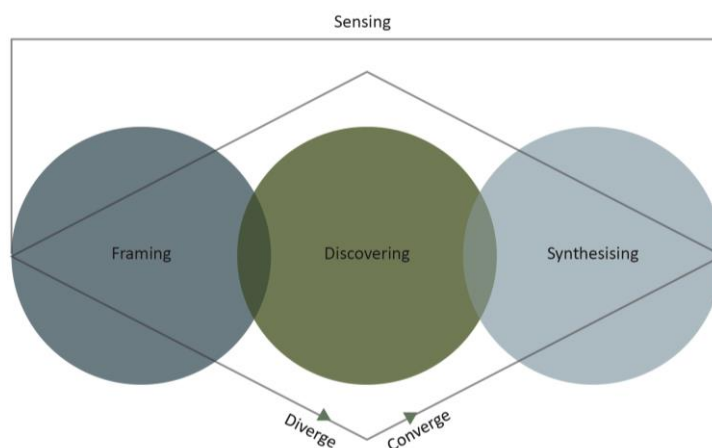


Image 1: The Sensing Loop within Design Thinking Processes

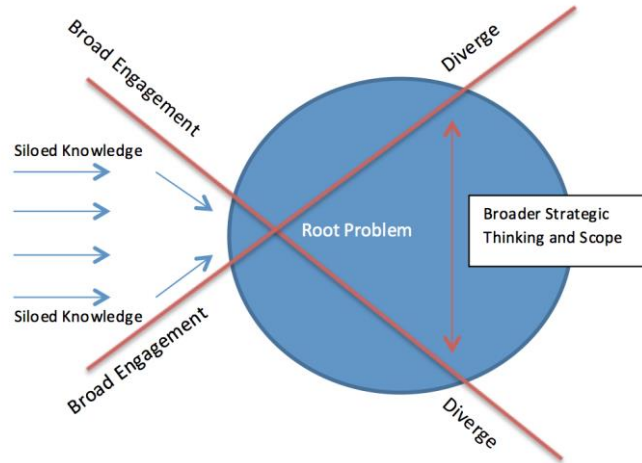


Image 2: The Framing Phase as a Sensing Routine

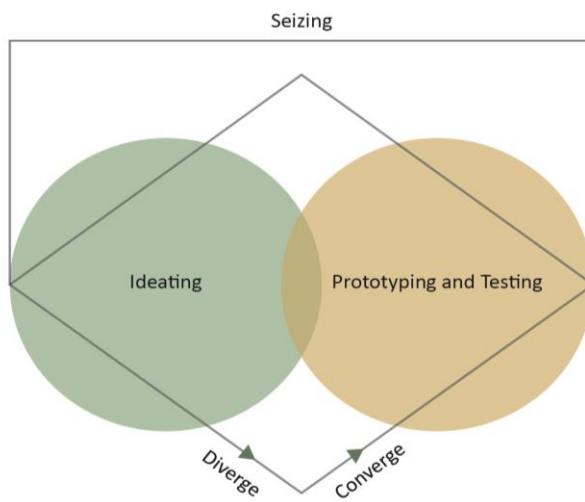


Image 3: The Seizing Loop within Design Thinking Processes