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Corporate governance of innovation in Singapore Chinese family business

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CORPORATE GOVERNANCE OF INNOVATION IN SINGAPORE CHINESE FAMILY BUSINESS

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Corporate Governance of Innovation in Singapore Chinese Family Business

by

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ABSTRACT

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Despite the large number of research publications on innovation management matters, there is still a gap in the understanding of effective innovation governance at corporate levels. The mechanisms that drive effective governance at firm level to ensure the “alignment of goals, allocation of resources and assignment of decision-making authority for innovation across the company, and with external parties” (Deschamps, 2013) remain unclear. Given the importance of family firms in Asia (and beyond), there is an urgent need to examine those family factors that influence the effectiveness of corporate governance of innovation in Asian enterprise. Against this background, this study attempts to contribute to the innovation literature by (i) developing a new model of corporate innovation governance for Singapore Chinese family firms; (ii) defining the roles and responsibilities of the board of directors in these family-based firms with regard to governing innovation; and (iii) creating a checklist to support both board members and CEOs of local family firms to better govern and manage organisational innovation efforts at corporate levels.

A qualitative research approach was used to provide rich insights into the “why” and “how” of the corporate governance of innovation in an Asian business context,

which is still poorly understood. During phase 1, we interviewed ten experts in areas related to innovation, governance and Chinese family firms. Using the insights generated, we created semi-structured interview questions for the subsequent phase 2 case study research. For each of the four case studies, interviews were conducted with two to three key executives of the firms to gather deeper insights into the research topic and to ensure a high level of data validity.

Using a grounded theory approach, we formulated an actionable, corporate innovation governance model that points the way ahead for the leaders of Singapore Chinese family firms towards continued value creation. Our research suggests that there is a clear gap between the expert views concerning the desired roles and responsibilities of the board of directors with regard to innovation governance and the actual practices observed in Singapore Chinese family firms. One of the key issues is the lack of domain expertise and experience in innovation management at the board level. Based on the qualitative research, we developed propositions on the antecedents to board's pro-activeness (e.g. shareholders' expectations), and family influence factors (e.g. cohesiveness among family members involved in business operation), that affect the governance of innovation. Besides discussing the theoretical implications of the research findings such as the impact of innovation leadership on the corporate governance of innovation in Singapore Chinese family firms, the dissertation concludes with a novel checklist to inform top business leaders about key variables and aspects that affect the effectiveness of making corporate innovation governance work such as innovation leadership, innovation capabilities and clarity of innovation strategy.

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CHAPTER 1: INTRODUCTION

The importance of innovation for driving a firm's performance, business viability and sustainability has been discussed both by practitioners and scholars. Businesses are grappling with the speed of change concerning consumer behaviours, technological disruption and the need to reconfigure operations to adapt to such changes. The speed of market changes implies that innovation is increasingly critical to a firm's long-term survival. Organisations need managers who are ambidextrous and strike a balance between evolutionary and revolutionary changes (Tushman & O'Reilly, 1996; O'Reilly & Tushman, 2008). March (1991, p. 71) suggested that "maintaining an appropriate balance between **exploration and exploitation** is a primary factor in system survival and prosperity".

A survey of research papers concerning innovation will return a vast number of scholarly works including innovation incubation, development, commercialisation, innovation investment portfolio, leadership and more. There is also consensus among researchers regarding the positive relationship between innovation and performance. Many researchers have focused on examining the innovation process, innovation input and the innovation outcome of family as well as non-family firms. However, **research about the corporate governance model of innovation is limited** (Miozzo & Dewick, 2002). In our opinion, corporate innovation governance is critical to provide an overarching strategic direction and operational framework to ensure that the business maintains the balance between “exploitation” and “exploration” activities (March, 1991).

We define the governance of innovation at the corporate level as "**Corporate governance of innovation**" (CGOI), aligned with Deschamps's (2013) definition of "**a system of mechanisms that aligns goals, allocates resources and assigns decision-making authority for innovation across the company, and with external parties**". CGOI provides clarity regarding why, what, where, when and how much to invest as well as who is authorised to decide. O'Sullivan (2000) posits that the corporate governance literature focuses on a variety of mechanisms to solve agency problems, which ensures that financiers' funds are not wasted on unattractive projects but provides no systematic explanation of the conditions under which managers will make investments that promote or discourage innovation. The clear research void concerning CGOI motivates us to focus our research in this area in order to contribute to an improved corporate governance of innovation.

1.1 How Should Innovation be Governed in Chinese Family Firms?

According to Gersick (1997), two-thirds of all enterprises worldwide are owned and/or managed by families. Large bodies of research have examined innovation in family businesses (Kraus et al., 2011; Xi et al., 2015) with conflicting views regarding whether family or non-family businesses are more innovative (Cassia et al., 2012; Chrisman et al., 2012; De Massis et al., 2013, 2015; Kraus et al., 2012). Enterprises in Asia are dominated by Chinese families (Menkhoff & Gerke, 2004). We define Chinese family firms as **businesses that are majority owned by ethnic Chinese business leaders and/or managed by their family members**. Singapore Chinese family firms are found to "combine Chinese tradition with modern Western management style" (Zang, 1999, p. 874). While Singapore Chinese family businesses incorporate modern Western management style, the Chinese values and traditions passed down from company founders are observed as profoundly influencing the businesses (Tan & Fock, 2001). This thus forms an interesting subject for research, as the findings derived could potentially extend to Chinese family firms in Southeast Asia. Many of these firms comprise similar cases of ethnic Chinese founders passing on their family business to younger generation leaders who are educated under a Western management system.

1.1.1 Who is Responsible for the Corporate Governance of Innovation?

Deschamps and Nelson (2014) submit their views concerning innovation governance and the importance of boards for driving both the "contents" and "process" of innovation. While there is consensus regarding the importance of innovation for organisations' long-term sustainable growth, there is a lack of clarity with regard to the roles of boards and top management in ensuring innovation investment and culture. In the 2015 Singapore Board of Directors Survey (SID, 2015), innovation was not included in the top five areas of focus for the respondents to the survey. Instead, the top five areas were business performance, strategy development, strategy execution, corporate governance and compliance as well as risk management. Innovation was assigned an importance of 0.26 on a scale of 0 to 5, with 5 being most important in this survey. This seems to indicate that boards of directors do not perceive innovation governance as a critical role for which they are responsible. The role of the board in driving corporate innovation governance is important in large organisations, especially when applying the perspective of “agency theory” (Ross, 1973) where professional managers in control of a company's operations may not act in the interest of shareholders. Agency problems may undermine incentives for executives to innovate (Jensen & Meckling, 1976), as such investments are often deemed high risk and do not produce immediate returns.

Would the role of the board in governing innovation be different in Chinese family firms? It is not uncommon to observe that the chairman of the board is often a role adopted by a family leader of the Chinese family firm. The significant involvement of family members at both board and executive levels reduces agency costs that often exist in large, non-family firms. Stewardship theory (Davis, Schoorman & Donaldson, 1997) better supports the model of family firm operations where there is alignment of interest between the owner and managers of the firm, since these positions often comprise the same people in family firms. In Chinese family businesses with controlling power from family leaders at the board level, which roles should independent directors adopt to drive the intended outcome for governing innovation? Le Breton-Miller et al. (2013) posit that the board composition that best supports the long-term survival of family firms changes with the evolution of family firms and family involvements which impacts the socio-emotional wealth priorities of family firms. However, there has been little research into the role of the board in the corporate governance of innovation in family firms. Our research contributes to this research gap and guides practitioners in their quest for better corporate governance of innovation at the board level in Chinese family firms.

1.1.2 Family Influence in the Corporate Governance of Innovation

In a survey conducted by PWC (PWC, 2018, p. 8), 80% of the 2950 respondents comprised of executives of family businesses across the globe who cited innovation, digitalisation and technology as their top challenges in sustaining growth over the next two years. KPMG conducted a survey in May 2017 (KPMG, 2017) on 100 Singapore family businesses and discovered that 53% have no plan to inculcate innovation culture in their organisation. The results of these surveys indicate gaps in family businesses in governing innovation.

Many research projects concerning family firms have also uncovered social-emotional factors as key variables that affect the decision-making process (Gomez-Mejia et al., 2007). Family firms exhibit long-term orientation, long-term leader tenures, tacit knowledge, strong family bonds and social networks which contribute to their elevated ability to innovate, while their willingness to innovate is heavily influenced by the family owners' goals, intentions, motivations and socioemotional concerns (Chrisma et al., 2015; Gómez-Mejía et al., 2007). How would family influence the way Chinese family firms govern innovation at corporate levels? This is clearly an area that lacks sufficient research focus and clarity.

1.2 Relevance of Research

The research gap with regard to the corporate governance of innovation in Chinese family firms motivates us to conduct a qualitative study in order to better understand the unexplored dynamics in this area. This study attempts to contribute to the innovation literature through exploring the following three research questions:

- What is the role of the board in the corporate governance of innovation in Singapore Chinese family firms?

- How does family influence affect the corporate governance of innovation in Singapore Chinese family firms?

- What are the key constructs of the corporate governance of innovation model for Singapore Chinese family firms?

This research aims to expand our understanding of the corporate governance of innovation model in Singapore Chinese family firms. A **checklist** is also developed to support the boards and top management of Chinese family firms towards improving the corporate governance of innovation. A qualitative research methodology is used to effectively seek clarity behind the "why", "what", "where", "when" and "how" of Singapore Chinese family firms' corporate governance of innovation models.

CHAPTER 2: LITERATURE REVIEW

This chapter focuses on the review of literature developed by scholars in the area of innovation governance and family firms and is organised into three parts. The first part reviews the literature in the area of innovation and innovation governance. The second part introduces the extant literature on theoretical perspectives of family firms. The final part discusses innovation governance in the distinct business system of family firms.

2.1 Corporate Governance of Innovation

As the business environment continues to rapidly evolve, innovation is widely regarded as a critical source of competitive advantage for any organisation (Dess & Picken, 2000; Tushman & O'Reilly, 1996). A plethora of research has been conducted in the area of innovation ranging from measurement of innovation performance (Cordero, 1990), product innovation process (Cormican & O'Sullivan, 2004), portfolio management (Mcgrath & Macmillian, 2000; Mcgrath, 2010) to innovation process measurement (Adams et al., 2006). While scholars have affirmed innovation's importance as a competitive advantage for a firm's success, it is often difficult for outside stakeholders and capital markets to evaluate. Hence, management judgement and persistency play a significant role in governing innovation (Christensen & Raynor, 2003; Liu, Chen & Wong, 2017).

Due to the complexity surrounding how innovation can be managed, Adams (2006) performed a systemic review of the extant bodies of literature and synthesised a framework consisting of seven dimensions of innovation management in order to enable firms to perform self-assessment. The seven dimensions of innovation management are: input management, knowledge management, innovation strategy, organisational culture and structure, portfolio management, project management and commercialisation (Adams, 2006). Crossan and Apaydin (2010) used a similar approach in analysing the large body of innovation management literature and developed a multi-dimensional framework of organisational innovation which links the three meta-constructs of innovation determinants: leadership, managerial levers and business processes. Such frameworks contribute to the academic and practitioner understanding of the complexity and various components that drive the input, process and outcome of innovation at the firm level.

While many researchers have studied the various components of the complex process of innovation management in an organisation, there is a lack of clarity regarding innovation governance at corporate levels. As Crossan and Apaydin (2010) point out, "The role of leadership at all levels of an organization, although sometimes tacit, is paramount for spearheading innovation as a process and maintaining its momentum until innovation as an outcome ensues" (p. 1156). Smith and Tushman (2005) posit that “paradoxical cognition, cognitive frames and processes that allow teams to effectively embrace, rather than avoid, contradictions” (p. 533) will enable top management teams’ effectiveness in managing the strategic contradiction of balancing exploitation with exploration. The complexity described in the model submitted by Smith and Tushman (2005) reinforced the need for the board to play a critical role in innovation governance, which Deschamps and Nelson

(2014) described in terms of who innovates, how to innovate as well as what and how much to innovate.

Deschamps (2013) defined innovation governance as "**a system of mechanisms that aligns goals, allocates resources and assigns decision-making authority for innovation across the company, and with external parties**". He further recommended boards to drive innovation governance through reviewing innovation strategies, managing innovation risks, auditing innovation effectiveness, assessing innovation performance and appointing top management with innovation focus. We thus term Deschamps's (2013) definition of innovation governance as the "**corporate governance of innovation**".

The corporate governance literature (O'Sullivan, 2000) focuses on a variety of mechanisms to solve agency problems to ensure the interest of shareholders but provides no systematic explanation of the conditions under which managers will make investments that promote or discourage innovation. O'Sullivan (2000, p. 410) posits that "the resource allocation process that generates innovation is developmental, organisational and strategic implies that, at any point in time, a system of corporate governance supports innovation by generating three conditions: financial commitment, organisational integration and insider control". By developmental, O'Sullivan (2000) means that innovation involves irreversible commitments of resources for uncertain returns. Hence, one condition for innovation to occur is financial commitment, as decisions need to be made regarding investment in a specific area of exploration. O'Sullivan (2000) further argued that innovation is organisational as collective learning is directly influenced by the manner in which work is organised. Organisational integration describes the integrated structure of work and collective learning processes that generate knowledge which cannot be replicated by competitors merely through assembling similar resources. O'Sullivan's third condition of "insider control" is based on the fact that innovation investment is a strategic decision, and the controlling party must have interest in committing to the investment in innovation after consideration of its uncertainty.

O'Sullivan's (2000) argument for further research into governing innovation in relation to corporate governance resonates with our research intention. While much research has explored the need to innovate, the complexity of enabling an organisation to effectively explore and exploit leads to the need for a model in order to enable the board and top management team to make sense of the complexity as well as to guide efforts to effectively enable an organisation to achieve the positive outcome of innovation investment. In light of innovation's importance to ensuring longevity and sustainable growth of a business, conducting research into the corporate governance of innovation would be valuable to both academics and practitioners.

2.1.1 Role of the Board in the Corporate Governance of Innovation

McNulty and Pettigrew (1999) describe the board's role regarding strategy using three modes of behaviour: "taking a strategic decision", "shaping strategic decisions" and "shaping the content, context and conduct of strategy". Stiles (2001) found that strategy is typically formulated at the business-unit level, but the board plays an important role in setting the strategic parameters within which strategic activity can occur. One could argue that "innovation strategy" is part of the broader scope of the organisational strategy. Ramanujam and Mensch (1985) advocated a conscious assessment of the strategic choices involved in innovation management, which encompasses innovation goals, allocation of resources to innovative activities, risks of innovation, timing aspects and a master plan. Andrews (1980) further highlighted that the board should be responsible for reviewing the organisation's corporate strategy and that through intimate involvement in corporate strategy, it can "emphasize and contribute to the search for a new opportunity" (p. 42).

Boards have dual roles to both monitor the performance of management and to provide advice (Adam, 2007). Agency problems may undermine firm incentives to innovate (Jensen & Meckling, 1976). Bernstein (2014) found that going public affects the innovation strategy of a firm. Public firms seem to produce more incremental innovation and acquire new technology through merger and acquisition activities. Balsmeier and Manso (2017) argued that more independent boards increased exploitation of previously successful areas of expertise as stronger board oversight increased managerial efforts and risk aversion. Such focus on exploitation instead of exploration would be detrimental to the sustainable growth of a business. The dual role of boards to monitor the performance of managers as well as their advisory role to enable executives to make better quality decisions implies a need for a clear innovation governance framework to enable boards’ effectiveness to support the C-suites regarding innovation management. Zhou (2016) studied the relationship between board governance and managerial risk-taking and found that board governance entails positive effects on managerial risk-taking which leads to higher investment in R&D expenditures over multiple years. This implies that board governance concerning innovation is of paramount importance for the long-term growth of a firm. Zhou (2016) further argued that board governance is expected to prevent managers' myopic investment behaviours since strategic decision-making roles are assigned to a corporate board.

Deschamps and Nelson (2014) posits that the board’s duty in governance impacting innovation can be grouped into two key areas. The first involves innovation strategy where the board has the duty to audit the company’s innovation performance as well as define acceptable ranges of risk, while the second regards performance review and C-suite nominations. Deschamps (2018) further suggested that the board should be looking beyond CEO nominations and also ensure that the CEO is supported by C-suites that have complementary profiles as a team in order to drive innovation and transformation in the organisation.

Zahra and Pearce (1990) found that the board’s strategic involvement is positively associated with the efficiency of the internal board operations. Zahra and Pearce (1989) define internal board operations as “variables that influence a board’s decision-making process” including frequency of board meetings, organisation of boards into specialised committees, flow of information etc. Many scholars have found that processes are important determinants of the board’s effectiveness in fulfilling control and strategy tasks (Forbes & Milliken, 1999; Gabrielsson & Winlund, 2000; Johnson, Daily & Ellstrand, 1996). This encourages us to inject clarity into the innovation governance process of the board in order to contribute to the board's effectiveness in the strategic involvement of innovation's corporate governance.

Besides the board's processes, board diversity and its impact on firm performance and innovativeness have also gained increased attention and interest from researchers. The behavioural theory of the firm (Cyert & March, 1963) posits that innovation in organisations is influenced by the extensiveness of the solution-searching and decision-making processes. When the search process for solutions to a specific problem is conducted by a homogenous group that focuses only on areas in which group members have prior experience, the decision reached may be biased (Hambrick & Mason, 1984). Board diversity in terms of gender and education has also been found to contribute to a firm's increased tendency to invest in R&D, while tenure diversity has a negative effect by reducing this tendency (Midavaine et al., 2016).

In family firms, the majority shareholders of a company occupy a large share of board seats due to overlap among shareholders, directors and managers (Gersick et al., 1997). It is also not uncommon for the chairman of the board of family firms to typically be a key family leader. The involvement of family members at the board level impacts the effectiveness of board processes such as how the board's expertise and knowledge are leveraged, the board's level of involvement in strategic decision-making processes as well as the extent of cognitive conflict (Zattoni et al., 2015; Forbes & Milliken, 1999). We believe that the dynamics of familial influence at the board level will have a similar effect that must be considered to achieve effective corporate governance of innovation. Because research into the corporate governance of innovation is at a nascent stage, there is a lack of current literature that studies the influence of family factors at the board level, which may impact the effectiveness of the governance process of innovation.

2.2 Theoretical Perspectives on Family Firms

There are various theories developed that contribute to the explanation of various aspects of family firms (Chrisman, Kellermanns, Chans & Liano, 2010). In this section, we examine the family variables derived from agency theory, the behavioural agency model, stewardship theory and the resource-based-view that will influence the corporate governance of innovation.

2.2.1 Agency Theory

According to Jensen and Meckling (1976), the separation of ownership and management results in information asymmetries and the assumption that decision-making is based on self-interest and personal preferences, which increases costs associated with monitoring by the principals (owners). Jenson and Meckling (1976) argued that in cases where ownership and management are unified, the "**principal-agent**" agency cost will be avoided. Family business researchers challenge assumptions made by Jenson and Meckling (1976) by claiming that altruistic and relational aspects of family firms have not been considered (Nordqvist et al., 2015; Kallmuenzer, 2015).

Schulze et al. (2001) were among the first researchers to argue that family firms entail several potential sources of agency costs arising from altruism and self-control. Schulze et al. (2001) defined altruism as “a trait that positively links the welfare of an individual to the welfare of others” (Schulze et al., 2001, p. 102). The family dynamics in family firms drive a different set of agency costs that is not solely financially motivated. Self-control problems may occur in the form of family members exploiting the generosity of family owners’ managers, family owner managers less stringently appraising family members’ job performance or the tendency to employ a family member over more qualified managers (Kallmuenzer, 2015).

The governance structure of family firms is differentiated from that of non-family firms resulting from the unification of ownership and control. Carney (2005) posits that the family’s control over a firm’s organisational authority generates three dominant propensities: **parsimony, personalism and particularism**. Parsimony observed in family firms is an outcome of the alignment of owner-managers’ interests which thereby reduces opportunism and increases prudency in resource deployment and conservation (Jensen & Meckling, 1976). De Massis et al. (2015) posit that family firms are expected to more prudently manage the product innovation process as such strategic decisions involve a family’s personal wealth. Personalism is rooted in the unification of ownership and management in family firms that grants significant power and legitimacy to family members in the organisation. De Massis et al. (2015, p. 4) propose that personalism results in “agents involved in product innovation process to be exempted from the internal bureaucratic constraints and strictly formalized management practices that limit managerial authority and inhibit ownership priorities in nonfamily firms". Particularism stems from the fact that family members may pursue goals beyond financial objectives with the personalistic exercise of authority (Chrisman et al., 2012). The parsimony, personalism and particularism propensity of family firms will likely influence the innovation governance model as well as the roles that the board of directors should play in a family-controlled firm.

Another form of agency cost in family firms is the "**principal-principal**" agency cost that arises due to the misalignment of interests between majority and minority shareholders (Porta et al., 1999; Anderson & Reeb, 2003). Innovation investment is a long-term strategy that requires the commitment of the organisation from the board to top management teams. In governing the success of innovation strategy, the process in which such conflicts can be managed as well as processes to ensure proper decision-making at the board level are critical.

The agency theory in the family business context supports our research direction in that innovation governance in family firms must be investigated while incorporating factors unique to family business dynamics beyond financial factors. Our research attempts to uncover how the agency theory will function in the innovation governance context of Singapore Chinese family businesses.

2.2.2 Behavioural Agency Model

According to Cyert and March (1963), the process of decision-making in organisations may be analysed in terms of "the variables that affect organisational goals, the variables that affect organisational expectations, and the variables that affect organisational choices" (Cyert & March, 1963, p. 162). They (Cyert & March, 1963) developed "A Behavioral Theory of the Firm" (BTOF) that predicts and explains the determinants of organisational goals, aspirations and the factors influencing organisational strategic behaviour towards risk-taking.

Wiseman and Gomez-Mejia (1998) expanded on behavioural theory and agency theory and constructed a new theoretical model called the "**behavioural agency model**" (BAM). They suggested that executives may exhibit risk-seeking as well as risk-averse behaviour (Wiseman & Gomez-Mejia, 1998) depending on the context (Gomez-Mejia et al., 2007). They further established that strategic decisions are 'reference dependent' and that decision makers are primarily "loss averse" (Wiseman & Gomez-Mejia, 1998). 'Reference dependent' means that decision-makers will choose the option that provides the optimal outcome with respect to their current wealth. 'Loss averse' refers to when the decision-maker favours options that avoid loss of their current wealth over options that optimise future wealth (Wiseman & Gomez-Mejia, 1998). In the context of family businesses, 'wealth' includes socio-economic wealth as well as financial wealth. Gomez-Mejia et al. (2007) posit that in family firms, **socioemotional wealth** (SEW)—defined as "non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty" (p. 106)—represents a key variable that affects the decision-making process. Berrone et al. (2012) suggested five measurable dimensions of SEW termed as "FIBER": **F**amily control and influence, **I**dentification with the firm,

Binding social ties, **E**motional attachment and **R**enewal of family bonds to the firm through dynastic succession.

Mazzelli (2015) noted that behavioural theory and particularly BAM have become dominant paradigms for understanding the ways in which family business organisations make decisions. The dynamics of how family firms determine aspiration goals and drive search processes to meet the goals impact the process of innovation governance. The established aspiration goals are influenced by the desire of family firms to preserve its SEW beyond merely financial considerations. In family business research, the BAM advises regarding the aspects of decision-making behaviour of family members that are influenced by their 'reference point' in terms of their current wealth (including SEW), their loss-averse disposition as well as the desire to have a 'mixed gamble' to hedge their options.

Our research investigates whether BAM explains the behaviour of Singapore Chinese family leaders in innovation investment decisions.

2.2.3 Stewardship Theory

Stewardship theory builds on a contrasting view of human behaviour compared to agency theory. The stewardship perspective assumes that man is driven by higher-level needs such as self-actualisation, social contribution, loyalty, generosity and intrinsic needs tied to personal motivations (Davis, Schoorman & Donaldson, 1997; Donaldson, 1990). Davis, Schoorman and Donaldson (1997) proposed that stewardship orientation regards individuals who are self-motivated and driven by the success of the collective organisation, which builds an environment of elevated trust.

In family firms with unified roles of owners and managers, we argue that there is a higher propensity towards a stewardship orientation due to an intrinsic trust environment among the family members as well as the alignment of organisational success that contributes to personal wealth. Miller, Le Breton-Miller and Scholnick (2008) propose that family firm leaders exhibit three forms of stewardship leadership. Firstly, they invest in building the business for the long-run benefit of various family members, ensuring longevity of the business. They further posit that due to the firm leaders' focus on longevity of their family business, they exhibit stewardship leadership by nurturing motivated, well-trained and loyal employees with a community culture. The third stewardship trait of family business leaders regards their focus on creating strong connections with outside stakeholders who can sustain the business in times of trouble (Miller, Le Breton-Miller & Scholnick, 2008).

Stewardship theory explains the unique traits of family businesses in terms of their long-termism and focus on relationships. In the area of innovation governance, long-termism is a possible antecedent to family leaders' commitment to driving innovation, and the focus on relationship-building possibly positively influences fostering an innovation culture in the organisation.

Our research examines whether Singapore Chinese family leaders exhibit stewardship leadership traits and whether these traits impact the structure of corporate governance of innovation.

2.2.4 Resource-based View

Presented by Penrose in 1959, the book "The Theory of the Growth of the Firm" is regarded by many scholars as the intellectual foundation for the modern resource-based-view (RBV). Penrose (1959) submitted the idea that the firm is a pool of interchangeable resources that are organised in an administrative framework. Barney (1991) is often regarded as the first scholar who formalised RBV into a theoretical framework (Hansson, 2015; Newbert, 2007). Barney (1991) posited that by accumulating resources that are valuable, rare, inimitable and non-substitutable (VRIN), a competitive advantage can be established by the firm. Firms that can develop valuable resources or capabilities that cannot be easily imitated or substituted by competitors are able to outperform them (Teece et al., 1997). Building on the RBV, Habbershon and Williams (1999) established a "familiness" model for assessing the competitive advantage of family firms. They described family business resources as "familiness" which is defined as "the bundle of resources that are distinctive to a firm as a result of family involvement" (Habbershon & Williams, 1999, p. 1). Family firms are unique due to the interaction between the family unit, the business entity and individual family members (Habbershon & Williams, 1999; Habbershon, Williams & Macmillan, 2003). The "familiness" RBV model (Habbershon & Williams, 1999) provides researchers a means to assess the behavioural social phenomena within family firms as well as the possible translation into the family firm's unique competitive advantage.

The effective management of "familiness" resources (social capital, human capital, patient capital and survivability capital, governance structure attribute) has been found to create competitive advantages and leads to wealth creation for family firms (Sirmon & Hitt, 2003). Social capital regards the resources embedded in the relationships among people (Hoffman, Hoelscher & Sorenson, 2006). Sirmon and Hitt (2003) described social capital as being composed of three dimensions: structural, cognitive and relational. They defined structural components as the social capital derived from network ties and configurations. The cognitive dimension is based on shared language and narratives while the relational dimension is based on trust, norms and obligations (Sirmon & Hitt, 2003). The unique "familiness" resource of social capital in family firms, where the shared language among family members simplifies communication and the trust network facilitates collaboration, entails positive effects on the product innovation process (De Massis et al., 2015).

Human capital is defined as the acquired knowledge, skills and capabilities of a person that allow for unique and novel actions (Coleman, 1988). Horton (1986) associates family firms' human capital with positive attributes such as high commitment, friendliness and close relationships. Firm-specific tacit knowledge that is difficult to codify has the potential to be transferred through early exposure and involvement of children in the family firm through direct exposure and experience (Lane & Lubatkin, 1998). However, many scholars have also cited negative human capital attributes associated with family firms such as hiring suboptimal employees due to the goal of employing family members (Miller, Le Breton-Miller & Scholnick, 2008) as well as the lack of access to qualified human capital (Carney, 1998).

Patient financial capital is financial capital that is invested without threat of liquidation over long periods (Dobrzynski, 1993). As Dreux (1990) highlighted, family firms generally face less pressure to achieve short-term results compared to nonfamily firms and hence have a longer time horizon for investment. Such a long-term view of investment will also impact the funding of product innovation projects (De Massis et al., 2015).

Sirmon and Hitt (2003) define survivability capital as "the pooled personal resources that family members are willing to loan, contribute, or share for the benefit of the family business". This is unique to family firms due to the duality of family and business relationships (Dreux, 1990; Horton, 1986). Survivability capital represents a unique advantage that family firms can draw upon during difficult economic times to ensure survival.

The RBV model in family business research provides a framework that guides clarity in seeking relationships among firm-level processes, assets, strategy and performance. Our study investigates whether the "familiness" model of RBV is aligned with our research findings for the corporate governance of innovation in Singapore Chinese business firms.

2.3 Family Firm and Corporate Governance of Innovation

According to a report published by NUS Business School, Centre for Governance, Institutions and Organisations (Dieleman, Shirm & Ibrahim, 2013), 60.8% of the firms listed on the Singapore stock exchange are family firms. Family firms here are defined as companies in which "(co-)founders or their family members are present among the 20 largest shareholders or as board members" (Dieleman et al., 2013, p. 7). The research found that "founders and their family members occupy the most important leadership roles in the boards" of family firms (Dieleman et al., 2013, p. 16) with Chairman and CEO positions typically held by the founder or family members of the founder.

Gerserk (1997) described the uniqueness of family businesses using a three-circle model where the business, the family and the owner intersect and play different roles at different times depending on the circle they occupy at that moment. Habbershon, Williams and Macmillan (2003) indicate that in family firms, performance outcomes are impacted by the interaction of these three components, creating unique systemic conditions and constituencies. Family business researchers have also found differences with respect to the organisational goals pursued, risks taken and the investment horizon between family and non-family firms, which are all determinants of innovation activities (Chrisma et al., 2012; Chrisma et al., 2015; Zellweger, 2007; Zellweger et al., 2012). A detailed analysis of extant literature on technological innovation and family firms performed by De Massis et al. (2013) found that family involvement directly affects innovation inputs, activities and outputs. While some of the characteristics of family businesses are considered to be favourable to innovation, others seem to have the opposite effect.

Empirical studies by scholars have found that family firms have lower investment in technology innovation compared to non-family firms (De Massis et al., 2013; Chrisman & Patel, 2012; Miller et al., 2011). Miller (2011) argued that family firms are not keen on R&D-intensive innovation strategies due to their risk aversion. Duran, Kammerlander, Van Essen and Zellweger (2015) conducted a meta-analysis based on 108 primary studies and concluded that while family firms invest less in innovation, they have achieved a higher conversion rate of innovation input into output.

The innovation process and the antecedents to its effectiveness have been of great interest to family business scholars. Chrisma et al. (2015) devised a framework to explain the influence of family involvement on innovation management based on two key parameters: ability to innovate (discretion to act) and willingness to innovate (disposition to act). The long-term orientation, long-term leader tenures, tacit knowledge, strong family bonds and social networks of family firms contribute to their enhanced ability to innovate. Their willingness to innovate is heavily influenced by family owners' goals, intentions and motivations as well as socioemotional concerns (Chrisma et al., 2015; Gómez-Mejía et al., 2007). Röd (2016) conducted an in-depth analysis of 78 empirical studies on innovation in family businesses and developed a conceptual framework that illustrates the various family factors that impact the various stages of family firms' innovation processes. He posits that the impact on the innovation behaviour of the business can be positive or negative depending on the familiness of the firm as well as contextual factors such as generational effects and type of family involvements.

Other studies show a positive link between new product or service introduction and family involvement. Gudmundson and Hartman (2003) posit that the initiation and implementation of innovation are related to aspects of culture and structure. Family businesses were found to have unique characteristics positively related to implementation (Gudmundson & Hartman, 2003). Liang et al. (2013) suggest that the family involvement in boards **strengthens** the positive relationship between R&D investment and innovation performance, whereas family involvement in management teams tends to **weaken** this relationship.

While there is extant literature on the effect of family involvement in the innovation management process, research into the corporate governance of innovation in family businesses is at its nascent stage. Family businesses are unique regarding the intersection among the three circles that Gerserk (1997) described: the business, family and owner. Some family firm attributes provide advantages in the innovation process while others may function as inhibitors. By providing clarity concerning the corporate governance of innovation in family businesses, family firms can become more aware of the various factors they can leverage or control at different phases of business development.

Our research examines three components of the proposed model of corporate governance of innovation: innovation strategy (why, where, when, how, what), control (who, how much), and monitor (outcome measurement). These foci provide a unique contribution to the knowledge of corporate governance of innovation in Chinese family firms.

CHAPTER 3: RESEARCH DESIGN, RESULTS AND ANALYSIS

3.1 Research Design

Our aim is to develop a model of corporate governance of innovation for Singapore Chinese family businesses. For this purpose, we conducted a qualitative study to better understand the under-explored dynamics of corporate governance of innovation in Chinese family firms. In this research, we adopt the common definition of family business as "**firms with substantial presence by the founder or the founder's relatives as owners and/or acting in leadership roles**" (Dieleman, 2018; Duran et al., 2015; König et al., 2013). This study adopts a grounded theory approach to study the dynamics of corporate governance of innovation in Chinese family firms.

This study attempts to contribute to the literature regarding corporate governance of innovation in Singapore Chinese family firms through the following research questions:

- What is the role of the board in the corporate governance of innovation in Singapore Chinese family firms?
- How does family influence affect the corporate governance of innovation in Singapore Chinese family firms?
- What are the key constructs of the corporate governance of innovation model for Singapore Chinese family firms?

3.1.1 Case-study Approach

A case-study approach is used as we seek clarity concerning the “why” and “how” behind the innovation governance process of Chinese family businesses, since case-study approaches have been found to be suitable for providing explanations rather than statistical information (Eisenhardt, 1983). A multiple-case study (Strauss & Corbin, 1998; Yin, 1994) on four Singapore Chinese family businesses was conducted to elucidate innovation governance in Chinese family businesses. A grounded-theory (Glaser & Strauss, 1967) approach was used in the case studies. "Grounded theory" is defined as "the discovery of theory from data – systematically obtained and analysed in social research" (Glaser & Strauss 1967, p. 1). Urquhart (2013) tabulated the different grounded-theory method coding procedures and described the originally proposed methods shared by Glaser and Strauss (1967) by comparing incidents applicable to each category, integrating categories and their properties, delimiting the theory and writing the theory. Eisenhardt (1983) found the case-study method to be especially relevant in research where the scholar seeks new insights and theory. The process is iterative and tightly linked to data and delivers theory that is often “novel, testable and empirically valid” (Eisenhardt, 1983, p. 532).

This study is divided into two phases. In phase 1, we conducted interviews with ten experts in the areas of innovation and governance. Seven out of the ten interviewees have been or are currently a board member. A semi-structured questionnaire for the expert interviews was developed based on literature reviews of the current body of knowledge on innovation governance and the dynamics of family firms (Appendix A). Data collected from phase 1 were analysed and the outcome was considered for our design of phase 2 interview questions for the case study research.

When selecting cases, Eisenhardt (1989) posits that qualitative samples should be purposive rather than random. Cases should be selected so that they are likely to replicate or extend the theory. Following this principle of selection, we chose our four family firms for the case-study research based on the following criteria:

- Ownership majority was held by members belonging to founder's family of Chinese heritage
- Owner or at least one of owner's family members is involved as a key management executive in the business operation
- Recognised by the industry as an innovative firm (i.e., obtained industry awards and/or is perceived as an industry leader)

The intent to create clear selection criteria is to ensure that the cases selected correspond to the research questions under investigation.

3.2 Data Collection and Analysis

Using the qualitative data analysis program Nvivo (QSR International, Version 12.1.0), we coded and iteratively analysed the qualitative data by alternating between the data and an emerging structure of theoretical arguments that corresponded to the research questions that we are focusing on. We used the three key steps described by Locke (2001): creating first-order codes, integrating first-order codes into second-order themes and delimiting the theory by aggregating theoretical dimensions. Figures 1 and 3 summarise the process and show the first-order codes, second-order categories and aggregate theoretical dimensions for phase 1 and phase 2 data collected respectively.

3.3 Phase 1: Expert Interviews

In phase 1 of the research we conducted ten interviews with experts in the areas of innovation and governance. The profiles of the experts interviewed are displayed in Table 1. Eight of the ten interviews were conducted face-to-face while two were via Skype call. All interviews were recorded, transcribed and analysed using grounded-theory methodology. We used a qualitative data analysis program NVIVO for data management and the open coding of the transcribed data from the interviews.

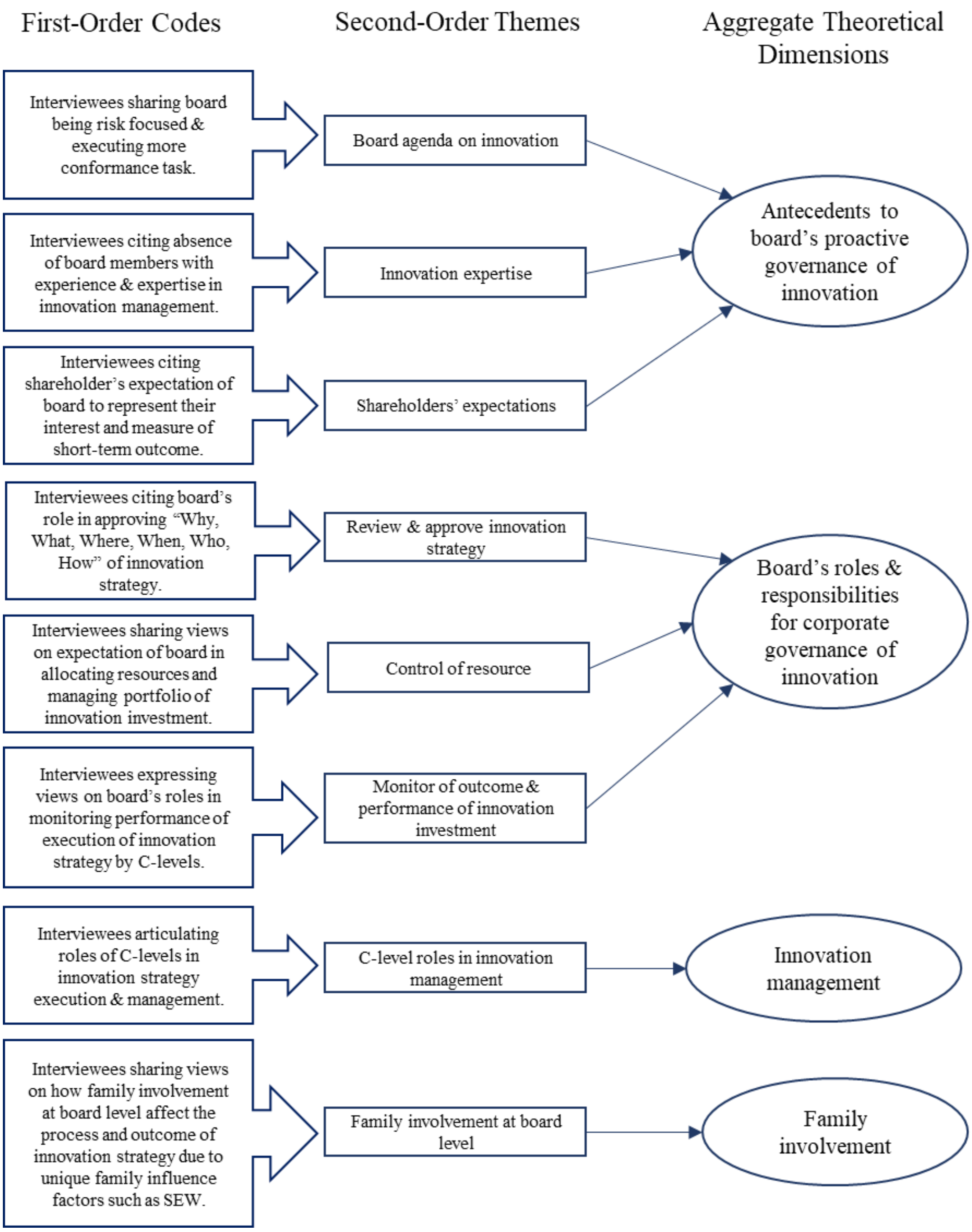
Table 1: Profile of Experts Interviewed in Phase 1

	Designation	Gender	Organisation	Remarks
1.	Managing Director	Female	Fortune 500 global management consulting and professional services firm that provides strategy, consulting, digital, technology and operations services	Seasoned strategist and collaborative leader with over 20 years of experience across industries globally. Specialises in the areas of business model innovation, corporate strategy and leadership
2.	Chairman	Male	National association of company directors	Independent board member of several listed and non-listed companies and non-profit organisations. Author of three books on social sector and change. Former managing director of global consulting firm
3.	Managing Director, Asia Pacific	Male	Management consulting firm advising enterprises on business strategy founded in 2000 by Harvard Business School professor	Strategic advisor, writer and speaker on topics of growth and innovation. Current board member of a government-linked media company
4.	Chief Innovation Officer	Male	One of the largest global providers of insurance, annuities and employee benefit programs	Independent board member of a Singapore statutory board. Former Chief Strategist Officer of a large Singapore listed company
5.	Former President	Male	University in Singapore	Independent board member of a French software company

	Designation	Gender	Organization	Remarks
6.	Strategy Professor	Female	Ivy League Business School in the US	Globally recognised expert on strategy, innovation and growth with an emphasis on corporate entrepreneurship. Recognised as top 10 management thinkers by global management award "Thinkers50" for two years. One of the most widely published authors in the Harvard Business Review and author of best-selling book
7.	CEO & Founder, Innovation Consultant	Male	Training and consultancy firm founded in 2014 focusing on innovation measurement and benchmarking with headquarters in Sweden	Launched 10 start-ups as well as acquired, turned around and sold more than 30 SMEs in Europe. Awarded Global Top 100 CEO by CEO Monthly in 2018
8.	Associate Professor	Male	University in Singapore	Director of Centre for Governance, Institutions & Organisations
9.	Associate Professor (Practice Track)	Female	University in Singapore	Scientific panel member of "The International Society for Professional Innovation Management" (ISPIM), advisor to Singapore university's lean transformation centre
10.	Professor emeritus of technology and innovation management	Male	Business school located in Lausanne, Switzerland	40 years of hands-on top management consulting and teaching experience with multinational corporations throughout Europe, USA and Asia. Coach to several start-ups. Author of numerous cases, articles and books

The experts were interviewed based on the questionnaire in Appendix A that covers the roles that boards should play in the corporate governance of innovation, the scope that should be included and the drivers behind the proactiveness of boards in governing innovation. Figure 1 shows the theme and theoretical dimensions that emerged from our phase 1 interviews.

Figure 1: Overview of Data Construct from Phase 1 Expert Interviews



We discuss the factors that affect the board's focus on the corporate governance of innovation in Section 3.3.1 and examine the roles and responsibilities of the different stakeholders: board members, top management team and family members involved in Sections 3.3.2 to 3.3.4. In Section 3.3.5, we crystallise our phase 1 research findings using a model that illustrates the different constructs of the corporate governance of innovation at the board level. The findings from phase 1 will be incorporated into our recommended checklist for CGOI for Singapore Chinese family firms.

3.3.1 Factors Affecting the Board's Proactiveness in Governing Innovation

A shared view of the interviewees is that while innovation is deemed of great importance to the sustainable growth of an organisation, the board of directors (BODs) does not actively drive innovation governance. The key reasons behind this view which surfaced from the interviews can be grouped into three key observations:

- BODs focus on risk of commission and not risk of omission
- Absence of board member with innovation management competency and experience
- Lack of shareholder pressure on the board to govern innovation

We study each of these observations that lead to our propositions regarding the antecedents to the board's proactiveness in governing innovation.

- **BODs focus on risk of commission and not risk of omission**

The board is responsible for ensuring conformance as well as performance of the firm. The monitoring role of the board is clear with compliance and regulatory aspects of work that must be fulfilled. Experts interviewed observed that the board of directors are **overwhelmed with governance-focused tasks** which also drive their risk-averse mindset:

*"What typically happens is that today's organisations **govern** and operate, overwhelm the time, effort and activity of both the board and the senior management team." Chief Innovation Officer, Global Insurance Services Provider*

*"The agenda is getting more and more crowded. And I suppose innovation is another entity that tries to make its way into the board; In my opinion, the boards these days are just too risk adverse. And because of **new regulation, new compliance requirement**, it pushes them into an even more inward looking, **risk avoidance** mentality." Associate Professor cum Director of Centre for Governance, Institutions & Organisations, University in Singapore*

*"I think a big part of the choices we see boards making is very **risk focused**. If you think about leaders and their leadership, it's a very difficult balancing act around managing risk. Risk of the future versus navigating for the present, and often boards and leadership are held accountable if you have done something that's risky, but you're never held accountable if you miss an opportunity. They should be thinking about how do you future-proof an organization. But what they wind up doing is risk,*

and we can understand why." Managing Director, Fortune 500 global management consulting and professional services firm

"Boards very often look at ***internal risk*** *of projects, but they don't look so much at external risk of disruption. A typical audit committee will look at all the risks in the financial terms and sometimes political risks, but they don't look at disruption risk." Professor emeritus of technology and innovation management, Business education school, Switzerland*

Observation 1:

Regulation and compliance requirements drive the board to be risk adverse, thus prioritising board agenda towards risk avoidance over pre-emption of future risk of disruption or displacement.

Matters which are immediate and urgent are always prioritised over those which are critical but not urgent. Regulations and compliance matters occupy most of the board's attention. Without a clear board mandate to drive the corporate governance of innovation, innovation will lack inclusion in the already-crowded board agenda.

- **Absence of board members with innovation management competency and experience**

Most board members are chosen based on their experience in large organisations, mostly from mature industries. The lack of suitable candidates at the board level who can effectively drive the discussion of innovation strategy represents a key impediment to the board's pro-activeness in driving an innovation governance agenda.

This problem begins with how board members are selected. One interviewee pointed out the issue concerning the appointment of board members by owners who chose people they trusted to represent their stance rather than from a competency-composition perspective:

"And that is a problem because you recruit board to represent the owners. And you put people now that you have faith in as an owner. 'Will you protect my ownership? Will you take my standpoint?' And you don't care about the composition of the board. That is a problem." CEO & Founder, Innovation consultancy and Training firm headquarters in Sweden

The intent is to choose board representatives who can protect the owners' interests. Even when the selection of board members is based on competency, the focus is often on professional competencies such as financial and legal and has nothing to do with innovation:

"I think that we have boards, which are composed of very capable, competent people, but who are chosen for ***competencies that have nothing to do with innovation****. They're chosen for their legal competencies, for their financial and audits competencies, but not necessarily for a deeper understanding of the industry." Former President, University in Singapore cum independent Board Member of a Global French software company*

When more closely examining the types of board members that will be valuable to driving the corporate governance of innovation, relevant experience and expertise in innovation management come into focus:

"In some respect, that concept of having a diverse board with one or two people who understand the impact of, in this case, digital disruption, and you could say innovation, to respond innovatively on the board, helps the board to be more biased towards ensuring that boards are responsive to the needs of the digital era." Chairman, National association of company directors

The board can also close the skill-set gaps through the formulation of a "technology advisory council":

"The critical issue is, how open and how aware is the management team of what's going on? The role of technology advisory councils is to make sure ... sometimes, you have, I know that some pharma companies have some Nobel prizes recipients, as part of that technology advisory committee simply just to make sure that they have the best knowledge in that advisory committee because they feel things are

changing so fast that unless they have some very talented people in their advisory committee, they might miss some big trends.“ Professor emeritus of technology and innovation management, Business education school, Switzerland

A key finding regards the knowledge gap in innovation management that hinders the board from being effective or even aware of their roles and responsibilities in making innovation strategy decisions:

*"I think both boards and management suffer from a lack of clarity in terms of what it takes to be innovative. I think that **misunderstanding is everywhere**. What people don't understand is it's not just about getting great ideas, it's about the ideation of great ideas, and then incubation, turning them into something that could be marketed. And I think that's a fundamental misunderstanding across both management and board level on those three processes." Strategy Professor, Ivy League Business School in the US*

Observation 2:

The nomination criteria of board members, centred on traditional professional expertise, lead to a lack of innovation experts on the board who can effectively drive the innovation governance agenda.

The board has a clearly critical role regarding the corporate governance of the organisation. However, the focus of the board has been on risk management, hence the observed dominance of board members with professional expertise in legal and finance areas. There is a need for board diversity in order to include board members with innovation management expertise and experience who can effectively drive the corporate governance of innovation.

- **Lack of shareholder pressure on the board to govern innovation**

It is simple to measure what has been accomplished but not opportunities missed. There is a lack of motivation for the board to drive innovation investment that is deemed high risk compared to established businesses. There is also insufficient shareholder pressure on the board to drive governance of innovation.

The board is expected to monitor the performance of the firm, and in the case of a publicly listed company the performance-monitoring portion may be short-term. As the interviewees shared, boards still function in a "business-as-usual" mode of operation:

"Well, I think the fact is it's business-as-usual. If you had a competitive advantage that you've been exploiting for a long time, then to do something different is a real change. And I think a lot of boards are still coasting on the business-as-usual framework. The penalisation for missing an opportunity is almost very small versus the penalisation for having missed a risk." Strategy Professor, Ivy League Business School in the US

There is no incentive for the board to drive innovation that is deemed "unpredictable" and “riskier”. It is also considered challenging to monitor the performance of the board in governing innovation investment, which one interviewee described as the "sin of omission" versus "sin of commission":

"I think it's always easier to measure sins of commission. We do something that goes wrong, and we measure that. Versus sins of omission, which is an opportunity we should've taken advantage of that we didn't. It's a very difficult balancing act around managing risk. Risk of the future versus navigating for the present, and often boards and leadership are held accountable if you have done something that's risky, but you're never held accountable if you miss an opportunity." Strategy Professor, Ivy League Business School in the US

“It's invisible 'til something horribly goes wrong, and then you're caught because you didn't think about a risk and it had left you vulnerable. However, if there was an opportunity, unless it was all the way like Kodak, but you missed it and you catch up, you're not penalised. So, if you think about how boards are rewarded and you think about how leadership is rewarded... you know, the penalisation for missing an opportunity is almost very small versus the penalisation for having missed a risk.” Managing Director, Fortune 500 global management consulting and professional services firm

Observation 3:

There is a lack of shareholder pressure on the board to drive innovation, and the performance of the board is still measured based on current business-as-usual operational risks.

The board's behaviour is shaped by the expectation of the shareholders. The current reward system for the board is still centred on operational risk and short-term financial performance. For the board to shift focus toward the corporate governance of innovation, shareholders' expectations must be aligned.

Considering this understanding of antecedents to the board's focus on the corporate governance of innovation, our research delves deeper into the scope of corporate governance that should be driven by the board.

3.3.2 Desired Governance of Innovation at the Board Level

Innovation strategy is part of broader corporate strategy. Researchers have long debated about the role of the board of directors regarding firm strategy (Hendry & Kiel, 2004; Schmidt & Brauer, 2006; Zahra & Pearce, 1990). When focusing on the aspect of innovation, a significant void in both academic research and practice surfaced regarding the board's role and how the governance process should be conducted. The interviewees mentioned the need for the board process to include:

- **Review and approve innovation strategy: Why, What, Where, When, Who, How**

The board has a "**fundamental responsibility**", as cited by one interviewee, to govern innovation in order to ensure survivability of the firm and to establish a clear direction for the organisation:

*"Innovation comes in because it can really disrupt products and market. That means the very survival, not just whether the firm is thriving. The very survivability. And in that context, I think the board will have a **most fundamental responsibility**. I think the board must play a very big role but not in the sense that they should decide what's R&D expenses, what is the direction of R&D, or where do you locate them. But more so the **broader directions of how innovation would redefine your business. What kind of innovation out there is threatening your business?**" Associate Professor cum Director of Centre for Governance, Institutions & Organisations., University in Singapore*

This may include "auditing" the company's current state of innovation:

"Auditing if you wish the capabilities of the company to follow the new technologies and new trends, etc. Some do have a technology advisory committee which basically tells them what's the state of the art in the industry or in their world and whether they are adequate. So, it is part of the board duties in my opinion to do some auditing of the capabilities and the understanding of the company." Professor

emeritus of technology and innovation management, Business education school, Switzerland

Besides providing clarity concerning the "why", the board is also expected to clearly establish the direction for "What does success look like?". The ability to state the goal the organisation desires from the innovation investment represents an important component of the governance process. The board delivers its value by questioning the proposed innovation strategy by the management team and thus "***elevate the conversation***", as shared by one interviewee. A key aspect of reviewing and approving the strategy for innovation includes determining the end state that the organisation desires:

"I am of the opinion that, when they talk about strategy, I have to set some targets in terms of **what you want to achieve in innovation**. *In particular, I always asked myself the question* **how much revenue should come from products that have been launched, or services that have been launched the last X years**, *X being a little bit dependent on the industry because it depends on the life cycles of the product."*
Former President, University in Singapore cum independent Board Member of a Global French software company

There is a need to ensure that the board has a process to provide clear directions for innovation investment and control mechanisms:

*"**The board can no longer take a back-seat role. They do need to put in place certain processes to ensure that there is some form of control.** Because I think*

governance by itself also has an element of control as well. But these control processes should not stifle innovation. That is more for accountability. The Board, at first, ***are expected to give high level directions and guidance when it comes to strategy objectives and giving rather broad guidelines in terms of quantum of return on investment****, with a broad range on what are the return of investment; while understanding that there...given a* ***portfolio of different investments****, assets and investment plans, you probably need to have a range of ROIs. But without giving very specific operational details." Associate Professor (Practice Track), University in Singapore*

The board's role is to ensure the appropriate conversation occurs at board meetings with the top management team in order to align the strategic direction for the organisation concerning its innovation investment and management. The board agenda should include strategic review and approval of the management's proposed innovation strategy as well as execution plans with clarity in terms of: why innovate, where to innovate, how to innovate, how much to invest in innovation and with whom to innovate.

- **Control of resources**

The board must ensure that the correct resources are allocated where innovation matters. This includes its role to appoint the appropriate leadership at the top that can fulfil the approved innovation strategy.

"Appointing top management with innovation focus, it's the board that needs to do that." Former President, University in Singapore cum independent Board Member of a Global French software company

Control of resources also includes the decision of **how much to invest** in innovation.

"The board needs to be involved in the resource allocation process, I think that's one of the key areas, which is making sure that management is allocating adequate resources to investment for the future. I think that's a huge part of where the board needs to be involved." Strategy Professor, Ivy League Business School in the US

As several interviewees pointed out, providing a clear portfolio may represent a means to achieve the desired clarity for monitoring:

"I have advised colleagues to have a clear dashboard about innovation performance. I refer to the number of new products as a percentage of the overall revenue. I think you also have to have some indicator of the pipeline of new products or new systems. In that pipeline, where the different projects are in different stages. I don't think that is for the board to judge the individual projects, but to look at whether the portfolio is a healthy portfolio." Former President, University in Singapore cum independent Board Member of a Global French software company

As part of the corporate governance of innovation, the board must be mindful about the selection of C-suites that can drive the approved innovation strategy.

Besides appointing the appropriate candidates to support the organisation's innovation strategy, the board must control resources in terms of investment into innovation. Viewing portfolios represents a possible approach that provides the board an opportunity to monitor whether the organisation's investment into innovation is adequate for future growth.

- **Monitoring of outcome and performance**

The board's role also includes monitoring the performance of the management team in executing the agreed strategy. It is difficult to measure innovation performance however, which is why we rarely observe the board measuring the innovation performance of the C-suite.

"Boards do not measure innovation performance. First because it is difficult to measure innovation performance, you have to measure input and output and very often more than financial performance. But the innovation performance for example, how many patents the company will be creating, how well protected it will be—quite a lot of performance measures. And it's important also that they should give the CEO some targets regarding innovation performance." Professor emeritus of technology and innovation management, Business education school, Switzerland

For innovation, the outcome must be measured differently:

"One way to evaluate, from a board perspective, from a monitoring perspective, is as follows: If you look at a management team, or the CEO herself, the question to

ask isn't, ‘Did she hit her numbers?’ The question to ask is, ‘Over her five-year tenure, did she leave the company in better competitive shape, and a better strategic position, a better posture, than when she joined?’" Chief Innovation Officer, Global Insurance Services Provider

It is always easier to measure the “sin of commission” compared to the “sin of omission”:

“I think it's always easier to measure sins of commission. We do something that goes wrong and we measure that. Versus sins of omission, which is an opportunity we should've taken advantage of that we didn't.” Strategy Professor, Ivy League Business School in the US

Hence, the board must ensure that they ask the correct questions with a focus on innovation, such as one suggested by an interviewee:

"I would often ask a CEO how much of his or her portfolio of innovation projects were failing. If they answered me less than 40%, I would say you don't innovate." Former President, University in Singapore cum independent Board Member of a Global French software company

The board needs to monitor the executive team’s performance and outcome of innovation management. The measurement of performance can be achieved through establishing a “Key Performance Indicator” (KPI) for the CEO in terms of percentage of revenue generated from new products launched over the past two years, number of patents filed, measure of success for projects in innovation portfolios etc. The measures would differ across different industries and organisations. The board must incorporate such measurements to the CEO's remuneration in order to drive the desired focus and behaviour.

3.3.3 C-level Role in Innovation Management

What distinguishes the roles of management from the board is that management is responsible to execute the approved strategies and to provide recommendations concerning what and how to innovate using their domain knowledge and entrenched roles in business operations. Hence, we describe the role of the C-level as innovation management since they must drive implementation of the strategies as well as the appropriate organisational structure and culture to achieve desired goals. The ability of the CEO to be ambidextrous and possesses the domain expertise necessary to determine the correct mix of innovation portfolios also surfaced in the interviews:

"And in my view, if a C-level person doesn't know what they're doing, they shouldn't be in that role. That's just flat out, and it is a confidence thing. Like, CEO, she needs to go to her board and say, 'We're applying this more like 60, 30, 10, and here's why. A lot of opportunities to differentiate, and here's the activities we're gonna go do.'" Chief Innovation Officer, Global Insurance Services Provider

"CEOs of innovative organisations need to have two faces. They used a nice word, ambidextrous, but you basically need to be schizophrenic. One moment you have to

say to this group, 'You need to be as efficient as possible. I'm going to take away resources, and you will need to increase productivity.' Then, turn to another person and say, 'Take your time. Be creative. Try out things. Experiment.'" Former President, University in Singapore cum independent Board Member of a Global French software company

While CEOs must embrace the responsibility to drive innovation outcomes in the organisation, the rest of the C-suites are equally important to ensuring the transformation of businesses:

"Now, most Americans faculty look at the CEO. There's always a CEO, CMO, CTO. My experience ... I've sort of 45 years of experience to show that CEO alone is insufficient. It's the entire C-Suite, the entire executive committee that must be adequately prepared to handle a transformation." Professor emeritus of technology and innovation management, Business education school, Switzerland

Having the correct team of C-suites in place with the competency to drive innovation management aligned with the board's mandate is key to the success of innovation investment (Crossan & Apaydin, 2010; Smith & Tushman, 2005). In the framework of innovation governance, we need to ensure clarity regarding "who" drives innovation and in "which area". The importance of having the proper management team in place to drive innovation was emphasised by interviewees and is also aligned with the innovation governance models of Deschamps and Nelson (2014). The board must ensure the selected management team possesses the capability to drive the approved innovation strategy as well as the clarity of roles and responsibilities of each innovation driver.

3.3.4 Family Involvement at the Board Level

Family involvement at the board level changes the dynamics of the board for governing innovation. The key difference seems to lie in the role of controlling family member, usually the Chairman and/or CEO of the organisation, who drives the innovation mandate from the board to the management level. The long-term view of family firms also means that the organisation can withstand short-term pressure for financial outcomes and can invest in a strategic future. Socio-emotional wealth (SEW) has long been recognised to be a key variable that affects decision-making in family businesses (Gomez-Mejia et al., 2007; Berrone et al., 2012). Family businesses are shown to employ a more long-term view compared to non-family firms. With family members at the board level, decisions to invest in innovation, which typically require longer time frames to reap returns, can be executed rather swiftly:

"In non-family boards, sometimes the problem they have is they are paralysed. Paralysis by analysis. They get too analytical and always due diligent, due process, until nothing happens…A lot of board members (non-family members) just have the mentality, I'm here three years, at most nine years. Whereas if you have family member executives, this business is for life." Associate Professor cum Director of Centre for Governance, Institutions & Organisations, University in Singapore

"I think for family business, the board (non-family members) may be less expected to hold a longer-term vision or to put in place in papers, because that is something that is really driven very much by the founder and the CEO and major shareholder. But for non-family business, I would say that in order for innovation to take place, then they can play a bigger role in setting the stage, the structure, and the environment to allow longer runway. The time you give for innovation to get started and to see results, to fail, and try other things. So that runway is something for boards to mandate." Associate Professor (Practice Track), University in Singapore

The family influence on how innovation governance occurs at the board level will be further explored in the case studies.

3.3.5 Findings from Phase 1 Expert Interviews

From the expert interview data in phase 1, a model of corporate governance of innovation (CGOI) at the board level emerged, as shown in Figure 2 below.

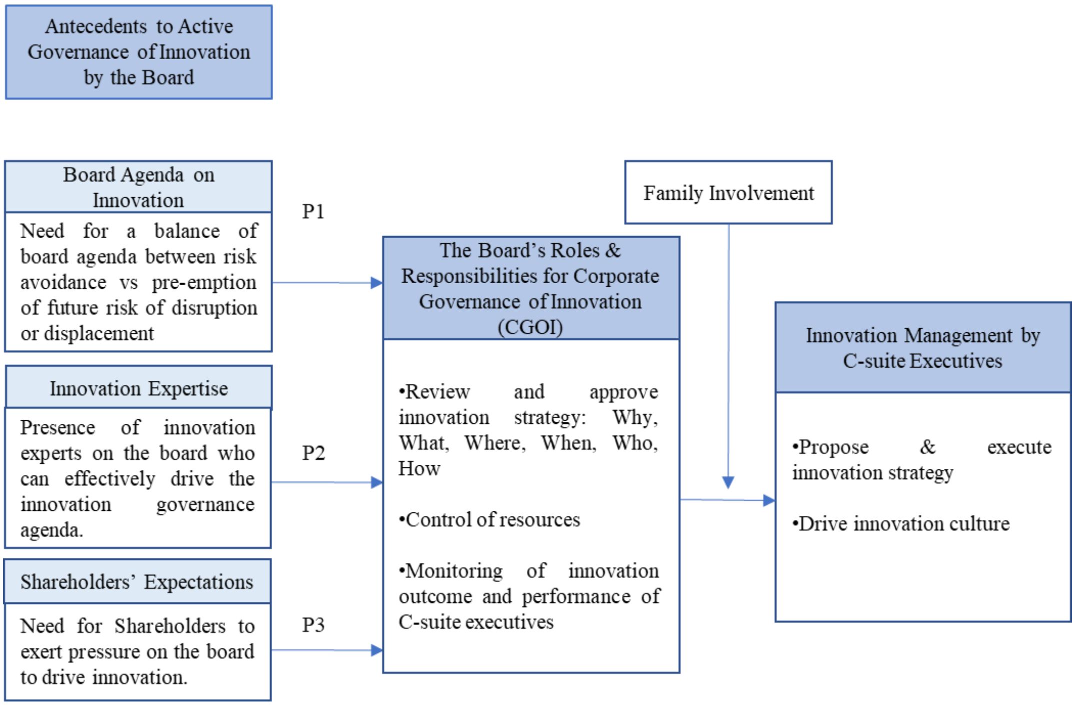


Figure 2: Corporate Governance of Innovation at the Board Level

Three key antecedents to proactiveness of the board in driving the corporate governance of innovation emerged from our phase 1 data analysis:

- **Board Agenda on Innovation**

Regulation and compliance requirements influence the board to be risk adverse and thus prioritise the board agenda towards risk avoidance over pre-emption of future risk of disruption or displacement. There is a need to ensure that innovation represents a key agenda in the board meeting. Board processes must be incorporated to ensure that board-level discussions occur concerning risk management of current projects as well as innovation investment for pre-emption of future risk of disruption. We posit that:

Proposition 1:

The more pronounced the innovation agenda enacted, the higher the motivation level of the board and management to make innovation work.

- **Innovation Expertise**

From the interview data collected, we observed that the nomination criteria of board members centre on traditional professional expertise, which leads to a lack of innovation experts on the board who can effectively drive the innovation governance agenda. This hinders the level of corporate governance of innovation that occurs at the board level. Hence, we posit that:

Proposition 2:

The greater the domain expertise and experience in innovation management at the board level, the more pronounced the firm's corporate governance of innovation.

There is a need to be mindful in the selection of board members in order to incorporate diversity of expertise in innovation management beyond professional expertise in functional areas such as finance, legal and industry domains. Incorporating board members with innovation management expertise will help to ensure a balanced board agenda with appropriate focus on the risks of disruption and displacement.

- **Shareholders' Expectations**

Shareholders should expect the appointed board representatives to not only protect their interests in short-term decisions but to also employ a long-term strategy to ensure business sustainability and profitability, pre-empting disruption and displacement of business.

Proposition 3:

The greater the expectation of shareholders vis-à-vis organisational innovation outcomes, the higher the motivation level of the board in driving the corporate governance of innovation.

Shareholders should clearly articulate their expectations of the board in driving the innovation agenda. This will impact the board's level of focus on the corporate governance of innovation at the organisational level.

The data collected from phase 1 expert interviews regarding the board's roles and responsibilities in the corporate governance of innovation are aligned with Deschamps and Nelson's (2014) proposed role of the board in governing innovation.

There are three key areas that clearly fall under **the roles and responsibilities of the board** in governing innovation:

- Review and approve the innovation strategy: why, what, where, when, who, how
- Control of resources
- Monitoring of innovation outcomes and performance of C-suite in the execution of innovation strategies

These are distinct from the roles and responsibilities of the top management team in the organisation who drive the innovation strategy's execution as well as the appropriate culture to achieve desired results.

Family involvement is observed to be a mediating factor that impacts the effectiveness of driving the corporate governance of innovation from the board level to innovation management at the executive level. The ways in which family involvement impacts the corporate governance of innovation will be further studied in phase 2, where we utilise case study research on four Chinese family firms in Singapore to develop a model that can inform both academics as well as practitioners.

The model proposed in Figure 2 provides clarity concerning the roles and responsibilities of the board in driving the corporate governance of innovation as well as the key antecedents to ensure their focus. The findings from phase 1 are incorporated into the checklist presented in Chapter 4. A comparison of the model with the roles and responsibility of the board in Chinese family firms is performed in Section 3.4.3, and recommendations are provided through the comparison.

3.4 Phase 2: Case Study

In the phase 2 case study research, we seek to expand our understanding of the constructs of the corporate governance of innovation model in Singapore Chinese family businesses.

3.4.1 Case Selection and Data Sources

In order to explore the links between different perspectives of family influence on the corporate governance of innovation, we utilised a qualitative approach through case studies. For this case study approach, four Singapore family-owned-and-controlled firms were selected that fulfilled the following three conditions: (1) Ownership majority was held by members belonging to founder's family of ethnic Chinese heritage; (2) owner or at least one of owner's family members is involved as a key management executive in the business operations and (3) recognised by the industry as innovative firms. The key parameters of the family firms are listed in Table 2.

The research design relied on multiple sources of information comprised of interviews with C-suite-level company executives, annual reports, company websites and media releases as well as interviews. The primary data collection method used involved semi-structured interviews with C-suite-level company executives. The interview questionnaires are attached in Appendix B. The interviews lasted between 45 minutes and 1 hour, and all were conducted face-to-face following the informed consent of the participant. The author voice-recorded all interviews and took notes. The audio recording was then transcribed verbatim.

For each case study, we provided a description of the background of the company as well as their organisational structure, innovation focus and current state of innovation governance. The current state of innovation governance is described based on Deschamps's (2013) model of the scope of innovation governance:

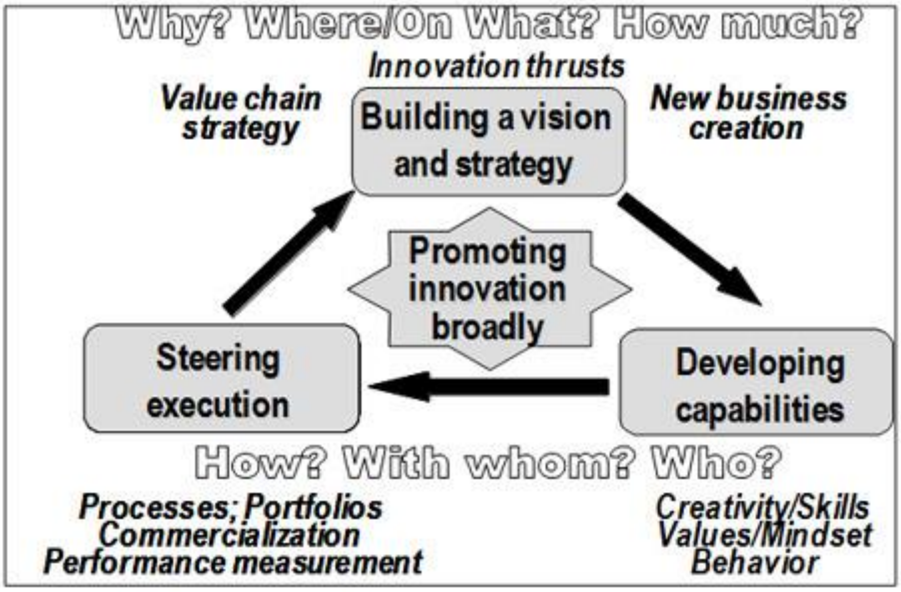


Figure 3: The Scope of Innovation Governance (Deschamps, 2013)

Case Study 1 – Aquaculture Co.

- **Background**

Aquaculture Co. was incorporated in 1998 and has been listed on the Singapore Exchange since 2000. According to information from the company's corporate website, it was established by two brothers, with one being the father of Aquaculture Co.'s current executive chairman and the other the father of its current deputy managing director. The company began as a pig farm and in 1985 was converted into a fish farm breeding guppies. It has since grown to become an integrated ornamental fish service provider engaged in business ranging from breeding, farming, and trading of over 1,000 species of ornamental fish to manufacturing and distribution of aquarium and pet accessories. The company garnered 52 awards since 2001 and is widely recognised for its corporate governance, transparency and innovation.

- **Company Structure**

Aquaculture Co. is a publicly listed company on the Singapore Stock Exchange (SGX). Based on the company's 2017 financial report, about 44% of shares are owned by the family. The current family members involved in company operations comprise second- and third-generation family members. Two of the eight board members are family members while three out of the eight of the top management team are family members.

- **Innovation Focus**

Aquaculture Co. has strongly emphasised value creation and innovation, and it is the first company in Singapore in the ornamental fish industry that strived for ISO 9002 certification in 1996. According to the company's Chairman cum Managing Director (MD), it started to innovate its internal processes in 1997 by semi-automating their packing processes during a time when most other fish farms still relied on manual processes:

"But we semi-automated. We also integrated the weighing machine, computers and all these to generate packing orders or the invoice. We started the whole thing back in 1997. There was a government agency called Productivity Board which helped us".

The Chairman of Aquaculture Co. regards technology as a key enabler of innovation in his company. Possessing a strong belief that technology is key to transforming the way they work, in 2009 he established an integrated R&D division to spearhead the firm's research and development efforts (Menkhoff, 2018).

"No matter what kind of new things you do, you have to involve technology. So, technology is something that I wanted to put in. Before I retire, I want people to call 'Aquaculture Co.' a technology company. Not a fish company because, regardless of what we do, we use technology to enable what we are doing".

A notable success due to Aquaculture Co.'s R&D efforts concerns a new filtration system that uses electrolytes to break down ammonia while retaining minerals. According to the General Manager of Aquaculture Co, the system was sold to other aquaponic farms and the Singapore Zoo as well. Besides technological innovation, the company is also venturing into adjacent industries and innovating around its business model. Leveraging its expertise with fish farming technology, it has now expanded into the edible fish business.

Innovation investment and strategy are driven by the C-suite at Aquaculture Co. The Chairman cum MD of Aquaculture Co. views the board of directors as advisors in specific domains such as legal, finance and technology. One board member is a professor at a Singapore university who specialised in aquaculture technology. The professor is viewed as the domain expert who advises Aquaculture Co. on research and development. In addition, he provides connections to external collaborators for Aquaculture in new areas of technological explorations.

- **Current State of Innovation Governance**

Building a vision and strategy	**Why Innovate?**	**Status**
	- Clearly stated mission statement with focus on innovation. - Strong commitment by Chairman cum MD and top management of Aquaculture co. in leveraging on innovative products to differentiate itself for "survival" of business.	
	Where to Innovate?	
	- New Product creation: Clear focus on technological innovation in core business of breeding of fish and fry. - New Business expansion: Driving innovation in business model through adjacent market of edible fish. - Incremental innovation: Encourages every staff to innovate in daily operation and processes.	
	How much to innovate?	
	- No fixed budget. Chairman cum MD believes in "gut feel" and invest when opportunity arises.	
Developing innovation-enhancing capabilities	**Values & Culture**	
	Strong innovation culture with embedded processes and mechanism in place: - Recognition and rewards for staff who drive innovation initiatives - Achievement of industry awards and certifications aligned to innovation focus - Engagement processes to reinforce innovation culture through informal coffee chat sessions with staff, regular town hall communication sessions.	
	Domain expertise	
	- Board member includes professor from university focusing on aquaculture research - Tacit knowledge of long serving staff and family members.	
	Soft skills e.g. customer sensing, ideas and concept evaluation, team management, venture management	
	-Believe in experiential learning through on-the-job training e.g. sent a third-generation family member to China as GM. - Expose staff to emerging technologies and global best practices through overseas study trip and seminars.	
Steering innovation	**How to innovate more effectively?**	
	- Innovation process is not structured. - Key investment decision by Chairman cum MD based on "Gut Feel". - Incremental innovation through ground up staff driven initiatives.	
	With Whom to innovate?	
	Decision on partners to co-innovate lies with Chairman and top management. Trust in key personnel is one of main decision driver: - Work closely with Institutes of higher learning on technology innovation. - Business model innovation through collaboration with in-market partners such as China partners for edible fish.	
	Who should be responsible?	
	- Chairman cum MD is the key decision maker for large investment projects. C-level clearly responsible for innovation investment. - Independent board members perform advisory roles. - Staff are responsible for incremental innovation in their individual area.	

High clarity and clear strength

High clarity. Area of strength with some opportunity for improvement

Areas of ambiguity exist. Potential threat if weaknesses not addressed.

Ambiguous. Area of weakness

Case Study 2 – Marine Co.

- **Background**

Marine Co. was listed on the SGX in 2005. The company's roots trace back to 1962 when its founder, together with two other business partners, began a business in electronics goods trading. In 1988, the business partners decided to part ways due to differences in business direction. Its founder then focused Marine Co.'s core business on supply chain management in the marine industry. Marine Co.'s second-generation leaders elevated the business to new heights through both geographical expansion into Vietnam, China, India and the Middle East as well as by capturing new adjacent business opportunities through expanding product and services.

The company now has four key strategic business pillars: supply chain management, design and manufacturing solutions, engineering solutions as well as surveillance and cyber security solutions. Marine Co. serves customers mainly from oil and gas, marine and offshore as well as industrial and petrochemical sectors. This is a sector that has faced multiple global challenges. Under the leadership of the second generation, Marine Co. has diversified its business into cyber security and information technologies which represent growth sectors unlike its core business sector concerning marine and offshore industry.

- **Company Structure**

The company features a board helmed by the second-generation leaders. The executive Chairman cum CEO is the second son of the founder, who succeeded the chairman role from his elder brother that passed away in 2016. The CEO's younger brother is the Chief Operating Officer of the organisation and serves on the board as a director as well. There are five family members including third-generation family on the management team of nine. The family owns 60% of the company's shares.

- **Innovation Focus**

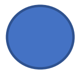
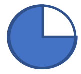
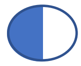
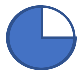
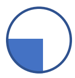
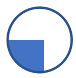
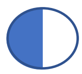
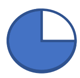
Marine Co.'s leadership team knew that in order to remain competitive in their industry, they had to innovate and value-add beyond products:

"In the past, Marine Co. was very product-based. Over the years we have developed it to become solution-based." Executive Chairman cum CEO, Marine Co.

As they expanded their solution-focused capabilities, they ventured into adjacent industry sectors such as LED lights for marine use. Joint ventures and acquisition represent means deployed by Marine Co. in order to equip itself with the necessary skillsets and talents. The C-suites of Marine Co. have outlined a clear direction of innovation focus for the organisation, namely environmental, electrification and digitalisation. As the maritime industry evolves, Marine Co.'s management team wanted to innovate and set the industry benchmark in delivering solutions that are environmentally friendly and sustainable for their clients. They observe that onboard equipment is evolving from mechanical to electrical and hence decided to invest in solutions that provide vessels with electrical engines that reduce polluting emissions. Digitalisation represents the third pillar of innovation focus as they strive to equip customers with solutions for protection from cyber security risks and to improve current business processes using straight-through processing and automations in order to improve productivity and business efficiency.

Marine Co.'s independent board of directors includes a veteran from the power and energy sector who provides advice to Marine Co. in the technical domain. The other two independent directors hold expertise from legal and finance domains. The innovation strategy is collectively devised by the C-level executives of Marine Co. The Chairman cum CEO of Marine Co. is viewed as the key decision-maker regarding innovation investment.

- ## Current State of Innovation Governance

Building a vision and strategy	**Why Innovate?**	**Status**
	- Clear commitment by Chairman cum CEO to invest into innovation to differentiate the company from competition and to drive business growth amidst challenging industry landscape in marine industry. - Alignment of vision across business unit heads through formation of top management committee to drive innovation and growth.	
	Where to Innovate?	
	- In the core business of Marine industry, solutions that reduce carbon footprint in alignment to industry legislations. - Diversification into other industry through acquisition of cybersecurity solution entity that was proven in marine sector and has potential across other industry sectors.	
	How much to innovate?	
	- No fixed budget. Investment is based on business case and decision by C-level driven by motivation to grow.	
Developing innovation-enhancing capabilities	**Values & Culture**	
	- Existing corporate culture is risk averse and conservative. This is influenced by long serving employees in marine sector. - Management driving culture change through staff engagement and communications. An area that is still work-in-progress.	
	Domain expertise	
	- Tacit knowledge from long serving employees and family members in marine industry. - New technology through acquisition of a cybersecurity and surveillance company. - Leverage on institute of higher learning for research and development of emerging technologies.	
	Soft skills e.g. customer sensing, ideas and concept evaluation, team management, venture management	
	- Lack of innovation soft skill set due to incumbent base of employees in marine industry sector that is relatively slow in its pace of change. - Third generation family leaders driving changes through bringing in new talent and introduction of digitalisation.	
Steering innovation	**How to innovate more effectively?**	
	- Driven by top management through partnering with industry experts and through acquisitions. - Ground up innovation is lacking due to incumbent employees base with conservative mindset.	
	With Whom to innovate?	
	- Work closely with institutes of higher learning on R&D for emerging technologies.	
	Who should be responsible?	
	- Chairman cum CEO is key decision maker for large investment projects. - Independent board members perform advisory roles and provide network connection in marine industry as needed by top management team. - Top management committee formed to drive business innovation and growth focus with measure of success built into leaders' performance measurement.	

 High clarity and clear strength

 High clarity. Area of strength with some opportunity for improvement

 Areas of ambiguity exist. Potential threat if weaknesses not addressed.

 Ambiguous. Area of weakness

Case Study 3: TCM Co.

- **Background**

TCM Co. was founded in 1879 in Gopeng, Perak, Malaysia by its founder operating a single medical shop. It was the second-generation leader, the founder's only son who brought the business to the next level by establishing himself in Malaya and Singapore and becoming a leading figure in tin mining and rubber plantation businesses by the 1920s. The second-generation leader expanded the medical shop beyond Gopeng, Malaysia to Singapore. The traditional Chinese Medicine (TCM) business has grown from a small, homegrown business to a regional company with retail stores in Hong Kong, Macau, China, Malaysia, Singapore and Australia as well as two factories in Hong Kong and Malaysia. The company was listed on the SGX in 2000 but was delisted in 2016.

- **Company Structure**

The company features a board helmed by a fourth-generation leader who was the CEO of the company known to be instrumental in elevating the homegrown business to a global level through its listing on the SGX in 2000. He hired a professional CEO when he stepped down in 2017 but remained the chairman of the board. The family owns 23.8% of the company's shares with the private equity firm's injection of capital in 2016 when the company was delisted from the SGX and became private.

- **Innovation Focus**

TCM Co. is viewed as a game changer in its industry by transforming the way TCM is retailed. It was the first in the industry that redesigned the look and feel of traditional medical halls to look like a designer store:

"We started with the design, actually. I think just changing the look and feel of the stores, retail design, packaging design. To me it was pretty straightforward. People might think that, why should the medical hall go and spend money employing good interior designers, and having expensive materials they install? I think we changed the industry that way. We influenced the industry that way. Now you see a few more chains have come up. At least they have some basic principles of retail design, and they look decent." Chairman, TCM Co.

TCM Co. also transformed the packaging of TCM products to reach a broader segment of customers. Its innovative culture is also demonstrated in the creation of new revenue streams from its "gifting" business of retailing hampers with TCM products.

The chairman of TCM Co. shared that his expectation is for every business leader to innovate, whether in business operations or new product development:

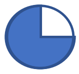
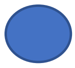
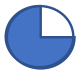
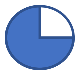
"At the basic operating level, you have to think about what you innovate, how you innovate, in order to increase your business. It's just improvements to how we can develop the business on a day-to-day basis, right? It includes things like your whole CRM program, marketing, new ways of marketing, new ways of

reaching the potential customers. At a corporate level you are looking at mostly longer-term things. It includes product development, partnership with universities and so on."

TCM Co. operates a research lab where they investigate new product development. Research heads and scientists are hired to drive product development. The investment in R&D for new product innovation is evident from the patents owned by TCM Co.

The Chairman of TCM Co.'s board champions TCM Co.'s innovation culture and focus. As the fourth-generation family leader, he transformed TCM Co. by disrupting the business model of his industry. He establishes a clear focus for TCM Co.'s innovation strategy and demands his staff to drive innovation in their area of responsibility. The innovation strategy and execution are viewed as the responsibility of the executive team. TCM Co. has also established a "scientific advisory board" to provide guidance to TCM Co. regarding product research and development.

- **Current State of Innovation Governance**

Building a vision and strategy	**Why Innovate?**	**Status**
	- Chairman set the foundation of innovation through redefining TCM retail shop concept that is seen as a "Game changer" in the industry. - Clear vision and strategy in driving new revenue growth through product innovation.	
	Where to Innovate?	
	- Commitment in product innovation with appointment of Chief Scientific Officer and patent filing. - Regular strategic review of percentage of revenue from new product launched in last three years set clear focus of company in driving new product innovation.	
	How much to innovate?	
	- No fixed budget. Established a Scientific Advisory Board (SAB) that will provide recommendation to CEO and board on matters of science, medicine and emerging technologies that are relevant to the growth of the Group. SAB also recommends product innovation and strategic initiatives based on emerging technologies and scientific advancement.	
Developing innovation-enhancing capabilities	**Values & Culture**	
	- Establishment of SAB demonstrated the value that TCM Co. placed on the development of new products and capabilities for the group, to ensure on-going relevance and innovation.	
	Domain expertise	
	- Strong domain expertise driven by scientific research. Establishment of SAB and innovation labs in TCM Co. entrenches its leadership position in the industry.	
	Soft skills e.g. customer sensing, ideas and concept evaluation, team management, venture management	
	- Leverage on company wide "Design Thinking" training to drive focus on consumer centric innovation. Use of concepts such as "Popup" store to test new ideas with agility shows the existence of soft skills in TCM Co. in driving innovation.	
Steering innovation	**How to innovate more effectively?**	
	- Chairman of the board, with his dual role as a family owner, sets the focus of innovation and expectation of innovation outcomes. - Product innovation driven by SAB. - Incremental innovation through ground up staff driven initiatives.	
	With Whom to innovate?	
	- SAB recommends collaboration strategy with external partners.	
	Who should be responsible?	
	- CEO and Scientific Officer responsible for driving strategic innovation initiatives. - The board performs advisory role and provides strategic guidance to C-suite - SAB is responsible for making recommendations at corporate level for product innovation. - Incremental innovation responsibility lies with every employee.	

 High clarity and clear strength  High clarity. Area of strength with some opportunity for improvement  Areas of ambiguity exist. Potential threat if weaknesses not addressed.  Ambiguous. Area of weakness

Case Study 4 – Integrated Oil Co.

- **Background**

Integrated Oil Co. was founded in the 1950s. The second-generation leader further grew the business to become an integrated agri-business that is now one of the largest palm oil processors in the world by capacity. Integrated Oil Co. produces a wide range of refined and fractionated vegetable oils and fats principally from palm oil. The company has integrated operations throughout the edible oils and fats value chain, including sourcing and processing of raw materials as well as packing, branding, merchandising, shipping and distribution of the products. Integrated Oil Co.'s products are sold to customers in more than 100 countries, and the company became listed on the SGX in 2010.

- **Company Structure**

The second-generation successor, the eldest son of the founder of Integrated Oil Co., is the current executive Chairman of the organisation. He has four children, of which three are actively involved in the company operations. His eldest daughter is the CEO of the company and is assisted by her sister who holds the COO position. The youngest son is involved in the trading business of Integrated Oil Co. but is not part of the senior management team. Integrated Oil Co. is a publicly listed company on the SGX with 85% of its shares held by the family. The Chairman, CEO and COO of Integrated Oil Co. sit on the board alongside four independent board members and one executive board member who is the organisation's head of risk management. The three family leaders also formed part of the company's seven-member senior management team.

- **Innovation Focus**

Integrated Oil Co. believes in investing in R&D as a catalyst for change in product innovation. The organisation has an "Innovation and Knowledge Management Centre" that incubates new commercial solutions based on customer insights and needs. Integrated Oil Co. does not limit its innovation efforts to product development, as the organisation has also driven business expansion though investment in a new palm-oil refinery, a palm-oil-based dairy manufacturing facility and a biodiesel plant in Malaysia. It has also added rice, dairy and palm-based soap to its product portfolio.

The focus of Integrated Oil Co. is clear regarding driving product innovation and business expansion:

"First is product creation. Secondly, it's channel creation." Chairman, Integrated Oil Co.

Integrated Oil Co. focused on product innovation through collaboration with key industry experts. Using their domain knowledge of the industry and its challenges, they focused on driving product innovation that enables them to achieve increased value:

"I have to develop so-called alternative proteins. One is using insects. The other is from molasses and sugar. The first thing we did was we tried to look for lactic acid, produce lactic acid that is used as an antiseptic, kill germs and all that, so that all these animals don't need antibiotic, antibiotic substitute. So, we approached XXX University and work with the professors. Then we want to look into algae, which is the biggest source of omega 3, to rear salmon. So, we went to ... My board director recommended this Professor xxx. He's the head of oceanic science in University of Malaya. So, that's what I meant by climbing up the knowledge tree, going up and up." Chairman, Integrated Oil Co.

Besides product innovation, Integrated Oil Co. has also leveraged their established channel distribution network and market intelligence to expand their business via adjacent industries such as dairy products.

The Chairman of Integrated Oil Co. is also the second-generation family leader who drove the global expansion of the business. He is viewed as the driver of innovation in the organisation. Innovation investment decisions are mainly handled by the Chairman and CEO of the organisation. The independent board members are not viewed to be involved in governing innovation.

- ## Current State of Innovation Governance

Building a vision and strategy	Why Innovate?	Status
	- Innovation very much driven by Chairman, supported by C-suite with focus on product innovation to drive growth and retain market leadership.	
	Where to Innovate?	
	- Product innovation in core business is a clear focus, e.g. establishment of "Innovation and Knowledge Management Centre". - Business model innovation driven by tacit knowledge of channel partners in different market and opportunistic in nature.	
	How much to innovate?	
	- No fixed budget. Investment based on business case and decision by C-level driven by motivation to grow.	
Developing innovation-enhancing capabilities	**Values & Culture**	
	- Integrated Oil Co. as a family business values long serving employees and does not endorse "hire-and-fire" mode of operation. Long serving employees are operation focused and resistant to change which hinders innovation drive. - Innovation is top-down decision driven by family leaders.	
	Domain expertise	
	- Tacit knowledge from long serving employees, channel partners and family members in integrated Oil Co. ensures its strong domain expertise in its core business. - Long term relationship established with channel partners in different markets provides the local market knowledge needed for Integrated Co. to evolve and grow its product portfolio and market share. - Acquire emerging technology and knowledge through acquisition and partnership with research institutions.	
	Soft skills e.g. customer sensing, ideas and concept evaluation, team management, venture management	
	- Lack of innovation soft skill among core employee base due to incumbent base of employees in industry sector that is relatively slow in its pace of change. - Third generation family leaders take a top-down approach for innovation, driving innovation initiative centrally.	
Steering innovation	**How to innovate more effectively?**	
	- Driven by top management through partnering with industry experts and acquisition. - Ground up innovation is lacking due to incumbent employee base with conservative mindset.	
	With Whom to innovate?	
	- Work closely with research institutions worldwide to gain access to expertise. - Acquired entity with promising emerging technologies and innovation.	
	Who should be responsible?	
	- Chairman and CEO are key decision makers for large investment projects. - The independednt directors are not involved in innovation strategy but provide useful connection to collaborators.	

High clarity and clear strength

High clarity. Area of strength with some opportunity for improvement

Areas of ambiguity exist. Potential threat if weaknesses not addressed.

Ambiguous. Area of weakness

Table 2: Profile of Case Study Companies

Company	Turnover (S$Mil)	No. of Employees	Industry	Generation	Interviewees	No. of family members out of total board members	No. of family members out of total management team	Estimated % share holdings by family	Remarks
Aquaculture Co.	87.8	551	Ornamental fish farming, import and export, Manufacturing of accessories for ornamental fish. Aquaculture for edible fish.	3rd	Chairman & CEO, Dy MD, GM	3/8	2/8	44%	Listed on the SGX in 2000.
Marine Co.	38.3	220	Supply Chain Management, Design & Manufacturing solutions, Engineering solutions and Surveillance & Cyber Security Solutions to the Marine & Offshore, Oil & Gas, Industrial, Petrochemical and Commercial industries	3rd	Chairman & CEO, HR Dir, Marketing & Business Dev Dir	2/5	5/9	60%	Listed on the SGX in 2005.

Company	Turnover (S$Mil)	No. of Employees	Industry	Generation	Interviewees	No. of family members out of total board members	No. of family members out of total management team	Estimated % share holdings by family	Remarks
TCM Co.	350	>1000	Manufactures, processes, distributes, retails, and sells traditional Chinese and other medicines	4th	Chairman, ex-Chief Scientific Officer	1/5	3/13	23.8%	Listed on the SGX in 2000, taken Private in 2016
Integrated Oil Co.	2947	2200	Integrated agri-business focused on edible oils and fats.	3rd	Chairman, CEO	3/8	3/7	85%	Listed on the SGX in 2010

Note: Data extracted from financial reports in 2018 for Integrated Oil Co, 2017 for Aquaculture Co. & Marine Co. 2015 for TCM Co. Shareholding information for TCM Co. extracted from Straits time interview in 2017

3.4.2 Findings from Phase 2 Case Study Research

Using the qualitative data analysis program Nvivo (QSR International, Version 12.1.0), we coded the qualitative data from phase 2 case study research and conducted iterative analysis by oscillating between the data. Figure 4 summarises the first-order codes, second-order categories and aggregate theoretical dimensions that emerged from phase 2 case study research data analysis.

Four main findings emerged from the phase 2 case study research. Firstly, "family influence" factors, namely commitment to ensure the **continuity** of the family business, **cohesiveness** among family owners and clear **controlling** party of family firm, represent antecedents to establishing the corporate governance of innovation in Singapore Chinese family firms. Secondly, **innovation leadership** exhibited by key family leaders is a critical success factor to the governance of innovation in Chinese family firms. Family members who evangelise innovation initiatives drive clarity regarding the scope of innovation investment and the process of innovation management. Innovation leaders in family firms can make decisions faster than non-family firms due to the control they possess as owners. The role of the board of directors in Chinese family firms seems to be confined to providing connections to external collaborators in specific industry sectors. Thirdly, the corporate governance of innovation in Singapore Chinese family firms is broadly aligned at a high level without a codified process. Because innovation leadership involves top management and the board level, the clarity concerning the corporate governance of innovation in terms of "who to innovate, where and how much to innovate as well as with whom do we innovate" are dictated by family leaders who often assume the role of chairman of the board and/or the CEO of the organisation. However, there is a clear gap in the formal process of formulating innovation strategy as well as ambiguity in the structuring of innovation investment portfolios. Lastly, Singapore Chinese family firms face challenges in cultivating innovative human resources and culture, which is often tied to its belief in treating employees as extended family. A consequence is that terminating poor performers is not an accepted practice, which slows the pace of change required for driving innovation and represents an area of risk that family firms need to mitigate.

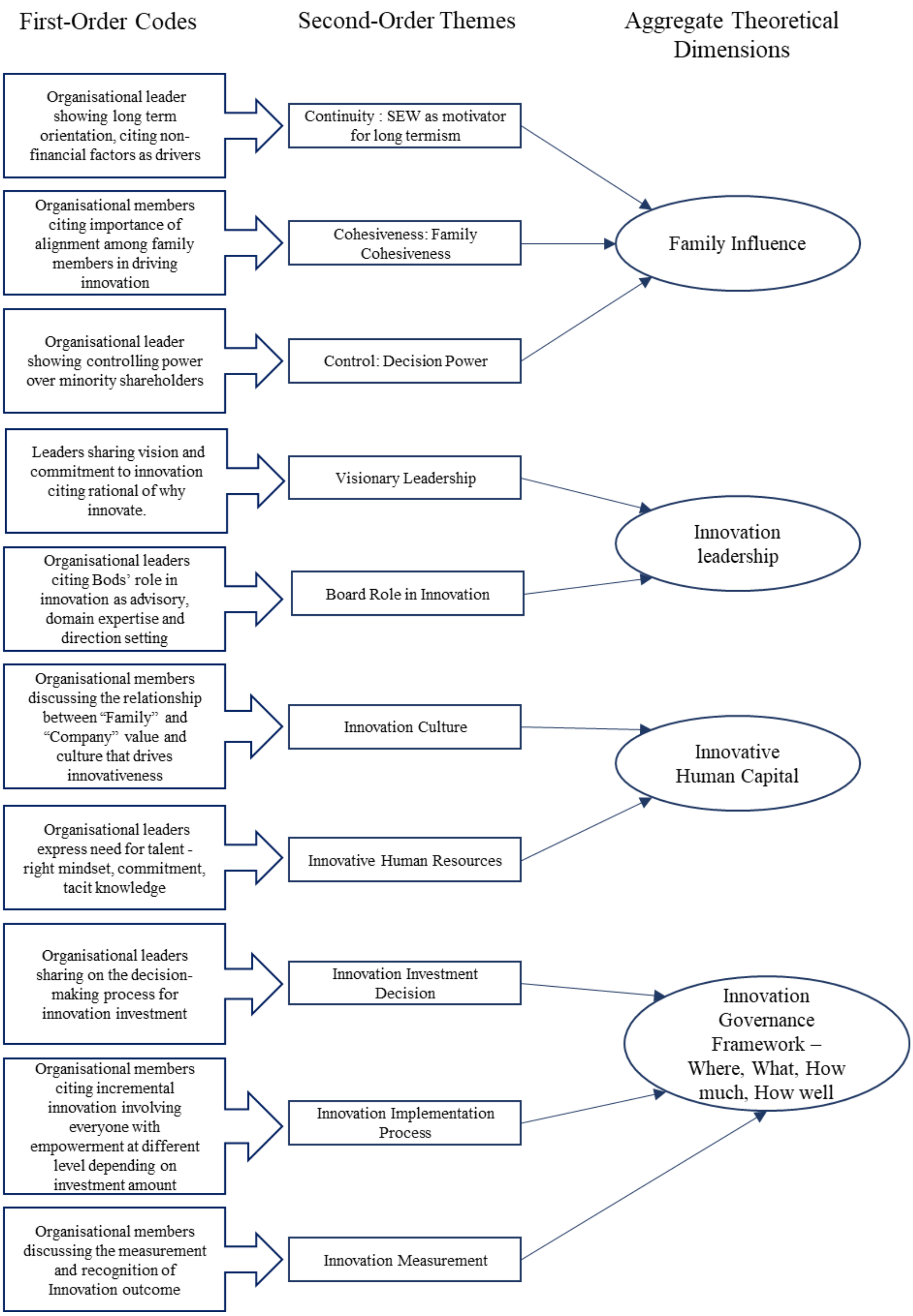


Figure 4: Overview of Data Structure for Phase 2 Case Studies

3.4.2.1 “Family Influence” Factors are Antecedents to Establishing the Corporate Governance of Innovation in Singapore Chinese Family Firms

As we analyse the data from the interviews, “family influence” factors comprising “continuity”, “cohesiveness” and “control” emerged as antecedents to establishing the corporate governance of innovation in Chinese family firms.

- **Continuity** of family business

There is a strong commitment expressed by family members to ensuring the continuity of their family business across multiple generations. This motivates them to constantly innovate as it represents a means to ensure survivability and continuity of their family business.

“Typically speaking, you look at a lot of family companies, especially SMEs, you'll probably find that ... Well, many changed now, but back in the day they may not want to invest into innovation, but now I think you'll find that most companies know that in order to ***survive*** *they've got to continue innovation. Or else, I don't think you'll survive.” Chairman, TCM Co.*

“I feel that commodity products are going to die. We have to come up with a new product, go up market. So, my role is to create a department known as department of specialty fat. So then, with our marketers and our specialty fat division, with their members, the marketer, the two senior marketers, and researchers, they form a

gang. And then what makes sense, what the market requires, you create." Chairman, Integrated Oil Co.

The family leaders in Chinese family firms consider it their responsibility to ensure that the business created by their forefathers will continue to flourish. To family leaders, their responsibility is not limited to the official duties of a business leader but also include the familial obligation to their ancestors to bring prosperity to their family.

"We understand that we have another commitment, which is to uphold the family values, and we are the founder, and we want it to be continued ...." GM, Aquaculture Co.

"After all, what is at stake will impact the entire family group. So, you knew you couldn't mess around. "HR Director, Marine Co.

（"毕竟是跟切身有关的东西。我这个东西一做不好，我整个族群都影响了。所以你觉得你不可以乱来。")

"I always tell my shareholders, you see, if I stop doing innovative projects or invest in R&D, I can show you the number. But our company will die after I leave the company. ***I'm highly irresponsible****. So, this is why I always say, a CEO's job is to think about beyond generation kind of business, which is your responsibility to two generations. Responsible guys always think about the survival of the company. Or the sustainability of the company. That his actions affect so many other people and*

if the company can survive, they will bring good things to other people." Chairman & CEO, Aquaculture Co.

The commitment to innovation in family firms is also driven by family members' desire to ensure that the "expanded family", which includes all staff working for the firm rather than solely direct family members, will benefit from the family firm. This desire drives their long-termism and commitment to innovation.

"I always view the people below me as my family members, regardless if they are Yap, Tan, Lim or whatever. I always view them as a family, so the result itself is only a number to me. At the current stage, I'm always thinking about how can I think long term of the people in the long run? So, when I have this strong mindset, I always think about the future, what is the next ten years or fifty years down the road? How should I make sure whatever I put into the company, whatever that I built in the company, you continue to do so that the rest of the family members will benefit from what I have done for them?" Deputy MD, Aquaculture Co.

The desire of management teams in family firms to innovate in order to ensure continuity of their family business is aligned with stewardship leadership traits as explained by Miller, Le Breton-Miller and Scholnick (2008). Due to the unification of the roles of owners and managers in family firms, their decision-making behaviour is driven more by socioemotional wealth aspects as explained by the behavioural agency model (Wiseman & Gomez-Mejia, 1998). Family members operating the business have a strong mission to preserve what their forefathers created.

Besides the desire to "pass down the family name", higher purposes including "doing good for staff and family members", "doing the right thing, protecting the environment" were cited as driving forces behind family firms' commitment to innovate.

"We believe in contributing to the society, to the world, to the people. If you want to do easy business, you just buy property. That's the easiest business. It's a very resilient business. But that is only for personal wealth creation. We are always looking to see how to contribute back to the society. Even like the LED lighting product, we named it SOP, "Save Our Planet". We have made something which industrial players say that we are insane for. For electrical products, to have recurring business. You need to do replacement. But we are developing something which can last for lifetimes." Chairman and CEO, Marine Co.

Such motivation and commitment to innovate and "do good" are often inspired by the founder of the family business, which is shown in the words of the Chairman of TCM Co.:

"I think most companies at some stage were probably a family business or at least maybe founded by somebody with a very strong vision. I think that trying to keep that essence is an important thing."

In an interview with an online magazine High Net Worth, the Chairman of TCM Co. elaborated on his vision that is driven by a higher purpose:

"My vision was really driven by the purpose of the company, which ***is to help people****. I think it's a very noble cause to try and help others. If you can grow a company by helping people and be able to make money at the same time, that's a win-win for everybody."*

The "why" of innovation is strongly supported by family members' commitments to sustain their family business over multi-generations. Family leaders strongly express a clear mandate to "innovate or die".

- **Cohesiveness** among family members

Cohesiveness among family members emerged as an antecedent to innovation governance in family firms. The alignment of vision among family members forms a strong driving force that ensures innovation governance across the organisation does not stop at the CEO level or become an "innovation theatre" in which innovations are pursued to impress rather than deliver results.

"I think for us, it's more special. Because we bear the "X" (anonymised) surname, and then we got more responsibility. And we know innovation is very important for differentiating ourselves. I'm glad that ***all my cousins have the same mindset****." GM, Aquaculture Co.*

"I think in family businesses, ***blood is thicker than water****. The cohesiveness will be stronger, and in difficult times, the chance of rebounding back is higher." HR Director, Marine Co.*

*(“我觉得家族企业可能血浓于水。而且凝聚力还会比较强，而且你在带动公司方*面，尤其是在困境的时候。家族企业我觉得它们翻身力会比较高。”)

The alignment among family members concerning who drives the business is important:

“Relationship structure. Let's say you got 10 family members, you decide one or *two, and who are the guys to run it. Those that cannot, please get out.” Chairman, Integrated Oil Co.*

Cohesiveness also denotes “**trust**” among family members, which represents a critical factor for innovation to flourish (Covey, 2006; Venohr, 2015). Habberson and Williams (1999) posit that family firms are unique due to the interaction between the family unit, business entity and individual family members. The data from this research support the resource-based view in which social capital is cited to entail a positive effect on product innovation (De Massis et al., 2015). Cohesiveness among family members is viewed as a supporting factor of alignment of views and hence achieving commitment to innovate.

*“The **unity and the trust**. Because we always believe that we are doing the right things. In fact, frankly, we have opportunity to delist the company. Actually, a lot of companies, list cos, do that during bad times. But after discussion we decided not to. Because the investors they have been with us for years now. And if we exit now, everybody will suffer huge losses because our company has not been doing well for the past few years. But we believe in continuing to invest. To a certain extent the*

family also loans a huge sum to the list co. If we want, we can cash out, but we did not. Instead we pump the money into the company. We try to help the company to settle certain issues. We have some cash flow in place then we can continue to run the business. We believe we want to grow the company." Chairman & CEO, Marine Co.

When the family members are aligned and there is trust among them, the business can move forward in unison. Cohesiveness is even more critical to innovation as the investment and initiative typically requires a longer time horizon. Hence, without family cohesiveness, such long-term investments and vision will not succeed.

- **Control** – Clear decision-maker

The control that family members enjoy as major shareholders provide the decision power to drive long-term investments in innovation and to avoid pressure from shareholders who may be seeking short-term returns.

"But I'm lucky because nobody can fire me because my family owns the business, so I can think about long term." Chairman & CEO, Aquaculture Co.

"Because of the history of the company, I had a freehand." Chairman, TCM Co.

This is aligned with the resource-based view in which family firms are observed to have patient capital and hence can fund longer time horizon innovation projects (De Massis et al., 2015). Family members may also pursue goals beyond financial objectives through the personalistic exercise of authority (Chrisman et al., 2012). The family control also facilitates quick decision making:

"But, we're shareholders, right? We make all the big decisions. We can allocate a lot of capital. So, that's different from scale and impact." CEO, Integrated Oil Co.

It is critical for family members to have clear control and the ability to make decisions. Without control there will be a lack of clarity regarding who drives innovation. Clear direction by key leaders at the board and executive level is key to the corporate governance of innovation.

3.4.2.2 Innovation Leadership is Key to Effective Execution of the Corporate Governance of Innovation

Exhibiting innovation leadership by family leaders in Chinese family firms represents a critical success factor to the effective corporate governance of innovation. Innovation leadership includes establishing the innovation vision.

"I have a mission statement. Initially, the capability of Aquaculture Co., we are talking about supply chain, customer service quality. Then I must add in innovation and technology because no matter what kind of new things you do you have to involve technology anyway, nowadays. So, technology is something that I wanted to put in. And I want, before I retire, I want people to call Aquaculture Co. a technology company. Not a fish company because, regardless of what we do, we

use technology to do what we are doing, you know?" Chairman & CEO, Aquaculture Co.

The strong belief of family leaders, often the Chairman and/or CEO, drive the importance of innovation across the organisation.

"Because of the new economy. Because it's globalised. There is competition from all over the world with the help of the new medias. So, everything is so transparent, and you must be very innovative to be ahead of your competitors." Chairman & CEO, Marine Co.

Family leaders exhibiting innovation leadership have a clear vision of "why innovate" and "where to innovate". The area of "how much to innovate" however is primarily driven by their "gut feel". From the interview data, we observed that the family leader establishes the innovation investment directions although there is often no structured allocation of specific investment quantum. Most decisions are instead reached based on the leader's "**gut feel**" or opportunities in which they strongly believe:

"Sometimes you have to use the guts. You can always put numbers on the paper and do all the changes because those really stifle your decision-making process. You must look at a person, you have to look at a professor, can I trust you? Yes, I think I can. Because the way you talk. Okay, anyway, I know this professor X years already. So, I know his character. All these kinds of things will come together and

then form your opinions, say yes, or we'll do this project." Chairman & CEO, Aquaculture Co.

"It's ***opportunistic****. If it's viable, we took a bet. That means the original plan versus the actual, very different. You just keep changing, until you find something that's operable. So, we do that all the time. We did dairy, we bought a biodiesel plant, and then we bought vessels and ships. And we didn't have any of this domain knowledge." CEO, Integrated Oil Co.*

The "gut feel" and "opportunistic" approach of family leaders seem to guide investment in innovation. The advantage of this approach is that decisions can be made quickly without the problem of "paralysis by analysis" experienced by large, non-family firms.

"If a good idea comes across the board, and then, it exceeds the budget, Chairman would just bang the table and go ahead, and things like that." GM, Aquaculture Co.

"The CEO gave me the fullest support whenever I needed to collaborate with research entities/institutions or relevant R&D scientists (both local and overseas). In fairness, between the period 2007 till early 2011 - the CEO and I were really pushing the boundary of "traditional heritage with a modern touch of bioscience" within the Group." Ex-Chief Scientific Officer, TCM Co.

Similarly, the CEO of Integrated Oil Co. stated, *"Because if you talk to 20 people, 20 people will tell you 20 different things to do. That's the problem."*

However, the risk is that "intuition" is based on past experiences which may also pose a risk:

"My issue is that we're making a lot of decisions based on intuition, which may be wrong, and not actually data driven. That's my first thesis. My second thesis is that, because the company and things have changed so much, the intuition is even (more) wrong." CEO, Integrated Oil Co.

Researchers (Burke & Miller, 1999; Dane & Pratt, 2007; Dane, Rockmann & Pratt, 2012) have found that intuitive decisions are effective only in cases where one has acquired a moderate to high level of domain expertise. Innovation investment involves decisions concerning new emerging technology or new business areas. The decision-maker must be conscious of when "gut feel" or "intuition" may not be reliable due to situations beyond his or her domain expertise.

Competent, independent board members with innovation skillsets can contribute added value to family leaders by providing outside-in views to complement their domain knowledge.

"My board members change according to the needs of the company. You have to. Initially we only have lawyers and accountants, right? Or consultants. Okay my ex-consultants become my board members. And then lawyers. IPO lawyer became my

board member. As times change, a few years ago I started replacing some of the board members or add in new board members which pertain to innovations or technology. Two or three years ago I asked a retired AVA, head of fisheries, his PHD is in fish disease and other things, to become a board member. So, I develop board members according to the needs of the company." Chairman & CEO, Aquaculture Co.

"We have three very diversified independent board members. One is a lawyer, marine lawyer. One is running an audit firm. So very good by financial background. And one is engineer by ground. So basically, he's the one that sets up many power plants in Singapore. So, with their help, we also link up to several experts from their field." Chairman & CEO, Marine Co.

In family firms, we found family members involvement both at the board and management levels, which aids the alignment of innovation strategies and communications. One key pitfall of innovation management involves "confusion over a company's innovation strategy" where the "innovation strategy is not made explicit, then top management has no choice but to guess what the board wants" (Deschamps & Nelson, 2014, p. 34). Hence, innovation leadership is critical to providing clarity in governing innovation strategy and execution.

"I think the board has to endorse it, and the board has to give the direction that you want to go that way, and then set the KPIs, even for the CEO. The board will review the plans, and then they will set the tone. If they say, 'Oh, where's the innovation

strategy in the plan?' Then if they don't have it, the board might say, 'Well, we should put it in.'" Chairman, TCM Co.

Family leaders must ensure that the appropriate board members are assembled and that the correct process and culture are embedded into the organisation in order to ensure tight execution of the innovation framework. Based on our research findings, family leaders in Chinese family firms view boards of directors as useful resources for connecting with potential collaborators for innovation projects. Board members who are domain experts can provide technical advice to the business, however there is a lack of innovation expertise at the board level. Innovation strategy is predominantly steered by the family leader who typically assumes the chairman position of the board.

"The members of the TCM Co. board at that time comprised people who were experienced in corporate management, and perhaps the group's bottom line was more crucial than exploring a new approach towards product development and investing in R&D for future expansion. Yes, at the board level - it is important to have diversity of members coming from varied backgrounds and relevant expertise. If there is a board member who understands innovation and technology, I think it'll be good for him/her to help broaden the understanding of other board members and stakeholders." Ex-Chief Scientific Officer, TCM Co.

Incorporating innovation experts into the boards of Chinese family firms can provide oversights in the corporate governance of innovation, complementing the “gut feel” approach of family leaders and mitigating risk by providing external perspectives which reduce blind spots in the decision-making process.

3.4.2.3 Innovative Human Capital: Family Values, Company Culture and Human Resources

The interview data show that Chinese family firms emphasise the alignment of culture and mindset of employees as core foundations to successful innovation.

“In my experience, I don't think you necessarily need to call somebody the innovator and expert in the company, because I think it's everybody's role. You never know, someone can suggest things which will have an impact, and so it's actually, I think it's the ***culture*** *of the company. I think it should be built in and it's the hardest thing to do.” Chairman, TCM Co.*

“No matter what the company is doing, to innovate or reorganise, I think the first thing to appease is the employee's heart. I feel that appeasement is the most important thing. When you want to change the policy and change direction, I feel that we have to communicate to employees.” HR Director, Marine Co.
(“无论公司在做什么创新也好，在做什么改组也好，我觉得第一个先要安抚的是员工的心。我觉得安抚人心是最重要的. 当你要改政策，改方向的时候，我觉得给员工一个信息.公司要做什么也会给我们知道嘞。”)

Based on the interviews with various family members in the case studies, family values heavily influence company culture. To a certain extent, the company culture is developed based on belief in the family system.

"In fact, in our family, a very basic philosophy that my father passed to us from the first generation, is about integrity and trust. No matter what we do, we must be honest and genuine… Father passed us a concept, that is, you must be sure that employees trust you and believe in you. If employees know how the boss is and are aligned to this common belief, their behaviour will follow." HR Director, Marine Co.

("其实我们家族，一个很基本的就是我父亲从第一代传给我们的理念就是诚跟信。就是说，我们无论做什么，都一定要货真价实。父亲传给我们一个观念，就是说，你一定要做到员工信任你，相信你。只要员工知道老板是怎样的，你让他们有这种共同的思想的时候，就那种身体语言就很自然地可以传下去。")

"The question is why we are less conservative, it's because of luck. Because of the cultures of my family. It's because of openness, because we don't care about money that much. We care about relationships more than anything else. So it's ... Why do we have this kind of culture? It's because we are very lucky to have this kind of parents, 上梁不正，下梁歪. Without those upbringings, we can't even, you know, behave as such. Do I choose to come to this family? No. It's by luck that I happen to be in this company. It's luck, okay? It's luck." Chairman & CEO, Aquaculture Co.

The "familiness" of the family firm includes its family values that form the foundation of the organisation's culture. Family members are often inspired by the spirit of the founders, and stories about the founding fathers are passed down and serve as a strong demonstration of the company's values. The family values that influence the company culture may not explicitly articulate the importance of innovation. However, values such as trust and delivering value to customers are important antecedents to driving an innovative culture.

There is a blurring of lines between family and business that is also manifested in the interactive activities of the management team:

"Like everything can be discussed... so that's why we emphasise a lot on family gatherings, or lunches together. So, I think, for us, a lot of times when we make key decisions, we just stick together. Just to have a meal, and that's where major decisions are made. So maybe more of being open to discussions, and things like that. I think that's one of the key factors." Dir, Marketing & Business Development, Marine Co.

Family values and relationships strongly influence the organisational culture and become manifest in the intertwinement of decision-making processes that occur within family gatherings outside of formal business settings. Family leaders are also mindful of how they incorporate these values into the company and inspire their employees to become aligned with the company culture:

"I've extended the definition of family. That regardless of race, sexual preferences, gender, you know, religious and all that; if you concur with my values, and you agree with my cultures, right, you're part of Aquaculture Co. members. So, we expanded the definitions of Aquaculture Co. Family." Chairman & CEO, Aquaculture Co.

"The culture of TCM Co. was still quite a family-oriented one - as during my time, a couple of cousins and relatives were on its payroll. But the CEO himself though was still honouring some gesture of "traditional values" and consideration - but he was very open-minded and constantly looking at new ways to improve the group's business practices and to explore overseas market expansion. Thus, I would think that TCM Co.'s history was certainly a legacy, but it was the CEO's vision and modern outlook leadership style that had given the 140-year-old company a 'major facelift that resonated with the younger generation of customers!'" ex-Chief Scientific Officer, TCM Co.

Family members are also conscious of the importance of having the appropriate pool of human resources to ensure the success of their innovation efforts. A challenge faced by family leaders regards their long-serving employees' inertia to change:

"The most difficult for us is to make people change, and you need to convince people, why you need to do so. So, you need to spend a lot of time talking to them and trying to change their mindset and influence them." Deputy MD, Aquaculture Co.

"You have people who are working here for 20 over years. They are resistant to change, neither can they see change, and they are very resistant to external parties." CEO, Integrated Oil Co.

In Chinese family firms, management values employees who have worked for the organisation almost their entire career. "Hire and fire" is not a norm in Chinese business firms' culture. While leaders know they might not be able to achieve the best output from some older workers who may resist changes, they choose to keep them due to social-emotional factors:

"If someone works with you for 20 years, they may no longer be promoted, but they believe in seniority, so what do you do? There was one time, they fight in the trenches, they gave their utmost best, so what do you do?" CEO, Integrated Oil Co.

However, the socio-emotional aspects of family firms sometimes pose a burden on the younger generation of leaders since non-performing staff may be retained based on emotional reasons:

"Being in a family business, I think traditional Chinese businesses we hire, but we don't fire that easily. So even if someone is not doing well, they'll just give chances and chances, again and again. I think that's different from the MNCs. So even if we see that they are really not performing well, right, and then we bring it up, but they'll say, 'Oh no. This worker, you cannot touch him or her because she has been working here for 20 years, 30 years.' So many times, this brings to frustration

because, for myself, I would like to have a more dynamic, or younger team." Dir, Marketing & Business Development, Marine Co.

By building human resources that embrace innovation culture, Chinese family businesses may have the advantage of "social-emotional factors" that motivate people to innovate in order to ensure sustainability of the business. The same factors may become a hindrance if the workers do not recognise the urgency to innovate or if they lack the competency to make innovation a success. This represents an area that the organisation must constantly monitor, and they must audit the gaps between what the organisation aspires to achieve versus the capability and willingness of the existing workforce to deliver the desired outcomes.

3.4.2.4 Corporate Governance of Innovation is Aligned at a Broad Level but not Codified

The unique family business structure, where the business, family and individual intersect, leads to an observed uniqueness in the corporate governance of innovation in Chinese family firms. There is a broad alignment of corporate governance of innovation in Chinese family firms in situations where the antecedents of "family influence" factors (continuity, cohesiveness, control) are present and innovation leadership is observed at the board and top management levels. The corporate governance of innovation, which we defined as "**a system of mechanisms that aligns goals, allocates resources and assigns decision-making authority for innovation across the company and with external parties**"

(Deschamps & Nelson, 2014), is driven in Chinese family firms by the family leader who determines the dimensions regarding:

- Why innovate?
- Where to innovate?
- With whom to innovate?
- Who innovates? (The Chairman and/or CEO of the family firm is usually the driver.)

The questions "how much to innovate" and "how to innovate" are not clearly answered. The allocation of resources to innovation is ambiguous and the decision is made based on family leaders' intuition. There is no strict guideline such as providing a dedicated innovation fund to drive innovation projects. The process seems to be more fluid and decision power is held by family leaders who will make the investment decision.

"You see, the problem of budgeting about R&D is something stupid. Because you never know when a good idea comes out, at that point you must adjust it. That number fluctuates. It's based on what kind of good ideas come up this year. You don't wait. You say, oh, I don't have budget and let's wait. No, no, no. This year I have three projects on hand. I know it's going to eat into a lot of my so-called expenses and all that. But I say, do it now. I mean, like, why do I have to schedule it?" Chairman & CEO, Aquaculture Co.

"We have this not-official community where we gather all the subsidiary heads into so-called "One-XXX" (anonymised). We have these business unit heads sit together,

and we try to explore ideas. We then set the directions. Three directions for the company: environmental, electrifications and digitalisation. So, these are the three areas that we have identified, going forward whatever we want to do, it must be very innovative. Someone has not done this before. You want to do something very niche, quite different from other companies." Chairman & CEO, Marine Co.

The innovation process differs depending on the values of the family leader. Some may be more fluid:

"We have this unstructured. I don't want to structure innovation because it's so unreal. So, I think we are quite broad base in terms of involving all the people because you cannot structure it but ... I always believe if you want to make people a little bit more creative, you must create an environment for them to try things, and you must not penalise when they make mistakes. I only cannot accept the mistake they're making twice. I call that stupid mistakes. That they have not learned from the first mistake. That I totally cannot accept. But I encourage them to try." Chairman & CEO, Aquaculture Co.

While others may be more structured:

"There's actually a process, we do have a process. It's a decision tree, so you go for it, or you kill it in several stages. Different people at different stages make the decision. It will go up to the CEO as the final position, but along the way someone's got to think it's worth going forward with it." Chairman, TCM Co.

The innovation process differs depending on the beliefs of the family leader. Innovation management heavily relies on the top management team for disruptive innovation that requires high capital or resource investment. For incremental innovation, the belief is that all employees should be involved.

There are less structured, hierarchical, formal processes for innovation projects to commence:

"But maybe if you are in a non-family business, that's a lot of red tape and things like that. Or things like you need to show certain figures, or certain supporting evidence first before you can embark on the project. While being a family business, you can do first and support evidence later. Because evidence normally only comes after you've carried out certain projects. Yeah. That's the pros of being a family business. We just have to present our points, our rationale, and our direction and what we expect to achieve." Dir, Marketing & Business Development, Marine Co.

There were no clear answers to questions about means of measuring innovation investment outcomes, but the Chinese family business leaders interviewed demonstrated a broad perspective regarding their perception of whether their innovation strategy is on track:

"It becomes expressed as a kind of quantitative, factual ... like, how many new products have you launched this year. Out of our top 20 products, in any given year, a certain percentage had to have been launched in the last three years, or five years, whatever. Something like that." Chairman, TCM Co.

"I set up the R&D department about 10 years ago. It's because of R&D, we came up with the XXX (New product name). That was the very first time we came up with our own way of doing filtration. Conventionally they use filter material but now we use current electrolytes to break down the things that we don't want. Like ammonia and that. We retain all the minerals. We say, yeah, we have some results. How about we continue to do this?" Chairman & CEO, Aquaculture Co.

There is no formal process or documentation at the board or top management levels that outline the innovation strategy and execution plans. Many aspects of innovation strategy and execution are driven by the family leaders who are committed to sustain the family business's growth, and the decisions are made based on their intuition. There is a lack of governance in ensuring an optimal innovation investment portfolio with desired levels of resources allocated for both incremental (exploitive) and disruptive (explorative) innovation. The broad alignment of innovation strategy and vision in Chinese family firms is driven by innovative leaders without a structured method to ensure a balanced investment portfolio that is aligned with the strategy.

3.4.3 CGOI Model and Propositions

From the case study research data in phase 2, a theoretical framework emerged as shown below in Figure 5.

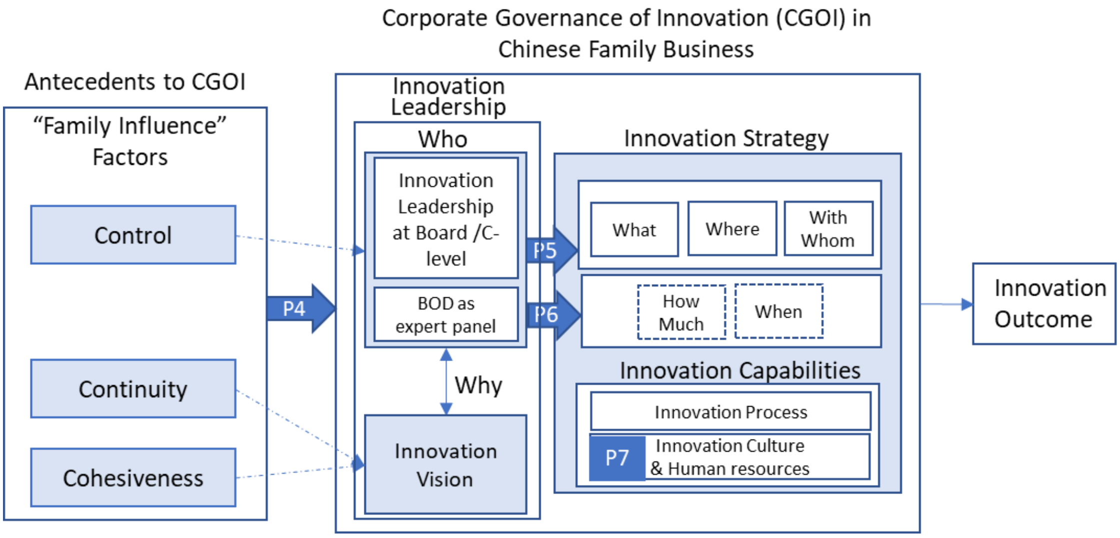


Figure 5: Corporate Governance of Innovation in Singapore Chinese Family Firms

Three key antecedents to establishing the corporate governance of innovation in Chinese family businesses emerged from our phase 2 data analysis. We posit that:

Proposition 4:

The antecedents to a strong corporate governance of innovation in Singapore Chinese family businesses are:

- ***Cohesiveness*** **among family members involved in the business management**
- **Commitment to ensure multi-generation *continuity* of their family business**
- **A decision-maker that has *controlling* power over the business**

The family influence factor of a strong desire to ensure **continuity** of the family business in order to "pass on the name and wealth" across multi-generations instils a strong commitment in family leaders to innovate. The family influence factor of "continuity" that drives the governance of innovation is aligned with the proposition proposed by Gomez-Mejia et al. (2007), which is that in family firms, socioemotional wealth (SEW) represents a key variable that affects decisions. Our research reaffirms the importance of SEW in Chinese family businesses as a key factor behind innovation investment decisions. We posit that the desire to "pass down the name of the family across multi-generations" is stronger in Chinese families due to the influence of Confucius values. As Kao (1993) found through his research on Chinese entrepreneurs, "Confucian tradition is remarkably persistent" and "enterprise is still a means of exerting control -and for achieving security in a disordered world" (p. 25). Filial piety is a key Confucius value, and for Chinese family firms continuity of their business and carrying the name of their founding father is considered a family duty. Our research affirms the importance of "continuity" in Chinese family firms and discovered that it is a key motivator for Chinese family businesses to focus on innovation.

Cohesiveness among family members involved in the management of the organisation enables a strong, consistent answer to the question of "why innovate". As scholars have discovered, Chinese family businesses have a distinct difference from other ethnic groups' family businesses regarding their focus on family ties even at the expense of other social relationships (Tan et al., 2001; Kao, 1993). This is often described as "familism" and is rooted in Confucianism which profoundly influences Chinese ethnic groups for more than 2000 years. In our research, the "cohesiveness" of family members holding management positions in the organisation represents a critical factor to driving the corporate governance of innovation. This can be viewed as part of "familiness", referring to resources unique to family businesses. Hoffman, Hoelscher and Sorenson (2006) described resources embedded in the relationships among people as social capital comprising three dimensions: structural, cognitive and relational. They defined structural components as the social capital derived from network ties and configurations. The cognitive dimension is based on a shared language and narratives, while the relational dimension is based on trust, norms and obligations (Sirmon & Hitt, 2003). We use the term "cohesiveness" to refer to the binding force among family leaders as a critical factor that will drive a consistent message regarding their corporate innovation direction and strategy.

The **control** of family leaders with majority shares of the business provide the leader with power to drive long-term investments as well as the ability to make decisions deemed beneficial to the business in the long term. The family influence factors of cohesiveness, continuity and control provide the foundation for family businesses to holistically establish a clear CGOI.

Proposition 5:

The clarity of corporate governance of innovation increases with the level of innovation leadership exhibited by family leaders of Chinese family firms.

Our research shows that the innovation agenda in Chinese family businesses is driven by its leader who holds a clear vision and commitment to innovation investment. The leader and his or her C-suites provide clarity regarding “why innovate”, “what to invest”, “where to innovate” and “with whom to innovate”, and the decisions are made by key family members in both formal as well as social settings. The uniqueness of family businesses lies in the intersection of the business, family and individual. There is a strong corporate governance of innovation when the key family leader exhibits strong innovation leadership.

Proposition 6:

An increased emphasis on the corporate governance of innovation in the board agenda increases the effectiveness of innovation investment portfolio management.

Our research sheds light on the current gap in CGOI in Singapore Chinese family firms in the area of innovation investment portfolio management. Decisions concerning innovation investment in terms of quantum and time horizon lie with the controlling family leaders. There is no clear strategy for ensuring a balanced innovation portfolio in both incremental innovation and disruptive innovation projects. Singapore Chinese family business leaders adopt an **opportunistic approach** and make decisions based on “**gut feel**”. Independent board members are not proactively involved in the corporate governance of innovation. The role of independent board members is limited to connecting with external collaborators for innovation initiatives. Based on our phase 1 research shown in Figure 2, the board of directors play a key role in the CGOI in terms of:

- Review and approve innovation strategy: Why, What, Where, When, Who, How
- Control of resources
- Monitoring of outcome and performance

Our model of the CGOI at the board level (Figure 2) highlights the need for innovation expertise in the board in order to drive effective corporate governance of innovation. By having a structured approach and developing an optimal portfolio of innovation investments, Singapore Chinese family business can avoid becoming blindsided by the current "intuitive" approach in innovation strategy when the pace of change is increasingly overwhelming.

Proposition 7:

The stronger the family culture of tolerating long-term employees who are non-performers, the weaker the innovation culture and greater resistance to change.

Innovation culture is a critical success factor that enables an organisation to be effective in its innovation management. By conducting this research, we also uncovered the linkage between family values and company culture: The deep-rooted family values passed down from founders become the company's core beliefs that drive the culture. Family business leaders regard long-serving employees as their expanded family and firing long-serving staff when their performance lags is not an accepted practice in Chinese family firms. This creates a hindrance to building innovation culture in the organisation, and thus Chinese family firms must investigate ways to manage this soft aspect of innovation governance. Without a clear strategy for ensuring the establishment of innovation culture and upskilling the current workforce to be competent in innovation management, the innovation strategy's pace of execution will become hindered. This represents an area of risk that must be considered under the corporate governance of innovation.

CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

The aim of this dissertation was to examine the model of the corporate governance of innovation (CGOI) in Singapore Chinese family businesses. The research focused on the role of the board, family influence factors and constructs that form the CGOI model for Singapore Chinese family firms. In this chapter, the strengths and weaknesses of the current CGOI observed in Singapore Chinese family firms are discussed and recommendations are provided. A checklist for the CGOI is also presented to facilitate practitioners' self-assessment of their organisation's strengths and weaknesses in the area of CGOI.

4.1 The "Yin and Yang" of Corporate Governance of Innovation in Singapore Chinese Family Firms

Yin yang is a unique Chinese duality and way of thinking that captures the "Chinese view of paradox as interdependent opposites compared with the Western view of paradox as exclusive opposites" (Law & Kesti, 2014, p. 1). The need to have proper corporate governance of innovation and the Chinese family way of driving innovation based on "uncodified" processes, "gut feel" and "family" discussions are similar to the "**yin**" and "**yang**" of ancient Chinese philosophy. A balance between the structured, formal governance processes and the unstructured engagement model of Chinese family firms can be achieved through a clear governance model of innovation in which alignment is accomplished from the board level to the working level.

4.1.1 SWOT Analysis of Current CGOI of Singapore Chinese Family Business

As we researched the CGOI of Singapore Chinese family businesses and define CGOI as "**a system of mechanisms that aligns goals, allocates resources and assigns decision-making authority for innovation across the company and with external parties**" (Deschamps, 2013), the strengths, weaknesses, threats and opportunities for Singapore Chinese family businesses unfold as shown in Figure 6 below:

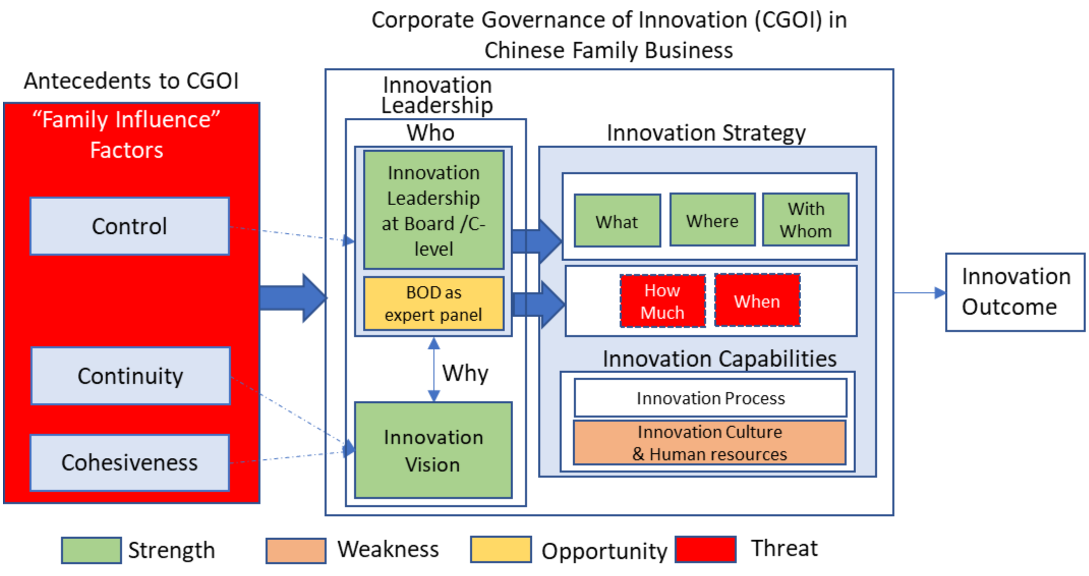


Figure 6: SWOT Analysis of CGOI in Singapore Chinese Family Businesses

<u>**Strengths**</u>

In Chinese family businesses, we found that the answers to "**why innovate**" and "**who innovates**" are typically clearly articulated and understood across the organisation. Family members have a strong survival instinct, and the leaders of the organisation mandate innovation efforts in order to ensure continuity of the family business. The need to ensure the passing down of family names across multiple generations (continuity) is tied to the Chinese value originating from Confucius values which consider it a part of filial piety to ensure the flourishing of the business created by one's forefather, which drives family leaders' commitment to innovation. We observed strong innovation visions from the four Singapore Chinese family firms in our case study research.

We observe that the key innovation driver is the Chairman and/or CEO of the organisation who are key family business leaders. There is less red tape in approving innovation investments due to family members' converged roles of both owner as well as manager. This provides the necessary speed for innovation decisions and patient capital with family business's long-termism. For innovation in the family business's core business, tacit knowledge of workers and family members also provides the competency required for decision making.

Weaknesses

Chinese family businesses' culture of treating their long-serving employees as their expanded family and resulting high tolerance for non-performing staff represent a weakness in driving innovation culture which may hinder the effective execution of innovation strategies. While long-serving employees possess tacit knowledge in the core industry, they may not have the skillset to drive innovation or awareness of new emerging technology or business models that might disrupt their current business.

Opportunities

The independent board of directors in Chinese family businesses is limited to providing access to external collaborators and advice in their domain area. Based on our research in phase 1 on the board's role in the governance of innovation, we posit that **innovation expertise at the board level** can increase the effectiveness of the corporate governance of innovation at the board level. The advantage of family firms is that the shareholders are also the key executives at the board level. Hence, shareholders' expectations regarding how the board can increase effectiveness in governing innovation can be achieved relatively easily. Incorporating a diverse mix of independent board members with innovation expertise in Chinese family businesses provides the opportunity to enhance the knowledge of family leaders and to introduce an "outside-in" perspective of potential disruptions and trends that the family business must consider in its innovation strategy.

Threats

A key threat in Chinese family business regards the absence of antecedents for establishing the CGOI. Based on the research, the three antecedents that emerged in the CGOI model are: commitment to drive continuity of the family business, cohesiveness among family members involved in business management and a clear controlling stakeholder that can make decisions. In many family businesses, the harmony and alignment among family members seem to be key internal disruptors to business growth. If there are no clear controlling stakeholders, decisions become stalled and business strategy, including innovation strategy, becomes hindered. This represents a key threat that Chinese family firms must be aware of when driving the CGOI.

The CGOI in Chinese family businesses does not provide clear guidance regarding innovation portfolio and investment in the area of "exploitation" versus "exploration". An innovation leader who invests too much in "exploration" may risk depleting the resources of the organisation, but on the other hand, insufficient investment in innovation projects may entail long-term risks of disruption or displacement. The current CGOI model of Chinese family businesses is based on the "gut feel" of the Chairman and/or CEO, which also represents a threat that Chinese family businesses must mitigate. We recommend that businesses provide clarity, including a dashboard view of all investments in different areas of innovation to be reviewed at the board level periodically. The organisation should also drive an audit of their innovation status using the checklist recommended in the following section.

4.1.2 Recommendations: CGOI Checklist

Considering today's ambiguity regarding the CGOI, from its definition to the details of scope and execution, it is challenging for organisations to manage the risk of future displacement. Hence, we propose a checklist to facilitate the board of directors and C-level of family firms' efforts in reviewing their organisation's CGOI state. The checklist incorporates the key constructs of the CGOI model of Chinese family businesses, the roles of the board that emerged from our research as well as elements from Deschamps and Nelson's (2014) innovation governance model.

The checklist provides a survey of the four key building blocks of CGOI as depicted in Figure 5, namely innovation leadership, innovation strategy, innovation capabilities and innovation outcome. In each building block we present the key elements of the CGOI in Singapore Chinese family businesses as well as indicators for auditing when the organisation has gaps in any of these elements. Table 3 shows the checklist that practitioners can use to perform periodic self-assessment of the organisation's CGOI state. Figure 7 presents a dashboard view of the four key building blocks and the eleven elements in a spider web chart in order to provide a visual representation of the organisation's current CGOI state.

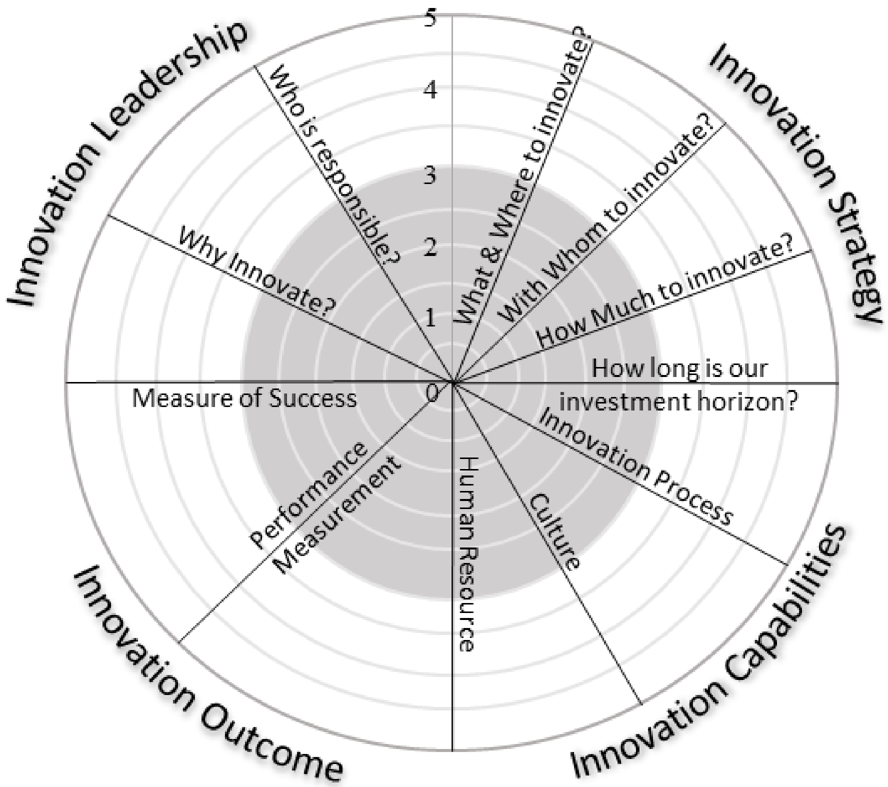


Figure 7: Dashboard View of CGOI Checklist Results of Organisation

Key indicators are used to ascertain the current state of the organisation in each of the eleven elements. A 5-point Likert scale is used in the checklist to enable users to assess the strength of each of the CGOI indicators.

- **Innovation Leadership**

Innovation leadership represents a key building block of the CGOI that emerged from our case study research of four Singapore Chinese family businesses. Using the CGOI model, we captured two key elements that drive innovation leadership:

  - **Why innovate?**

The understanding and commitment to the purpose of innovation is a key element under innovation leadership. Based on the CGOI constructs in Singapore Chinese family businesses that emerged from our research, there are three indicators found to drive clarity behind this element of "why innovate".

Firstly, the organisation must have a well-defined **innovation vision** that is communicated by top management extensively throughout the organisation. Secondly, there must be **alignment between the board of directors and top management team** regarding the innovation vision, which must be thoroughly considered and discussed at the board level to ensure that the vision is not merely marketing fluff from the CEO. The innovation vision drives the behaviour and decisions of the board and top management in terms of innovation investment. For the innovation vision to cascade down throughout the organisation, the top management team needs to be committed to the vision. This cannot be solely the CEO's job but must also be supported by the CEO's management team in order to achieve traction and success.

In our research, we uncovered family factors that influence the effectiveness of the CGOI in Singapore Chinese family businesses. Cohesiveness among family members involved in business operations and commitment to drive continuity of the family business represent two key family influence factors that impact the strength of innovation leadership.

- **Who is responsible for innovation?**

It is critical to ensure the clarity of roles and responsibilities of the board, top management and the working team that drives innovation. Based on our research in phase 1 on the roles and responsibilities of the board in the CGOI, the model shown in Figure 2 depicts the key roles, responsibilities and antecedents to the board's effectiveness in executing their duties in governing innovation. In the checklist, we incorporated our findings under the indicator of "board's roles & responsibilities". The checklist enables organisations to assess whether the board is clearly aware of its role in innovation governance. An audit of the board's meeting agenda to assess whether a regular review of innovation strategy occurs provides an indication of the board's execution of governing innovation. Our research highlighted the criticality of incorporating board members with innovation experience and expertise in order to ensure the effective governance of innovation. This has thus been incorporated into our checklist as a lead indicator. The board's role also includes recruiting a C-suite that is capable of driving business growth. Hence, the nomination committee should also consider and incorporate the innovation criteria when recruiting C-suite executives.

The second key indicator under the element of “who is responsible for innovation” concerns the C-suite innovation structure, which is an important construct in the CGOI for achieving clarity regarding innovation drivers. Aside from organisational structure clarity, it is critical to include clear performance indictors when measuring the innovation drivers’ performance.

Our research has also revealed the need for a clear controlling party in family businesses who can make decisions including developing the innovation charter. This is also an indicator in the checklist which sheds light on the state of the CGOI in the family business regarding innovation drivers.

- **Innovation Strategy**

In our research, we found that Singapore Chinese family leaders tend to rely on their intuition to make judgement calls concerning innovation investment. The quantum of innovation investment as well as the time horizon that the organisation can tolerate for the return on investment in innovation are not clearly defined. Incorporating these items into the checklist enables the board and top management to discuss and determine the framework they wish to enforce in the organisation in order to guide innovation efforts. The checklist can also highlight areas where increased clarity may help achieve alignment between the board and top management teams regarding strategic focus. The checklist enables the family leaders to provide clarity concerning potential areas of weakness in their innovation strategy as well as take measures to mitigate such risks. However, this does not restrict the agility and flexibility of the leader in making decisions when opportunities arise. Providing clarity guides the executive team to meaningfully discuss exceptional cases that deviate from the formulated innovation strategy.

The key elements in innovation strategy comprise the following elements:

- **What and where to innovate?**

For this element, we seek indicators in the clarity of scope and depth of innovation focus. The scope includes outlining the areas of innovation focus, whether in product innovation, process innovation, business model innovation, supply chain innovation etc. The scope also defines what is considered unreachable for the organisation, which includes "what will we not do" in terms of business expansion, new product development etc. Clarity in scope guides the investment of resources that support the organisation's strategic growth focus. The depth of innovation regards areas to drive incremental innovation and further exploit current competitive advantages as well as areas for investment to seek disruptive innovation in order to explore new possibilities.

- **With whom to innovate?**

In our case study research, we observe that Chinese family businesses drive innovation through internal incremental innovation efforts and disruptive innovation through joint research with partners such as institutes of higher learning. Trust elements emerged from the research data that determine with whom they partner. In the CGOI, we have incorporated indicators for defining the areas of innovation that the organisation will drive internally as well as areas where they will seek external partnership. This guideline represents a useful practice for providing employees driving innovation clarity and alignment with management. The indicator for “type of partnership” encourages organisations to also consider the extent of partnership with which they are comfortable.

- **How much to innovate?**

In this element of CGOI, we posit that the organisation should provide a guideline for their innovation investment appetite in terms of quantum. The organisation should also maintain a dashboard view of their innovation investment portfolio (Mcgrath & Macmillan, 2000; Mcgrath, 2010). Frequent review of the dashboard allows management and the board to become aligned regarding investment balance of incremental versus disruptive innovation.

- **How long is the innovation horizon?**

This element is inter-related to the innovation portfolio discussed in the element of “how much to invest?”. The time horizon must be defined as well, as there needs to be a view of innovation investment in the short-, mid- and long-term horizon. The various investment horizons will ensure the organisation’s capability of maintaining current competitiveness while investing in areas that bring new capabilities to the business.

Family businesses are found to have “patient capital” (Dobrzynski, 1993; Dreux, 1990; De Massis et al., 2015) since they are committed to investing for the long term. This long-termism represents a strength of family businesses. We have developed an indicator for the clarity regarding organisational expectations of innovation investment.

- **Innovation capabilities**

The third building block of the CGOI, innovation capabilities, comprises three key elements: innovation process, culture and human resources.

-Process

The board and management must ensure that the organisation has an innovation process from ideation and experimentation to implementation. There must be a process in place to determine whether the organisation will increase the investment amount or resources for specific innovations in order to accelerate their success or to abort initiatives. This process of managing the lifecycle of innovation projects is critical. It is the role of the board and top management to ensure that the process is enacted and its effectiveness continuously improved.

-Culture

In our case study research, Chinese family businesses observe that their family value influences the corporate culture. The deep-rooted family values passed down from founders become the company's core beliefs and drive the culture. Innovation culture represents a key element of "innovation capabilities". Hence, we have included indicators for understanding the state of the CGOI in innovation culture in the checklist.

-Human Resources

Without the appropriate human resources in place, innovation will not flourish. In this area, we examine indicators including the presence of domain expertise, soft skills in driving innovation initiatives as well as the organisation's practice of continuously upskilling and retooling the organisation's human resources. Our research data show that family business leaders view long-serving employees as their expanded family and that firing long-serving staff when their performance lags is not an accepted practice in Chinese family firms. This represents a hindrance to building innovation culture in the organisation. Including such indicators in the CGOI checklist ensures that underlying threats will rise to the board and top management levels for regular review and drive action plans to strengthen areas of weakness.

- **Innovation Outcome**

This is a lagging indicator for companies regarding how well they are performing innovation governance. There are two key elements that we will measure in this pillar, performance measurement and measure of success.

- **Performance Measurement**

It is the duty of the board to ensure that they monitor the outcome of innovation initiatives as well as how well the top management team is executing innovation strategies. Key Performance Indicators (KPIs) of C-suite executives should include a measure of their effectiveness in driving innovation culture, executing the approved innovation strategy, and their management of resources for short-time, mid-term and long-term innovation investment.

The board's performance of the CGOI must be measured as well, which is a factor that emerged from our research in the phase 1 expert interviews. Shareholders' expectations of the board in governing innovation as well as clear measurement of the board's performance are antecedents to proactiveness of the board in governing innovation. Metrics that can be used to measure the effectiveness of board in CGOI can include the board's frequency of review of innovation strategy and outcome.

- **Measure of success**

In CGOI, it is important to establish a measure of success such as percentage of revenue generated from new products created in the past three years, number of patents filed, number of new business launched etc. The measure of success will indicate whether the innovation strategy and execution are on track.

Table 3: Corporate Governance of Innovation (COGI) Checklist for Singapore Chinese Family Businesses

BUILDING BLOCKS OF CGOI	ELEMENTS	INDICATORS	QUESTIONS	INDICATOR SCORE (1 = Not at all; 2 = To a small extent; 3 = To a moderate extent; 4 = To a great extent; 5 = To a very great extent.)
Innovation Leadership	**Why Innovate?**	Innovation Vision	We have an innovation vision that clearly articulates the purpose and direction of innovation.	
			Our leaders communicate the innovation vision clearly and frequently to the organization.	
		BoD & Top Management Alignment	The innovation vision is endorsed by our board of directors.	
			The top management team is committed to the innovation vision.	
		Family Influence Factors - Cohesiveness & Continuity	There is cohesiveness among family members involved in the management and operation of the company.	
			There is a strong motivation shown by family members in ensuring continuity of the family business over multi-generations.	
	Who is responsible?	Board Roles & Responsibilities	The roles and responsibilities of the board in governing innovation is clearly defined and includes: - Review and approve innovation strategy - Control of resources - Monitoring of outcome and performance of C-suite in innovation execution	
			Board meeting agenda includes innovation strategy and review on a regular basis.	
			There are board members with innovation experience who champion innovation governance agenda.	
			Nomination committee has clear criteria for innovation attributes when appointing C-suite executives.	
		C-suite Innovation Structure	There is clarity in terms of innovation drivers and their area of responsibilities.	
			The decision authority and empowerment limit for innovation investment is clearly structured.	
		Family Influence Factors - Control	There is a family leader with a controlling stake in the organization who can make decisions.	

BUILDING BLOCKS OF CGOI	ELEMENTS	INDICATORS	QUESTIONS	INDICATOR SCORE (1 = Not at all; 2 = To a small extent; 3 = To a moderate extent; 4 = To a great extent; 5 = To a very great extent.)
Innovation Strategy	**What & Where to Innovate?**	Scope of Innovation	Innovation priority is defined and shared across the organization, e.g. business model innovation, new product innovation, process innovation, supply chain innovation.	
			There is guidance on innovation focus aligned to business strategy with clarity on "What we will not do", including industry boundaries, product scope, value chain etc.	
		Depth of Innovation	There is clear alignment of expectations in terms of areas where we will drive incremental innovation (exploit) and where we will invest in disruptive (explore) innovation.	
	With Whom to Innovate?	Internal vs External	We have established an understanding of areas of innovation where we will seek external partnerships and those that we will develop internally.	
		Types of Partnership	We are clear in terms of the types of partnerships we will establish for effective innovation outcomes, e.g. joint venture, outsourced partners for research and development, co-creation with industry partners etc.	
	How Much to Innovate?	Quantum	We have an understanding of our investment appetite in various areas of innovation in the organization. It may not be a defined investment budget but a broad guideline of what is palatable to the organization in terms of investment size and return from innovation investment.	
		Portfolio	We have a dashboard of innovation investments (portfolio) across the organization. The board and C-suite regularly review the portfolio to ensure it meets the organization's growth strategy.	
	How Long is the Innovation Horizon?	Time Horizon	There is an understanding of the time horizon that the organization would be comfortable with for reaping benefit from innovation investment & initiatives.	
			We have alignment of our innovation investment priorities for short term, mid term and long term.	

BUILDING BLOCKS OF CGOI	ELEMENTS	INDICATORS	QUESTIONS	INDICATOR SCORE (1 = Not at all; 2 = To a small extent; 3 = To a moderate extent; 4 = To a great extent; 5 = To a very great extent.)
Innovation Capabilities	**Innovation Process**	Discovering Opportunities	There is an established process in generating ideas, detecting emerging weak signals from the market and uncovering innovation opportunities.	
		Decision Making	The decision process to invest in innovation resources for new ideas generated is well managed and agile.	
			There is a process to make decisions on aborting or accelerating the investment into a project depending on the initial results of innovation incubation.	
	Culture	Innovation Mindset	There is a strong innovation culture in the organization where people proactively experiment with new ideas and continuously seek improvement in the current work process.	
			Top management shows commitment to innovation and communicates regularly on innovation outcomes and learnings.	
	Human Resource	Domain Expertise	We have strong domain expertise in our organization to innovate and deliver increased values to stakeholders.	
		Soft skills	Our staff possess the necessary soft skills to drive innovation, including customer sensing, ideas and concept evaluation, team management and venture management.	
		Continuous Upskilling	We continuously seek ways to upskill our people, including training, on-the-job experiential learning, exposure etc.	
			While the family business values employees as their expanded family, non-performers are not tolerated. Injection of new talent is done to ensure strong human capital in the organization.	
Innovation Outcome	**Performance Measurement**	Board Performance	Shareholders have clear expectations and set performance indicators on innovation governance for the board.	
		Top Management Performance	The board has clear expectations and set performance indicators on innovation execution and outcomes for the C-suite executives.	
	Measure of Success	Parameter of Success	There is clarity in measuring the success of innovation outcomes and such measures are shared at every level of the organization, e.g. percentage of revenue generated from new products launched in the past 3 years, number of patents filed.	

4.2 Contributions

Research into the corporate governance of innovation is at its nascent stage. When focusing specifically on family business research, we discovered a void in the CGOI literature. By focusing our research on Singapore Chinese family firms, we uncovered specific family-influenced factors, understood the decision-making processes for innovation investments and the complexity introduced by the nature of family businesses in which family, business and individual intersect. This research contributes to the body of knowledge regarding the CGOI with a focus on Singapore Chinese family businesses, and it serves to inform practitioners through providing a model showing the various antecedents and constructs of the CGOI in Chinese family firms.

There are seven propositions derived from our research:

Proposition 1	The more pronounced the innovation agenda enacted, the higher the motivation level of the board and management to make innovation work.
Proposition 2	The greater the domain expertise and experience in innovation management at the board level, the more pronounced the firm's corporate governance of innovation.
Proposition 3	The greater the expectation of shareholders vis-à-vis organisational innovation outcomes, the higher the motivation level of the board in driving the corporate governance of innovation.

Proposition 4	The antecedents to a strong corporate governance of innovation in Singapore Chinese family businesses are: • Cohesiveness among family members involved in the business management • Commitment to ensure multi-generation continuity of their family business • A decision-maker that has controlling power over the business
Proposition 5	The clarity of corporate governance of innovation increases with the level of innovation leadership exhibited by family leaders of Chinese family firms.
Proposition 6	An increased emphasis on the corporate governance of innovation in the board agenda increases the effectiveness of innovation investment portfolio management.
Proposition 7	The stronger the family culture of tolerating long-term employees who are non-performers, the weaker the innovation culture and greater resistance to change.

There are opportunities of future research on these propositions using quantitative methodology to further validate and generate new insights.

4.2.1 Theoretical Implications

- **Agency Theory**

Scholars have found that several potential sources of agency costs exist in family firms arising from altruism and self-control (Schulze et al., 2001; Kallmuenzer, 2015). This includes factors such as family owner-managers less stringently appraising family members' job performance or the tendency to employ a family member over more qualified managers. In our research, we found that Singapore Chinese family owner-managers treat long-serving employees as their expanded family. There are also indications from our research data that indicate leniency in appraising these "expanded family members". Hence, our research contributes additional potential agency cost sources in family firms that may arise due to Chinese family leaders viewing long-serving employees as part of their family.

In our research, the family influence factor "control" emerged as an antecedent to proper execution of the CGOI. This is supported by the agency theory where the "principal-principal" agency cost is said to arise due to the misalignment of interests between majority and minority shareholders (Porta et al., 1999; Anderson & Reeb, 2003). In our CGOI model for Singapore Chinese family firms, we found that it is key to have a family leader who has control and decision-making power over business operations. This both removes the "principal-principal" agency cost and enables organisations to reduce the friction in driving innovation.

- **Behavioural Agency Model**

The behavioural agency model posits that strategic decisions are 'reference dependent' and that decision-makers are primarily "loss averse" (Wiseman & Gomez-Mejia, 1998). In our research, we find that Singapore Chinese family leaders in four case studies are strongly committed to innovation since they are committed to ensuring the "continuity" of their business over multi-generations. Their commitment to innovation is driven by their "survival" instincts and they felt that innovation is key to ensuring the survivability of their business. This is aligned with the BAM model which states that decision-makers are primarily "loss averse". 'Loss averse' refers to when the decision-maker favours options that avoid loss of their current wealth over options that optimise future wealth (Wiseman & Gomez-Mejia, 1998). In our research, we observed that Chinese family leaders spoke about driving innovation to ensure continuity of their business and not about optimising future wealth. Their intent to ensure survivability of their business is also driven by socioemotional wealth and not just financial wealth. Chinese family leaders are influenced by Confucius values where passing down of family business built by their forefathers is part of filial piety. The need to perpetuate the family identity is important to Chinese family leaders and that represents a key driver that affects the decision-making process of Chinese family business in their investment into innovation. The BAM supports our CGOI model where "commitment to ensure continuity of their family business" is a key antecedent to Chinese family businesses driving the CGOI.

- **Stewardship Theory**

Stewardship theory states that man is driven by higher-level needs such as self-actualisation, social contribution, loyalty and generosity as well as intrinsic needs tied to personal motivations (Davis, Schoorman & Donaldson, 1997; Donaldson, 1990). Our research data support the stewardship theory as the Singapore Chinese family leaders demonstrated motivation beyond personal gains. From our research data, we observed that Chinese family business leaders spoke about contributing back to society and ensuring well being of their long-serving employees. Their desire to contribute to greater goods beyond personal wealth and individual gains are also observed from our interviews. Chinese family business leaders in our case study have also exhibited stewardship leadership described by Miller et al. (2008) where they exhibit long-termism in building their business as well as nurturing motivated, well-trained and loyal employees with a community culture.

However, stewardship leadership traits (Miller, Le Breton-Miller & Scholnick, 2008) exhibited by family firm leaders are not sufficient for driving the governance of innovation. Our research uncovers the need for innovation leadership to provide clarity regarding innovation vision and the structure of innovation drivers. Stewardship leadership trait (Miller et al., 2008) of nurturing employees with a community culture has to be complemented with innovation leadership emphasising the need to innovate. Innovation culture has to be inculcated in the organization to ensure employees have the right mindset coupled with training to equip them with the right skillset to drive innovation effectively.

- **Resource-based View**

The “familiness” model of RBV described family business resources as “the bundle of resources that are distinctive to a firm as a result of family involvement” (Habbershon & Williams, 1999, p. 1). In our research, we reveal that “familiness” factors impact the governance of innovation in Singapore Chinese family firms. The CGOI model contributes to the RBV literature in the area of innovation governance. The unique family factors that strengthen or weaken the pursuit of innovation outcomes are described in our SWOT analysis in Section 4.1.1. The data from this research also support the resource-based view in which social capital is cited to entail a positive effect on product innovation (De Massis et al., 2015).

Due to the uniqueness of family business where individual, business and family intersects, we found three “familiness” (Habbershon & Williams, 1999) factors that have to be present before Singapore Chinese family businesses can ensure a strong corporate governance of innovation: cohesiveness among family members involved in the business management, commitment to ensure multi-generation continuity of their family business and controlling power held by a decision-maker over the business. Sirmon and Hitt (2013) have found that effective management of “familiness” resources create competitive advantages and leads to wealth creation for family firms. Our CGOI model supports this proposition and provides a model for Chinese family business leaders to increase their effectiveness in managing the family influence factors to drive a strong corporate governance of innovation.

4.2.2 Practical Implications

Our research contributes to Singapore Chinese family business through the CGOI model that informs family leaders on antecedents to CGOI as well as the scope and depth of CGOI to enable effective execution in their organization. The SWOT analysis further informs Singapore Chinese family businesses on areas of threats, weaknesses, strengths and opportunities that they should be aware of in governing innovation.

In order to strike a balance between "governing" innovation at the corporate level and the need for agility and flexibility in driving innovation execution, we proposed a checklist to facilitate the board and management team to perform self-assessment of gaps and raise awareness of its existing CGOI state. The checklist functions like a "risk register" that organisations may incorporate to ensure awareness of risk areas and that plans are in place to mitigate risk. This is part of risk management with a focus on the "future risks" of disruption and displacement or, in the words of one phase 1 interviewee, the "risk of omission vs risk of commission". The checklist provides the level of details needed for board and management team to discuss and drive clarity across four building blocks of CGOI: innovation leadership, innovation strategy, innovation capabilities and innovation outcome. By expanding the four building blocks into eleven elements and incorporating indicators for self-assessment, we provide practitioners with tools that increase their execution finesse. A dashboard view in the form of spider web is proposed as a visual aid to board and management team to communicate effectively across the organization on their area of strength and weaknesses in CGOI.

4.3 Limitations and Future Research Directions

The purpose of our research is to introduce constructs to explain the CGOI in Singapore Chinese family firms, however refining and validating these constructs lies outside the scope of this study. We have also put forth seven propositions derived from our research. Future research can include quantitative studies to further validate these propositions. Quantitative studies can also be done in future to extend the external validity and generalisability of our findings.

In our study, we uncovered three antecedents to proactiveness of board in driving CGOI and three antecedents to establishing CGOI in Singapore Chinese family businesses. Future studies can be done to further examine additional antecedents that may not be covered in our current research.

Due to time and access constraints, our research utilises case studies of four Singapore Chinese family businesses. Future research can expand the study to Chinese family businesses in different national settings in order to examine whether there are country-specific factors that affect the corporate governance of innovation in Chinese family firms.

The study of the CGOI in family businesses is at a nascent stage. Our research achieves initial steps towards deepening the understanding of constructs that impact the effective governance of innovation in the complex setting of Singapore Chinese family businesses. However, as with any qualitative research, it includes several limitations that lay the foundations for future research. We have used four case studies in our research and with the limited number of cases, our findings cannot be generalized with the same degree of certainty that quantitative analyses can. In qualitative research, the researcher is the primary instrument of data collection and analysis. In this regard, there could be a limitation due to the biases of the researcher. The research findings have not been tested to discover whether they are statistically significant or due to chance. As with any qualitative research, it is also challenging to establish a cause-effect connection between the constructs that we posit in our CGOI model.

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Appendix A: Interview questions for Expert panel

1. What role do you think board should play in the organization's innovation strategy and execution? (Advisory vs monitoring or not at all?)
2. What are the key areas that should fall under board governance for innovation? Examples:
    - Reviewing innovation strategies (Why, What, How much?)
    - Managing innovation risks (How)
    - Auditing innovation effectiveness and assessing innovation performance (Outcome)
    - Appointing top management with innovation focus (Who)
3. To what extend (on a scale of 0-10, 10 being most extensive) do you think boards in Singapore are driving innovation governance? Why? (competency, awareness of role, clarity of processes and structure)
4. What do you think needs to be done to increase the level of involvement of board in innovation governance?
5. How would an audit framework help and where would it hurt?

Appendix B: Interview Questions for Family Business Executives

Current state of innovation

1. On a scale of 0-10, how would you rate the importance of innovation to your company? 0 being totally not and 10 being highly important.
   Can you explain the rationale behind your rating?

2. On a scale of 0-10, how would you rate your company in terms of innovativeness? 0 being totally not and 10 being highly innovative.
   Can you explain the rationale behind your rating?

Innovation Strategy & Process

3. Do you have an innovation strategy? Can you describe it? (Why, Where, What, When, Who, How)

4. What is the process behind the approval of this innovation strategy? (Who propose, who approve. At board or C-level? How frequent is this process done?)

5. Who is responsible for driving the innovation strategy in the company?

6. How often is the strategy being reviewed and who monitors the progress? Who makes the decision to "Kill" or "Scale"? How do you measure the success for innovation investment?

7. What is your current innovation portfolio, how many percent of your revenue is contributed from new services/products launched in the last 12-18 months?

8. How much are your investing into new business/innovation in terms of percentage?

Roles of Board vs C-level

9. What role does the board play in the innovation process?

10. From your view, what have the board done well and what are the area of improvements needed to drive effective innovation governance?

11. How about C-level? What role do they play in the innovation process? what have the executives done well and what are the area of improvements needed to drive effective innovation management?

Antecedents to Board's effectiveness in driving innovation governance

12. How are the boards selected? Are there key members who are driving innovation governance at the board level?

13. What are the factors that you felt affects the focus of the board on innovation?