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Corporate Strategic Change towards Sustainability: A Dynamic Capabilities View

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Abstract

Firms are confronted with the challenge of integrating sustainable principles into their long-term development strategies to both reduce their environmental and social impacts and maximize their economic returns. An increasing research attention is how firms use dynamic capabilities to pursue such goals. Through an extensive literature review in the fields of both Dynamic Capabilities View (DCV) and corporate strategic change towards sustainability, we propose a conceptual framework depicting the main dimensions of dynamic capabilities for corporate sustainability and competitive advantage, namely *scanning capability*, *sensing capability* and *reconfiguration capability*.

1. Introduction

Corporate sustainability cannot be achieved without change. A growing acceptance is that moving towards sustainability is a long-term journey in which the firm must proactively change its strategies and operations to address emerging social and environmental concerns (Hart, 1995; Porter and Kramer, 2006; Hart and Dowell, 2011). At the same time, extant studies argue that this proactive change is associated with the emergence of unique organizational capabilities (Russo and Fouts, 1997; Sharma and Vredenburg, 1998; Christmann, 2000). Drawing on the Resource-Based View (RBV), the studies conclude that these idiosyncratic capabilities enable the firm to implement new value-adding strategies and contribute to its sustained competitive advantage (Hart, 1995; Russo and Fouts, 1997; Hart and Dowell, 2011).

Some more recent literature calls for introducing Dynamic Capabilities View (DCV) to the area of corporate sustainable change (Aragon-Correa and Sharma, 2003; Hart and Dowell, 2011). Dynamic capabilities are defined as ‘the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments’ (Teece *et al.*, 1997: 516). When high dynamic and unpredictable environments make firm’s existing competence quickly obsolete, the firm should implement dynamic capabilities to rebuild its competitive resources base and strategic position in a timely and astute manner (Eisenhardt and Martin, 2000; Helfat *et al.*, 2007). Given that the context in which firms deal with various emerging sustainable issues is highly complex and ambiguous (Aragon-Correa and Sharma, 2003), dynamic capabilities should be applied to the process by which firms undertake sustainable development strategies (*e.g.* Aragon-Correa and Sharma, 2003; Hart and Dowell, 2011).

However, to date most of the literature of dynamic capabilities view (DCV) links dynamic capabilities only with the environments that concentrate on firm’s economic bottom line. How firm apply dynamic capabilities to address the distinctive challenges involved in corporate sustainable change is yet to be fully explored. In line with the argument that different dynamic capabilities should be applied to different changing

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scenarios (Eisenhardt and Martin, 2000; Zollo and Winter, 2002), we thus attempt to make an theoretical extension of the view of dynamic capabilities to the context of corporate strategic change towards sustainability.

2. Drivers to Corporate Sustainability: Two Theoretical Perspectives

Corporate sustainability is an ongoing transitional progress in which firm simultaneously deliver economic, social and environmental values to both direct and indirect stakeholders (Shrivastava, 1995; Porter and Van de Linde 1995; Dyllick and Hockerts, 2002; Hart and Milstein, 2003; Bansal, 2005). According to this definition, corporate sustainability needs firms to respond to emerging environmental and social issues and integrate them into their economic strategic visions to manage as a whole (Elkington, 1998; Florida and Davison, 2001). It also needs firms to consider the sustainability concerns not only from direct stakeholders (shareholders, customers and governments), but also from fringe or indirect stakeholders such as non-governmental organizations (NGOs) and community groups (Hart and Milstein, 2003; Reinhard *et al.*, 2005). By doing so, proactive organizations, especially the quick movers towards sustainable management, can use the institutional sustainability pressure wisely to obtain their marketing competitive edge. For example, in a thematic analysis of the corporate social responsibility (CSR) reports of 100 global companies, Tate *et al.* (2010) find that the companies they investigate not only follow the simple compliance with legal regulations but also proactively search for more responsible strategies to build their “healthier” social and environmental images in markets.

Why firms should commit to sustainable development is explained by two contrasting perspectives that are prevalent in the literature of corporate sustainability. The first is institution-focused and concentrates predominantly on the social context within which firms operate. This view aims to explain how social value and belief system affects firm’s legitimate status and drive them to pursue sustainability (e.g., Freeman, 1984; Cox *et al.*, 2004). The second perspective is more resource-based and turns the emphasis to internal resources and capabilities of the firm. This approach explicitly focuses on the identification of the specific capabilities and strategies that help firms to simultaneously pursue economic, environmental and social competence (e.g., Hart, 1995; Russo and Fouts, 1997; Porter and Kramer, 2006).

2.1 Institution-Based Perspective for Corporate Sustainability

The institution-based perspective argues that, as government, customers, public media, and the society as a whole have taken increasing interest in sustainability issues, failure to responding to this institutional pressure threatens firm’s legitimacy and survival (Bansal and Roth, 2000). To the contrary, proactive stakeholder engagement as a means to identify and prevent negative social and environmental impacts not only reduces firms’ ethical and ecologic risks, but also helps to gain access to scare resources and enhance reputation among stakeholders (Hart, 1995; Bansal and Roth, 2000; Bansal, 2005). Nevertheless, the external pressure for sustainability faced by the firm is coming from a myriad of interest groups with conflicting preferences (Dixon and Fallon, 1989). This complex contextual situation seriously challenges the conventional management approach of the firm in three ways.

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First, firms with limited resources cannot simultaneously meet all sustainability needs from a broad variety of stakeholders. They have to select and satisfy firstly those that are perceived as the most urgent and legitimate (Escobar and Vredenburg, 2011). Firms used to put much attention on the social and environmental standards enforced by official regulators (Hart and Sharma, 2004). But as NGOs and other civil society groups are becoming more and more active in sustainable concerns, in many cases their requests supersede governmental regulations to become a more serious challenge to the unsustainable operations of the firm (Reinhard *et al.*, 2005). Unfortunately, firms often find difficulties to quickly sense these emerging concerns and manage them properly because they lack immediate communication channels with these so-called indirect stakeholders (Hart and Sharma, 2004).

Second, the institutional pressure of sustainability cannot be understood as a collection of agreed schemas, norms and rules. Rather, it is a complex phenomenon full of conflicting views and interests (Dixon and Fallon, 1989; Gladwin *et al.*, 1995). Different stakeholders may interpret sustainability differently based on their own needs. So sustainability is not a predetermined goal but a negotiated outcome of various interest groups (Reinhard *et al.*, 2005). Any stakeholder involved, including regulators, customers, community members, and also firms themselves, play a certain role in defining what sustainability means and how the navigation towards sustainability should be directed (Gladwin, *et al.*, 1995). Following this viewpoint, firms cannot catch the trend of sustainability and minimize the related potential risks by simply listening and responding to the voice of stakeholders. They have to step into the sustainability debate so as to influence its transitional direction.

Third, firms embedded in different institutional contexts may face different sustainable development pressures (Escobar and Vredenburg, 2011). While the stakeholders in the north show increasing interest on eco-friendly production and social equality, those in the south still require firms to concentrate on the more basic needs such as poverty, job opportunities and income (Hart, 1997; Escobar and Vredenburg, 2011). However, when international outsourcing activities links the firms in different geographic regions into a global supply chain, those involved in the same supply chain should not only consider the institutional context they are embedded, but also care about the different sustainable development pressure faced by their business partners. On the one side, the supply firms need to modify their unsustainable practices according to the guidance of the purchasing firms as well as the related regulations set by the destination market (Lee and Klassen, 2008). On the other side, it is an irresponsible behaviour if the customer firms in developed countries simply pass the sustainability burdens to their supply partners. Instead, they should work closely with their suppliers to find a viable way to reconcile the imbalance of the sustainability focuses between developed and less developed countries in social, environmental and economic spheres (Vachon and Klassen, 2006).

2.2 Resource-Based Perspective for Corporate Sustainability

Referring to the evolutionary theory (Nelson and Winter, 1982; Tushman and Anderson, 1986), Resource-based perspective views corporate sustainability as an ongoing, non-linear journey towards the intersection of environmental, social and

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economic competence (Hart, 1995, Hart and Milstein, 2003). Initially, firms are easy to find inexpensive ways to reduce waste and achieve huge cost savings through internal process improvement and innovation. When these so-called “low-hanging fruits” are exhausted, further improvement becomes difficult to accomplish by simply increasing the efficiency of the existing business practices and patterns. It requires huge investment and great shift in organizational strategies and technologies (Russo and Fouts, 1997; Hart, 1997). Alternatively stated, different capabilities are required at different sustainable development stages. Thus focusing on firms’ current capabilities and competence is necessary but not enough; it can only ensure a temporary success. Long term competitive advantage needs firms to quickly develop and apply new capabilities in responding to the increasingly frequent occurrence of the major and discrete shifts in social, environmental, technological and regulatory domains (Hart and Dowell, 2011).

However, firms with superior performance at present are more likely to stick to their existing capabilities (Hart, 1995; Markides, 1998). As indicated by resource-based view (RBV) (Barney, 1991), firm specific capabilities represent a series of patterned, self-reinforced behaviours that are stabilized through the accumulation of relevant skills, expertise, and know-how (Helfat and Peteraf, 2003; Winter, 2003). They render organizations incapable of changing their familiar "way of doing" in volatile environments in which the rules of competitive game constantly change (Levinthal and March, 1993; Repenning and Sterman; 2002). This "capabilities trap" becomes even salient when firms are not clear about the exact returns they can derive from the input into sustainability activities (Berchicci and King; 2007).

As a consequence, firms face a paradoxical situation: on the one hand, the superior capabilities that are valuable, rare, inimitable, and non-substitutable forms the basis of strategic strength and competitive advantage of the firm; on the other hand, the very capabilities restrict organization’s flexibility and responsiveness towards the emerging sustainability challenges. Obviously, firms need to find new ways to unlock this dilemma.

The resource-based perspective indicates that firms striving for sustainability should look inside to overcome the internal "capabilities trap" inhabited in strategic mind set and managerial routines. The institutional-based perspective suggests that firm should look outside to continuously prioritize and cope with the emerging sustainability needs. Combining these two theoretical perspectives, Next section discusses the new challenges involved in corporate strategic change towards sustainability.

3. Corporate Change towards Sustainability: A Distinctive Strategic Change

Strategic change is conceptualized as the change in the content of a firm’s strategy to enable alignment with its external environment (Hofer and Schendel, 1978; Rajagopalan and Spreitzer, 1997). Because a firm’s performance and competitive advantage depend on its strategic fit with the external environment (Rajagopalan and Spreitzer, 1997; Helfat *et al.*, 2007), emerging opportunities and threats often influence the firm to change its strategy in its scope as well as resource deployments to gain competitive advantage and increased synergy (Hofer and Schendel, 1978; Rajagopalan and Spreitzer, 1997).

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Corporate change towards sustainability is interpreted as a strategic change under the growing external pressure for environmental- and social-friendly development (Hart, 1995; Porter and Kramer, 2006). It requires the firm to incorporate sustainable principles into its business model and growth strategy to achieve economic competence, while minimizing environmental and social impact at the same time (Dyllick and Hockerts, 2002; Hart and Milstein, 2003; Bansal, 2005). Because external stakeholders are becoming increasingly concerned about sustainability issues, firms' strategies and operations have been widely considered as the foundation of their long-term economic viability and sustained competitive advantage (Hart, 1995; Russo and Fouts, 1997; Porter and Kramer, 2006; Hart and Dowell, 2011).

However, corporate strategic change towards sustainability is a far more complex development process that brings firms with distinctive challenges that have not been encountered before. First, the external sustainable pressures come not only from direct stakeholders such as customers or governments, but also from indirect stakeholders such as non-governmental organizations (NGOs) or other interest groups (Freeman, 1984; Jennings and Zandbergen, 1995; Bansal and Roth, 2000; Hart and Sharma, 2004; Steurer *et al.*, 2005). These different stakeholders hold different interests regarding sustainability (Dixon and Fallon, 1989; Gladwin *et al.*, 1995). Sometimes, they compete with each other to attract firms' attention (Hoffman, 1999; McWilliams and Siegel, 2001). Obviously, it is very difficult for firms to simultaneously meet all sustainability needs from such a broad variety of stakeholders. Firms have to allocate their limited resources to those that are perceived as the most urgent and legitimate (Hart and Sharma, 2004; Escobar and Vredenburg, 2011). Second, corporate change towards sustainability requires firms to meet the intersection of economic, environmental, and social performance (Dyllick and Hockerts, 2002; Bansal, 2005), which is referred to as the 'triple bottom line' by Elkington (1998). However, no external market exists by which firms can generate revenues directly from the environmental and social values they create for the public (Berchicci and King, 2007). Hence, the linkage between a firm's sustainable actions and its economic performance is not straightforward. Therefore, to financially justify the strategic change towards sustainability, firms have to find new ways to transform their sustainability efforts into their private interests.

Considering these distinctive challenges, in the following sections we first review the general findings of the existing DCV literature, and then introduce a conceptual framework to examine the role that dynamic capabilities can play in the process of aligning firms' strategic orientation with various internal and external sustainable interests.

4. Dynamic Capabilities View (DCV) of the Firm

The question of how firms sustain competitive advantage in a changing environment is a central focus in the field of strategic management. Researchers have long understood that technological discontinuities and environmental shifts require the alignment of internal resource and capabilities configuration of the firm with external environmental variations (Nelson and Winter, 1982; Tushman and Anderson, 1986). But only after the seminal work of (Teece *et al.*, 1997), the concept of dynamic capabilities has begun to be extensively discussed by a growing body of literature

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(Barreto, 2010). The agreed view of dynamic capabilities is that, as the exogenous factors such as technological innovation and changes in regulatory and competitive conditions constantly erode the usefulness of the existing resources and capabilities of the firm, long-term competitive advantage is more rooted in the development of dynamic capabilities that are defined as the abilities to purposely reconfigure resources and ordinary capabilities to address changing environments (Teece *et al.*, 1997; Winter, 2003; Helfat *et al.*, 2007).

The fast growth of the research regarding dynamic capabilities has provided a rich body of distinctive views and constructs (Barreto, 2010). Under the banner of dynamic capabilities view (DCV), a number of studies give various definitions of dynamic capabilities. Table 1.1 summarizes some typical definitions of dynamic capabilities.

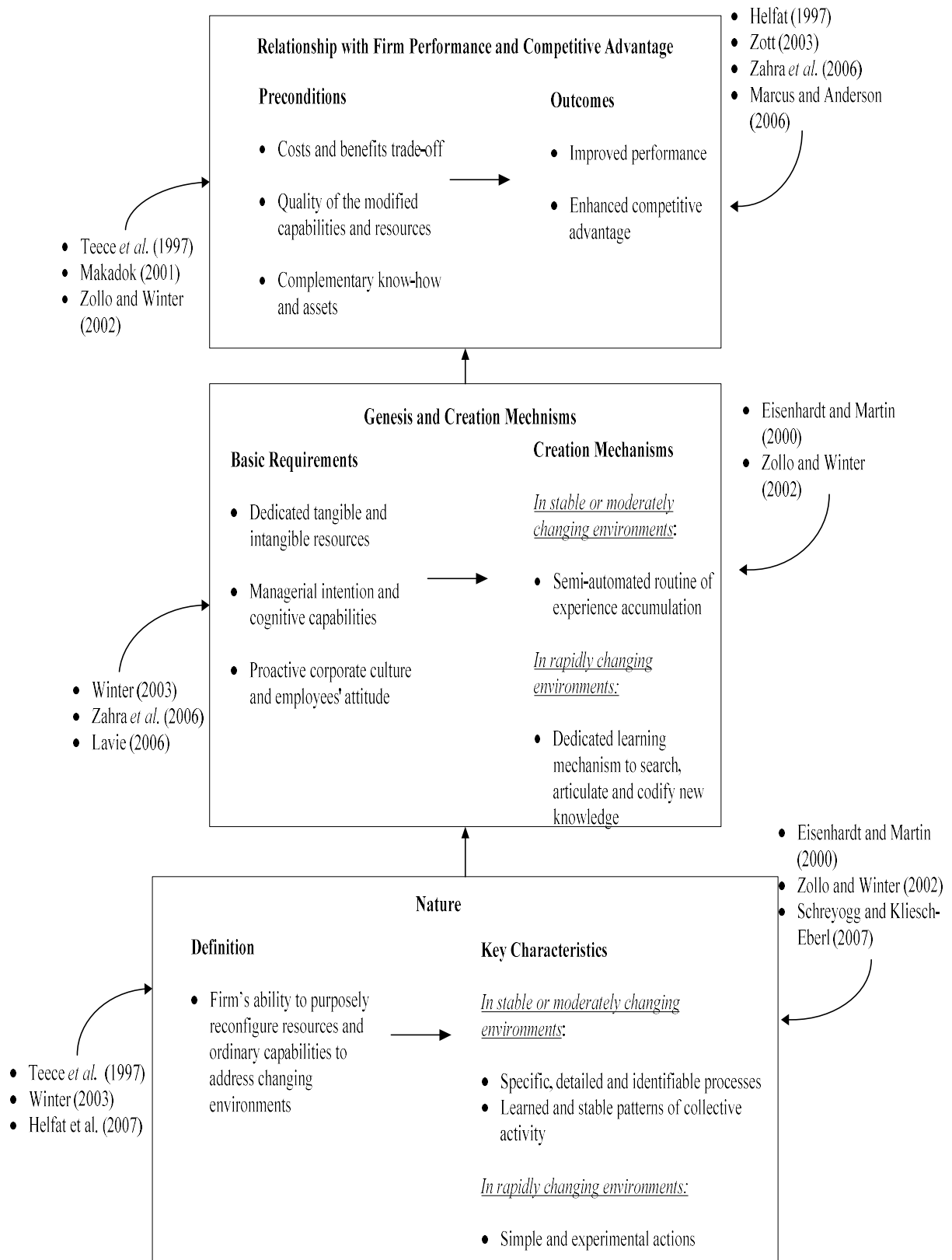
Table 1.1 - Definitions of Dynamic Capability

Reference	Definitions
Teece <i>et al.</i> , (1997)	The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments
Zollo and Winter (2002)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness
Zahra <i>et al.</i> , (2006)	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision maker(s)
Helfat <i>et al.</i> , (2007)	The capacity of an organization to purposefully create, extend, or modify its resource base
Teece (2007)	Dynamic capabilities can be disaggregated into the capacity (a) to sense and shape opportunities and threats, (b) to seize opportunities, and (c) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets

However, the fast growing literature of DCV is full of diverse assumptions and constructs that vary significantly in terms of the nature of dynamic capabilities, their specific characteristics and creation mechanisms in relevant contexts, and their relationship with firm's performance and competitive advantage. Figure 1.1 graphically summarizes these disparate views and the associated key authors.

Figure 1.1 - Theoretical Constructs of Dynamic Capabilities

The Dynamic Capabilities View of the Firm



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4.1 Nature of Dynamic Capabilities

In DCV literature, dynamic capabilities are explained as a special kind of organizational capabilities that should be differentiated from ordinary organizational capabilities (Zollo and Winter, 2002; Winter, 2003; Zahra *et al.*, 2006). More specifically, dynamic capabilities enable firms to change their ordinary capabilities in order to address external turbulence (Teece *et al.*, 1997; Winter, 2003). This argument does not mean that ordinary capabilities are totally immobile and fail for any change or adjustment. However, the evolution of ordinary capabilities has to follow their own life-cycle trajectories (Helfat and Peteraf, 2003) and bears an inherent tendency towards self-enforcement (Schreyögg and Kliesch-Eberl, 2007).

Indeed, the self-enhancement adaption of ordinary capabilities is a double-blade sword. On the one hand, it ensures organizations to operate in a reliable and efficient manner (Hannan and Freeman, 1984). On the other hand, it leads to the “capabilities trap” that narrows the scope of firm’s alternative strategic choices in major, discrete environmental shifts (Levinthal and March, 1993). To overcome this long-standing theoretical paradox, the concept of dynamic capabilities was introduced. Different from the conception of ordinary capabilities as “the abilities to solve complex problems” (Amit and Schoemaker, 1993), dynamic capabilities are described as “the abilities to change the way the firm solves its problems” (Zahra, *et al.*, 2006). For example, product development process is an ordinary capability. But the ability to change the way the firm develops new products is dynamic capability (Zahra, *et al.*, 2006). Firms can utilize both of these two capabilities to meet present and future competitions. Ordinary capabilities are employed as “zero-order” capabilities in operational activities and allow a firm to “make a living” in a short term (Winter, 2003). Dynamic capabilities are the “higher-order” ones that operate in turbulent environments and deliberately change the adaption routines of the ordinary capabilities in order to break the “capabilities trap” for future challenges (Zollo and Winter, 2002).

However, no matter how *dynamic* they are, dynamic capabilities are still conceptualized as organizational capabilities. Organizational capabilities are defined by Amit and Schoemaker (1993) as habitualized and reliable processes that are developed through interactions among firm’s resources for complex problems solving. In a similar vein, the literature of DCV also stresses the repeatability and reliability of dynamic capabilities by presenting them as specific and identifiable processes (Eisenhardt and Martin, 2000), learned and stable patterns of collective activity (Zollo and Winter, 2002), or capabilities to perform given tasks in an acceptable and repetitive manner (Teece *et al.*, 1997; Helfat *et al.*, 2007). But if dynamic capabilities are treated as reliable processes and replicable routines, they still need to follow stabilized action patterns and cannot become fully flexible for all kinds of external changes (Schreyögg and Kliesch-Eberl, 2007). The studies of DCV were quite aware of this problem and suggested that different changing scenarios require different dynamic capabilities.

4.2 Specific Characteristics of Dynamic Capabilities in Relevant Contexts

The literature of DCV mainly relates dynamic capabilities with two changing scenarios: high-velocity environments vs. moderately changing or stable environments (Eisenhardt and Martin, 2000; Barreto, 2010). In high velocity

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environments, disruptive technological change destroys the usefulness of the existing competence and capabilities generated by past experience, (Handerson and Clark 1990, Teece, 2007), the sudden shift of marketing preference makes future business models unclear (Eisenhardt and Martin, 2000), and established firms are forced to follow a different set of technology and marketing principles introduced by radical innovation (Bourgeois and Eisenhardt, 1988; Handerson and Clark, 1990). In contrast, in moderately changing or stable environments in which market change can be predicted (Eisenhardt and Martin, 2000), incremental innovation requires minor changes to the established product design (Handerson and Clark, 1990), and competence of the firm is reinforced by the exploitation of existing knowledge and skills base (Gatignon *et al.*, 2002). It is suggested that the effective patterns and roles of dynamic capabilities vary greatly between these two contrasting environments (Eisenhardt and Martin, 2000, Schreyögg and Kliesch-Eberl, 2007).

In moderately dynamic or stable environments, dynamic capabilities are conceived as specific, detailed and identifiable processes (Eisenhardt and Martin, 2000). These stable processes or routines can be used to systematically modify resource configurations in responding to the predictable market change (Eisenhardt and Martin, 2000; Zollo and Winter, 2002). But in high-velocity environments, dynamic capabilities are more recognized as a series of simple, experimental, and reactive actions based on the real-time information and situation-specific knowledge (Eisenhardt and Martin, 2000). Open and non-routine search for the extraordinary, unforeseen marketing signals allows firms to break the pre-set cognitive framing (Teece, 2000; Teece, 2007; Schreyögg and Kliesch-Eberl, 2007). Extensive cross-functional communication enables managers to quickly understand the changing situation and adapt to it (Zollo and Winter, 2002). And experimental actions following flexible and simple rules allow firms to make more improvisational and non-linear strategic decisions in fast-shifting and ambiguous markets (Eisenhardt and Martin, 2000; Okhuysen and Eisenhardt, 2002).

4.3 Genesis and Creation Mechanism of Dynamic Capabilities

The development of dynamic capabilities is costly and complex (Winter, 2003). Dedicated resource such as financial and manpower input is prerequisite but not sufficient (Winter, 2003; Zahra *et al.*, 2006). What equally important is managers' intention and cognitive capabilities, as well as the proactive corporate culture and employees' attitudes towards change (Winter, 2003; Zahra *et al.*, 2006). In addition, the evolution of dynamic capabilities is also influenced by existing knowledge base and resource endowment of the firm (Winter 2003; Lavie, 2006).

In moderately dynamic or stable environments, the genesis of dynamic capabilities relies heavily on previously built expertise (Eisenhardt and Martin, 2000). The semi-automated routine of experience accumulation within the existing knowledge domain is adequate to ensure the repetitive upgrading of dynamic capabilities for frequent and incremental changes (Zollo and Winter, 2002). However, in high-velocity environments where market conditions and rules of competition are subject to rapid change, dynamic capabilities should not bind to established rules and historical experience (Zollo and Winter, 2002). Rather, they are more based on new, situation-specific knowledge (Eisenhardt and Martin, 2000). What firms need is a dedicated learning mechanism composed of a set of cognitive processes and activities to

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deliberately search, articulate and codify knowledge that is more relevant to the changing situation (Eisenhardt and Martin, 2000; Zollo and Winter, 2002).

4.4 Relationship between Dynamic Capabilities and Firm's Performance and Competitive Advantage

Earlier research in DCV theoretically links the application of dynamic capabilities with enhanced competitive position of the firm by arguing that firms with idiosyncratic dynamic capabilities can generate above-the-average economic rents, especially in changing environments (Teece *et al.*, 1997; Makadok, 2001). In addition, through articulation and codification of the tacit knowledge embedded in operating routines, firms can understand and realize the causal linkage between the dynamic capabilities they operate and the performance outcomes obtained (Zollo and Winter, 2002).

More recent research complements the above assumptions by stating that, although the assertion is theoretically sound that dynamic capabilities can enhance firm's performance and competitiveness, this effect is indirect. First, as "higher-order" capabilities, dynamic capabilities have no direct impact on firm's performance. Instead, they can influence performance only through reconfiguring the ordinary capabilities in which the quality of the modified capabilities plays a mediating role (Zott, 2003; Zahra *et al.*, 2006). Second, the development of dynamic capabilities is a huge investment involving both economic and cognitive costs (Winter, 2003, Lavie, 2006). Whether dynamic capabilities should be used for firm's performance improvement depends on the relevant cost and benefit analysis (Winter, 2003). If dynamic capabilities are used based on wrong calculations, they may damage rather than improve a firm's performance (Zahra *et al.*, 2006). Third, the possession of dynamic capabilities is a necessary, but not sufficient condition for firm's competitiveness (Eisenhardt and Martin, 2000). Firms with identical dynamic capabilities but different complementary know-how and assets may actually build differential resource positions and consequently have differentiated performance and competence levels (Helfat, 1997; Zott, 2003; Marcus and Anderson, 2006).

The discussion of dynamic capabilities provides three salient conclusions. First, the common feature of dynamic capabilities is that they are a special kind of capabilities aim to modify firm's existing resources and capabilities for the needs of environmental changes. Second, like other organizational capabilities, dynamic capabilities are still patterned processes and replicable routines and oriented towards specific tasks (Eisenhardt and Martin, 2000; Zollo and Winer, 2002). It is impossible to develop a general-purpose dynamic capability that is fully flexible for all kinds of external changes (Winter, 2003). Different competition contexts require different dynamic capabilities. Third, the development mechanisms of dynamic capabilities based on diverse external environments vary greatly from experience accumulation to new knowledge creation (Zollo and Winer, 2002). Firms should consider the marketing conditions they are facing when designing the development routines of dynamic capabilities.

More recently, some studies suggest that dynamic capabilities should be applied to the process by which firms undertake corporate sustainability (e.g., Aragon-Correa and Sharma, 2003; Hart and Dowell, 2011). The argument is, given that corporate

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sustainability is an ongoing development progress in which the firm has to continuously evolve its capabilities and strategies to address the emerging sustainability challenges (Hart, 1995, Shrivastava, 1995; Porter and Van de Linde 1995; Hart and Milstein, 2003, Porter and Kramer, 2006). The perspective of dynamic capabilities holds the promise for a better understanding of how firms adjust their capabilities for sustainable change (Hart and Dowell, 2011).

Traditional DCV literature links dynamic capabilities mainly with the environments that concentrate on firm's economic bottom line, despite the fact that the external environment that drives corporate sustainability brings firms with new challenges that are not encountered before. Some recent studies examine the role of dynamic capability in corporate sustainable development, including the research of the dynamic capability in environmental management (e.g., Marcus and Anderson, 2006), green logistics and purchasing management (Defee and Fugate, 2010; Reuter *et al.*, 2010), and the development of proactive sustainable strategies (e.g., Aragon-Correa and Sharma, 2003; Hart and Dowell, 2011). This research stream provides profound insights in how to apply dynamic capability to corporate sustainable development, but one issue still remains. Most of the studies assume the existence of the contingent dynamic capabilities in corporate sustainable development, but fail to elaborate their distinctive nature, despite the argument that different dynamic capabilities are required in different contexts (Eisenhardt and Martin, 2000; Zollo and Winter, 2002). There is thus a paucity of research explicating the nature and microfoundations of these contingent dynamic capabilities for corporate strategic change towards sustainability.

5. Towards a Definition of Dynamic Capabilities for Corporate Sustainability

We define the dynamic capabilities for corporate sustainability as "*firms' abilities to address the rapidly evolving sustainability expectations of stakeholders by purposefully modifying functional capabilities for the simultaneous pursuit of economic, environmental and social competences*".

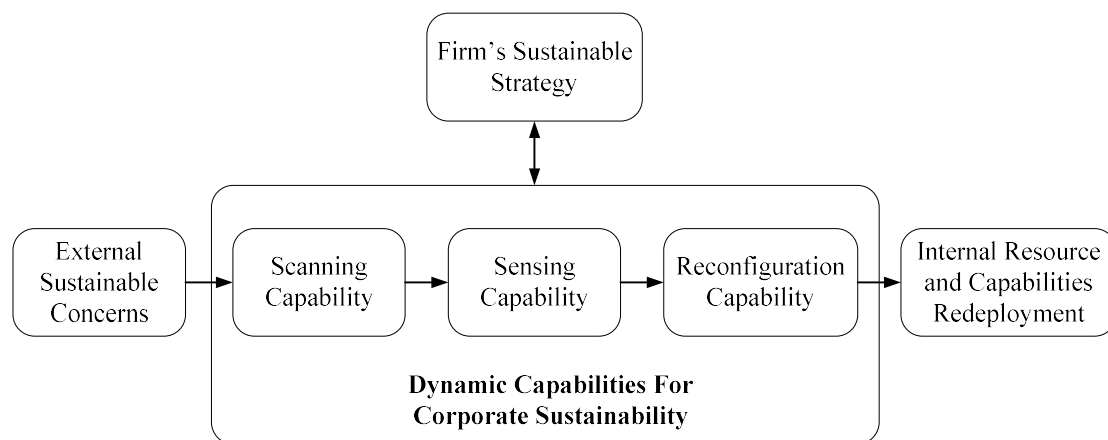
This definition is underpinned by the DCV literature, but also incorporates the insights gained from research on corporate sustainability. The word *purposefully* indicates that the application of the dynamic capabilities for corporate sustainability should be linked directly with a firm's strategic objective and managerial intent, so as to systematically derive *sustainable development opportunities* from internal and external stakeholders' demand (Porter and Kramer, 2006; McWilliams and Siegel, 2011). Here, *sustainable development opportunities* are those that firms can use to pursue both environmental and social values for the public and economic values for themselves (McWilliams and Siegel, 2001). The definition is also in line with the conception of dynamic capabilities as the higher-order capabilities to change the functional, or "ordinary" capabilities to match the market change (Zollo and Winter, 2002; Winter, 2003; Zahra *et al.*, 2006).

In DCV literature, dynamic capabilities are treated as a multidimensional construct (Wang and Ahmed, 2007; Barreto, 2010). First, dynamic capabilities are firm's ability to monitor the constantly shifting environment (Schreyögg and Kliesch-Eberl, 2007), and sense and seize new business opportunities (Teece, 2007). Second, dynamic capabilities also represent the antecedent organizational routines by which managers

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alter their resource deployment to generate new value-creation strategies (Eisenhardt and Martin, 2000). Following this theoretical viewpoint, the dynamic capabilities for corporate sustainability are disaggregated into three distinctive, but related capabilities to: (1) scan the emerging sustainable needs of various stakeholders, (2) sense opportunities or threats from the rapidly changing sustainable expectations, and (3) reconfigure existing functional capabilities for corporate sustainability. Below, we propose and delineate a conceptual framework to explain how these capabilities work together as an underlying mechanism to support firms' strategic change towards sustainability (see Figure 1.2).

Figure 1.2 - Conceptual framework of dynamic capabilities for corporate strategic change towards sustainability



5.1 Scanning Capability

Teece (2007) suggests that the monitoring function of dynamic capabilities involves an analytical system to scan, learn, and interpret the signals reflecting emerging market and technological developments. Such a system represents a set of processes in which the external innovation ideas are received, integrated and used to define future business model and investment priorities (Teece, 2007; Schreyögg and Kliesch-Eberl, 2007). Following this suggestion, the dynamic capability to scan the emerging sustainable needs is considered as an information processing mechanism composed of two different searching processes, one for direct stakeholders and the other for indirect stakeholders.

In corporate sustainability, the pressure from direct stakeholders, such as customer requirements and governmental regulations, is always treated as the most relevant factor that affects firm's legitimate status (Carrol, 1979; Porter and Van de Linde, 1995). Thus formal searching processes should be in place to communicate with those direct stakeholders, in order to recognize new sustainable trends, and analyze their impact on firms' current operations.

In addition, the sustainable concerns from indirect stakeholders cannot be neglected either (Bansal and Roth, 2000; Reinhard *et al.*, 2005). Because indirect stakeholders normally reside outside of firm's established communication or relationship networks,

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firms need to find new ways to systematically identify their “remote voices” (Hart and Sharma, 2004). On the one hand, in the case of the indirect stakeholders whose concerns are perceived as the most urgent and legitimate, firms should build direct communication channels with them (Hart and Sharma, 2004; Escobar and Vredenburg, 2011). On the other hand, in the case of the stakeholders that cannot be directly accessed at the moment, their concerns can also be sensed via firm existing communication network. For example, a firm can rely on its supply chain partners to gain information and insights about the stakeholders staying outside of its networking boundaries (Hart and Sharma, 2004; Ansett, 2007). In either case, the broad search of distant and unfamiliar sustainable signals requires deliberate managerial attention to delineate explicit search routines and processes in organization’s existing communication structure (Berchicci and King; 2007; Hart and Dowell, 2011).

It should be noted that the scanning capability is by no means a one way mechanism for firms to receive information from various stakeholders. Instead, it is firm’s ability to establish a trust-based collaboration relationship with a wide variety of stakeholders (Buysse and Verbeke, 2003; Sharma and Henriques, 2005). The firms with effective scanning capability is more likely to manage context-specific stakeholder pressures along its value chain (Sharma, *et al.* 2007), and reduce negative social and environmental impacts in its pursuit of competitive advantage (Buysse and Verbeke, 2003).

5.2 Sensing Capability

A firm’s capability to sense external environmental changes and its capability to identify relevant business opportunities and threats are often regarded as a unified theoretical construct (e.g., Gilbert, 2006; Teece, 2007). However, these two kinds of capabilities need to be delineated separately in the context of corporate sustainability, because understanding new sustainable expectations from external stakeholders does not mean firms can automatically profitable opportunities from them (McWilliams and Siegel, 2001). The focus of these expectations is on the improvement of corporate environmental and social performance. In many cases they do not tell firms how to relate the societal expectations with their own benefits (McWilliams and Siegel, 2001). These sustainable requirements often focus on improving a firm’s environmental and social performance. In many cases they do not tell firms how to obtain their own financial benefits at the same time (McWilliams and Siegel, 2001). In this sense the sensing capability should be applied to not only recognize potential sustainable risks, but also find the intersection between the firm’s environmental and social goals and its economic interests. Alternately stated, firm’s sensing dynamic capability is the ability to sense and capitalise on, rather than merely react to, emerging external sustainability challenges and opportunities in its business environment (Aragon-Correa, 1998; Dunphy *et al.*, 2003; Sharma *et al.*, 2007).

The development of the sensing capability needs a shared vision within the firm to unify objectives and aspirations of its members (Oswald *et al.*, 1994; Tsai and Ghoshal, 1998). a shared vision enables a firm to generate internal pressure and mobilize employees’ enthusiasm necessary for innovation and change (Hart 1995; Graafland *et al.*, 2003; Worthington *et al.* 2006). The shared vision facilitates organizational learning and employee creativity, initiates competitive actions to challenge the *status quo* (Storey 1994; Chen and Hambrick 1995; Hitt *et al.*, 2001),

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and enable firms to accumulate and harness the resources and skills necessary for developing and adopting proactive sustainability innovations (Hart 1995; Graafland *et al.* 2003).

In the context of corporate sustainability, the sensing capability should be performed to analyze new sustainable knowledge and information, and systematically linking them with related organizational functions in various innovation activities. For example, to simultaneously reduce the negative sustainable impacts and operational cost through process reengineering, firms must combine strong process redesign capability with deep sustainable know-how (Russo and Fouts, 1997). Similarly, to obtain the differentiation advantage in “green” product market, the knowledge about customers’ sustainable preference should be used to guide the R&D activities (Hart 1995; 1997). Specifically, the sensing capability plays two dedicated roles: one for cross-functional knowledge sharing, and the other for knowledge articulation and codification. First, before the sustainable information and knowledge collected from diverse stakeholders are applied to subsequent actions, they must be well understood and meaningfully integrated into organization’s existing knowledge structure. For this purpose, cross-functional knowledge exchange is necessary because novel sustainable knowledge should be forwarded to and interpreted by the individuals or planning units who are capable of making sense of them (Teece, 2007). For example, when new demands in organic product market are received by sales department, through knowledge sharing, they can be sent to product design teams for further analysis. Moreover, in more comprehensive sustainable innovations, profitable opportunities are often generated from the coordination of multiple functional departments. As an illustration, the study of Wells and Seitz (2006) showed that, when an engine remanufacturing program was triggered by a new sustainable idea, its implementation involved the knowledge integration of at least 10 different departments to realize the anticipated environmental and cost benefits.

Second, once new sustainable knowledge has been successfully applied to organizational operations and repetitively justified, the resulting sustainable know-how sometimes need to be articulated and codified into explicit management approaches (Winter, 2003). In the literature of DCV and strategic management, these approaches are described as “best practices” (Christmann, 2000), combinative capabilities (Kogut and Zander, 1992), or proactive corporate approach (Sharma and Vredenburg, 1998; Aragon-Correa, 1998; Aragon-Correa and Sharma, 2003). In the research of corporate sustainable management, they are operationalized as environment management system (Florida and Davison, 2001), or responsive corporate social approaches (Wood, 1991; Porter and Kramer, 2006). These explicit approaches are the formalization of the past experience accumulated in recurrent sustainable innovation activities. They offer stable action templates and simplify future task execution in similar situations.

5.3 Reconfiguration Capability

Reconfiguring organization’s functional capabilities has been recognized as one of the fundamental roles of dynamic capabilities (Teece *et al.*, 1997; Winter, 2003; Zahra *et al.*, 2006). An organization’s functional capabilities are complex, rigid operational routines guided by accumulated tacit skills (Helfat and Peteraf, 2003; Winter, 2003). Firms tend to stick to their established functional capabilities to ensure reliable and

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efficient organizational operation (Hannan and Freeman, 1984; Leonard-Barton, 1992; Levinthal and March, 1993), even when the changing business environment has begun to undermine its fundamental capabilities base (Repenning and Sterman; 2002; Schreyögg and Kliesch-Eberl, 2007). For example, to avoid the possible operational disturbance, many firms prefer the end-of-pipe approach to solve the imposed sustainable problems, despite the fact that this approach can entails huge, non-productive cost (Hart, 1995; Russo and Fout, 1997). Therefore, in corporate sustainable change, the reconfiguration capability refers to the firm's capability to discard, modify, or rebuild the well-entrenched organizational routines and practices that are unsustainable.

This reconfiguration capability aims to overcome the potential “capabilities trap” involved in corporate sustainable development. “Capabilities trap” means firms with superior performance tend to stick to their existing capabilities to ensure reliable and efficient organizational operation (Hannan and Freeman, 1984; Leonard-Barton, 1992; Levinthal and March, 1993). It makes an organization reluctant to drastically change its familiar “way of doing”, even when the changing environmental conditions has began to undermine its fundamental capabilities base (Repenning and Sterman; 2002; Schreyögg and Kliesch-Eberl, 2007). The “capabilities trap” problem is more salient in corporate sustainable management (Berchicci and King; 2007), because the link between sustainable actions and firm economic performance is not straightforward (McWilliams and Siegel, 2001; 2011). For example, to avoid the possible operational disturbance, some firms prefer the end-of-pipe approach to solve the imposed sustainable problems. Even this approach actually entails huge, non-productive cost (Hart, 1995; Russo and Fout, 1997). Furthermore, even firms tend to take more proactive actions to realize both sustainable and financial benefits, without the reliable estimation about the resulting impact on their existing operational routines, firms may still fail to make right decisions (McWilliams and Siegel, 2001; Berchicci and King; 2007).

Indeed, organizational capabilities are complex operational routines guided by accumulated tacit skills and expertise (Helfat and Peteraf, 2003; Winter, 2003). The effective reconfiguration of these internal routines requires a clear understanding of their ambiguous nature (Schreyögg and Kliesch-Eberl, 2007). Firms should conduct a series of collective discussion and evaluation sessions to articulate how these routines are generated and organized (Winter, 2003), and what the results will be when these routines are changed.

Furthermore, the capabilities reconfiguration process should also consider the strong effect of functional interdependence that has been repetitively identified in corporate sustainable development (Hart, 1995; 1997). Functional interdependence means that the operational functions within an organization are interrelated. If one function is changed, its interactive patterns with other functions may be changed as well (Tece, 2007). Put differently, in corporate sustainability, what should be reconfigured includes not only organizational capabilities, but also their interactive patterns (Handerson and Cockburn, 1994; Hart, 1995). To rearrange these combinative patterns, firms should break the tacit routines embedded in the established communication channels and information filters between operational functional units (Galunic and Rodan, 1998; Galunic and Eisenhardt, 2001).

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Drawing on resource-based view of the firm (Barney, 1991, Barney *et al.*, 2011), these three particular dynamic (scanning, sensing, and reconfiguration) capabilities are not only valuable, socially complex, causally ambiguous and deeply embedded within a firm, but also likely to be firm-specific and costly to imitate (Galunic and Eisenhardt, 2001; Hillman and Keim 2001). As such, the three distinctive capabilities provide a foundation for successful corporate strategic change towards sustainability.

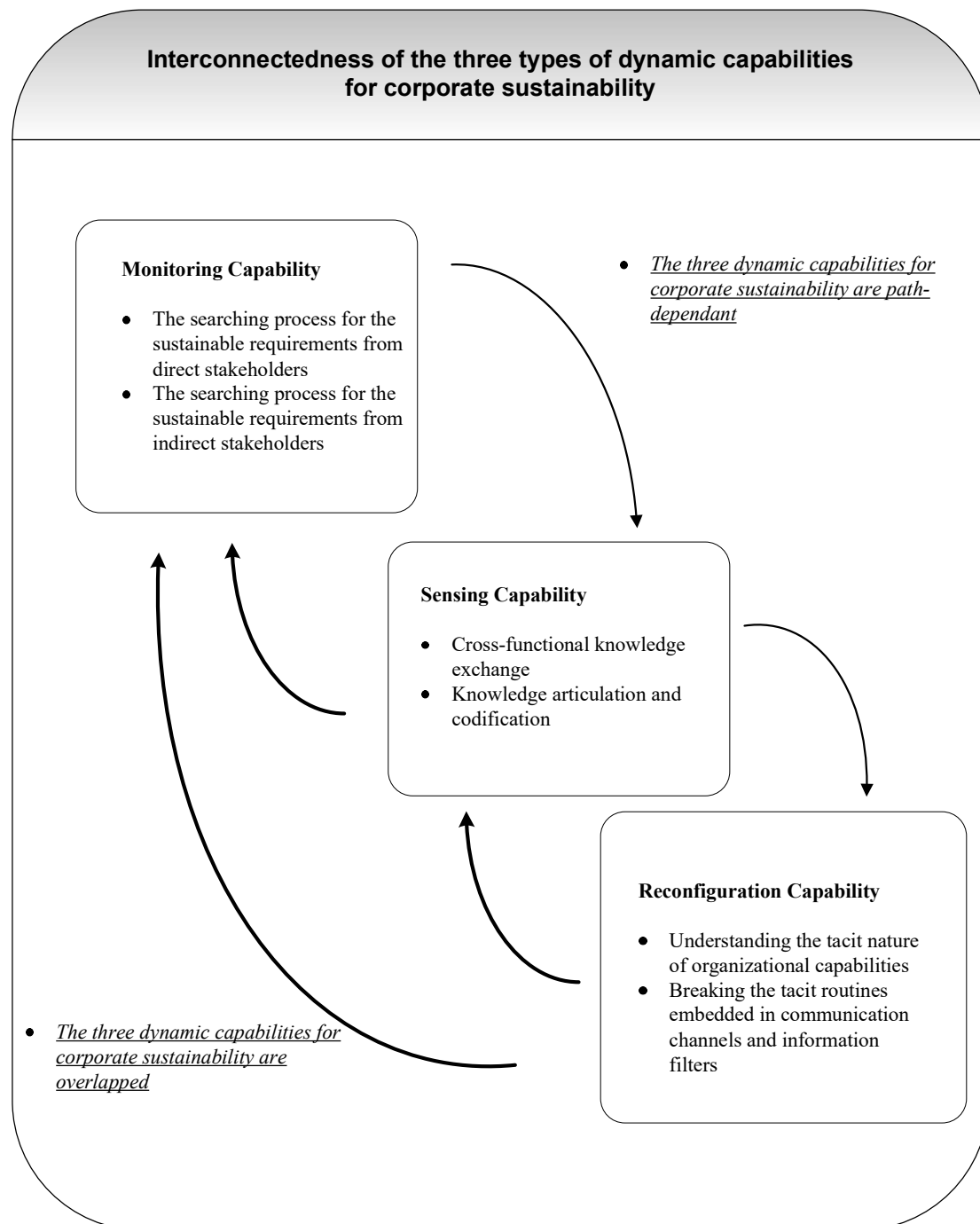
5.4 Interconnectedness of the Three Types of Dynamic Capabilities for Corporate Sustainability

It should be noted that the three dynamic capabilities for corporate sustainability are interconnected. Interconnectedness, as suggested by Hart (1995), consists of two seemingly controversial dimensions: path-dependence and embeddedness. Path dependence suggests that there is a sequential logic to the implementation of the three dynamic capabilities. For instance, the capability to identify new opportunities and threats is relevant only if the scanning capability has been in place to recognize future sustainable trend. Similarly, the reconfiguration capability is relevant only when the sensing capability has already indicated what capabilities might be seriously challenged in further sustainable actions.

Although the logic of path dependence is obvious, the effect of embeddedness represents the other logic to the interconnections of the three dynamic capabilities. Embeddedness means that these capabilities are overlapped. For example, it can be argued that, because the sustainable information collected from different stakeholders often contradicts with each other (Dixon and Fallon, 1989; Gladwin *et al.*, 1995), the scanning capability should be combined with the sensing capability to identify and prioritize the most relevant sustainable needs. Similarly, the sensing capability cannot be separated from the reconfiguration capabilities because seizing sustainable opportunities require firms to apply new knowledge to their existing operations to realize both private and public benefits (McWilliams and Siegel, 2011). In this process, without a comprehensive understanding about how its internal operations are organized and how they can be reconfigured, an organization cannot capture real sustainable opportunities and transform them into profitable outputs. Furthermore, the reconfiguration capability also relates to the scanning capability. Because the sensing capability requires deliberate managerial attention to establish new information sharing mechanism with various external stakeholders (Berchicci and King; 2007; Hart and Dowell, 2011), the reconfiguration capability is thus needed to modify the existing communication practices and routines. In short, there are clear synergies across these three capabilities. The following figure summarizes the interrelatedness exists among the three dynamic capabilities for corporate sustainability.

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Figure 1.3 - Interconnectedness of the Three Types of Dynamic Capabilities for Corporate Sustainability



6. Conclusion

The findings of this conceptual study regarding strategic change (or strategic renewal) especially towards corporate sustainability is threefold. First, the study reviews and concludes up-to-date DCV literature related with environmental complexity and strategic change. Second, the study identifies new challenges involved in

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contemporary corporate strategic change, especially towards sustainable development. Third, the study makes an early attempt to extend DCV to the understanding of corporate strategic change towards sustainability. the proposed conceptual framework can be used by future researchers to further explore the role of dynamic capabilities in facilitating corporate strategic change in contemporary situation.

It is advocated that corporate strategic change towards sustainability depends on the convergence between firm' dynamic capabilities and the formation of its sustainable strategy. On the one hand, firms should establish their strategic objective and missions for long-term sustainable development (Porter and Kramer, 2006). On the other hand, the formation of firm's sustainability strategy requires its dynamic capabilities to sense the emerging sustainable opportunities from external environment. The realization of firms' strategic sustainability objectives also needs dynamic capabilities to change unsustainable routines and practices.

Moreover, a firm's sustainable strategy can navigate the implementation focus of its dynamic capabilities. As suggested by Porter and Kramer (2006), the firm should not treat sustainable development as a series of unorganized, defensive actions. To make real benefits for society and confer competitive advantage, firms need to address the most relevant sustainable concerns in concert with their core strategies.

The theoretical framework developed in the study to illustrate how dynamic capabilities for corporate sustainability potentially enable firms to follow certain managerial processes to sense and seize sustainable development opportunities. This framework stresses the interrelatedness of scanning, sensing and reconfiguration capabilities in responding to stakeholder sustainability requirements and mobilizing firms' internal resources to simultaneously pursue economic, environmental and social benefits. Given the fast changing nature of stakeholder expectations, it is important for managers to realize that deploying dynamic capabilities for corporate sustainability is a continuous process. Firms should also build their long-term transformation vision for both CSR management and sustainable development. Moreover, firms should not attach to their fixed organizational functions, but focus on the underlying changing routines and mechanism for sustainability-oriented innovation. During the change process, both intra and inter-organizational knowledge exchange should be encouraged to break the conventional managerial cognition frame. It is worth noting, the framework developed in this paper is just a benchmarking guidance for firms to regulate their sustainability activities. Managers can use their own ways to utilize the framework based on their specific business and institutional environments.

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