The Dynamic Capabilities Theory: Assessment and Evaluation as a Contributing Theory for Supply Chain Management

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This paper focuses on the Dynamic Capabilities Theory in two main ways. The first relates to assessing the Dynamic Capabilities Theory based on Vos and Schiele's (2014) assessment criteria. In doing so, it was found that the Dynamic Capabilities Theory is vibrant and widely studied, but lacks concrete definitional constructs. The second relates to elaborating on the contribution of the Dynamic Capabilities Theory in supply chain management. Specifically the focus was on discussing the theories contribution to four key decision making processes in supply chain management, namely; make or buy, sourcing, supplier strategy and contracting. The findings highlight the theoretical and practical contribution of the theory for all four decision points. Furthermore the findings highlight the potential of the theory in contributing to the field of supply chain management and the need for further theoretical and empirical research.

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1. THE IMPORTANCE OF SUPPLY CHAIN RESEARCH AND THE ROLE OF THE DYNAMIC CAPABILITIES APPROACH

There has been a growing interest in the field of supply chain management and over the past ten years the term has risen to prominence (Cooper, Lambert, & Pagh, 1997, p. 2). Simultaneously the management of supply chain systems has become more important as companies become increasingly interdependent (Georgi, Darkow, & Kotzab, 2013, p. 522). This strategic role that purchasing and supply chain management has assumed arises from globalization and the increasing possibilities for outsourcing (Van Weele & Van Raaij, 2014, p. 68).

The strategic role has resulted in increased attention for the field of supply chain management since the 1980's, yet it is argued that there is a lack of conceptual understanding in the field (Croom, Romano, & Giannakis, 2000, p. 68). Chen, Paulraj, and Lado (2004, p. 505) claim that the strategic role of purchasing has not yet been fully subjected to rigorous theoretical and empirical analyses and that existing literature remains largely theoretically undeveloped. It was also stated by Croom et al. (2000, p. 75) that there is a relative lack of theoretical work in the field of supply chain management when compared to empirical studies, and they argue that theoretical development is focal to the establishment and development of supply chain management study. This assumption merely highlights the need for further development of the theory and as will be discussed further on in this paper, the past 14 years have seen major advancements in the approach.

The apparent lack of theoretical foundation for purchasing and supply chain management undoubtedly instigates the need for stricter theoretical analysis. The field of supply chain management requires relevant and applicable theories that can improve managerial decision making and improve the way companies organize themselves and operate. This need was also highlighted by Van Weele and Van Raaij (2014, p. 68) who argued that future purchasing and supply management research should be embedded in a limited number of management theories. Basing future purchasing and supply management theory on a limited number of established, dominant theories would lead to a better understanding of the field, both academically and in practice (Van Weele & Van Raaij, 2014, p. 62). The authors have proposed stakeholder theory, network theory, the resource based view and the dynamic capabilities theory among others as options for future research (Van Weele & Van Raaij, 2014, p. 68).

For the purpose of this paper the dynamic capabilities theory will be investigated. Dynamic capabilities theory, hereafter referred to as DCT, was first introduced to explain firm performance in dynamic business environments, focusing on the capabilities that firms employ to reach competitive advantage (Beske, Land, & Seuring, 2014, p. 3). Similarly, purchasing functions have been found to be a major contributor to the firm's profitability and in fostering supply management capabilities which facilitates long-term strategic advantage (Chen et al., 2004, p. 518). Purchasing and the function of DC's both seemingly work towards the same goal; achieving sustainable competitive advantage in dynamic business environments. This was highlighted by Beske et al. (2014, p. 4) who showed the overlapping applicability of sustainable supply chain management and DCT arguing that both strategic management approaches aim to explain the achievement of competitive advantage in global marketplaces characterized by changes in customer demand. At the same time the DCT explains the competences a firm requires to create long term sustainable competitive advantage. Similarly the ability for the field of supply chain management to be an important driver in the achievement of sustainable competitive advantage has also been highlighted (Chen et al., 2004, p. 518).

The compatibility of both approaches makes the DCT interesting to study as a contributing theory for SCM. Therefore it will be analyzed more rigorously using the model proposed by Vos and Schiele (2014). They proposed a comprehensive assessment model which can be used to evaluate purchasing and supply chain management theories (Vos & Schiele, 2014, p. 1). Additionally they provide a framework that helps determine at which stage of its life cycle a theory is (Vos & Schiele, 2014, p. 8), which will be applied to the DC's approach. The DC's theory will further on be tested against four key decision making processes that characterize the most influential decisions made within the management of supply chains, namely; make or buy decisions, sourcing decisions, supplier selection decisions and contracting decisions. The purpose of which is to provide insight into the theory as a theoretical foundation for supply chain management practices and to assess whether the DCT makes a practical contribution to supply chain management in key decision making processes. Assessing the value of the DCT as a foundation for supply chain management and key decision making processes could contribute to a better understanding, both academically and in the practitioner field. Considering the focus of this paper the key research questions can be stated as follows: *does the dynamic capabilities theory qualify as a theory and how does it contribute to the management of supply chains with regard to key decision making processes?*

2. DYNAMIC CAPABILITIES THEORY

2.1 Dynamic Capabilities as an Extension to the Resource Based View

The DCT was initially introduced by David Teece and Gary Pisano in 1994. According to (D. J. Teece & Pisano, 1994, p. 515), in the past successful companies pursued a "resource-based strategy of accumulating valuable technological assets, often reserved by a defensive approach towards intellectual property". This "resource based strategy" was grounded on the ideas of the "Resource Based View" which attempted to explain that the source of competitive advantage lies within a company's ability to manage internal resources(Das & Teng, 2000, p. 32). The argument is that because some resources can be specific to firms and are not easily imitated, firms differ in terms of their resource base. This inimitability is essentially what leads to competitive advantage (Das & Teng, 2000, p. 32). At the heart of the RBV are the VRIN variables. The main principle is that an organization is seen as a collection of resources that are simultaneously *valuable, rare, imperfectly imitable and non-substitutable,* these variables essentially enable the company to reap superior rents (Bowman & Ambrosini,

2003, p. 291). In this context, the resource based view focuses on the unique internal resources within firms and exploiting firm specific assets to achieve competitive advantage (D. J. Teece, Pisano, & Shuen, 1997, p. 514).

Although the resource based view is considered an influential management theory it has been criticized to be conceptually vague and redundant, with limited focus on the mechanisms by which resources actually contribute to competitive advantage (Eisenhardt & Martin, 2000, p. 1106). This is supported by D. J. Teece and Pisano (1994, p. 538) who argued that the foundation of the resource based view is not capable of supporting sustained competitive advantage. While the resource based view recognizes the mechanisms that enable competitive advantage, it does not attempt to explain how these mechanisms operate (D. J. Teece et al., 1997, p. 510). Instead it was proposed that competitive advantage would be attributed to those companies that were able react rapidly and flexibly to product innovation, while simultaneously possessing the capacity to manage firm specific capabilities in such a way as to effectively coordinate and redeploy internal and external competences (D. J. Teece et al., 1997, p. 515). This ability to achieve new forms of competitive advantage by being flexible and fast in dealing with changing market environments is what D. J. Teece and Pisano (1994, p. 552) referred to as "DC's". The DCT expands on two fundamental issues that were not discussed in other strategy approaches, such as the resource based view; the first being the firm's ability to renew competences so as to adapt to changes in the business environment and the second being the ability of strategic management to use these competences to match the requirements of the environment (D. J. Teece et al., 1997, p. 515). Thus due to the fact that the resource based view has not been able to adequately explain how and why certain firms have competitive advantage in situations of rapid and unpredictable change (Eisenhardt & Martin, 2000, p. 1106) in which DC's become the source of sustained competitive advantage (D. J. Teece et al., 1997, p. 511), the DC's approach is proposed.

In this sense the DCT adds to the resource based view by attempting to improve theory by explaining the nature of sustainable competitive advantage, while also intending to inform managerial practices (D. J. Teece et al., 1997, p. 510). In essence the DCT tries to make use of competences that are unique to firms to gain competitive advantage and explains how these competences are developed, deployed and protected (D. J. Teece et al., 1997, p. 510). Initially the term DC was defined as a "Firms ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (D. J. Teece et al., 1997, p. 516). The approach takes into account three classes of factors that help explain where competitive advantages derives, namely; processes, which describe the way things are done in an organization: positions, which represent the types of assets, and relations of an organization: and paths, which refer to the organizations strategic direction. In essence the accumulation of competitive advantage and DC's is attributed to the processes of an organization, the positions of its assets and its past and future paths (D. J. Teece et al., 1997, p. 518). Since its introduction however the DCT has seen several elaborations from numerous authors. Further developments of the DCT will be discussed later in the paper.

2.2 The Dynamic Capabilities Approach Assumes that Successful Companies are Able to Demonstrate Timely Responsiveness to Market Dynamics

The DCT sets out to explain how competitive advantage is achieved. D. J. Teece et al. (1997, p. 515) argue that successful companies in the global market place are able to demonstrate timely responsiveness to market dynamics and speedy product innovation. Additionally, successful companies are able to effectively coordinate and redeploy internal and external competence (D. J. Teece et al., 1997, p. 515). The ability to achieve competitive advantage in this context is referred to as the DC (D. J. Teece et al., 1997, p. 515). D. J. Teece et al. (1997, p. 515) define the term "dynamic" as "the capacity to renew competences so as to achieve congruence with the changing business environment; this is relevant in situations where time to market is critical and the nature of competition is difficult to determine". Capabilities are referred to as "the key role of strategic management in appropriately adapting, integrating and reconfiguring, internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment" (D. J. Teece et al., 1997, p. 515).

The approach explains that the way organizations develop firm specific competences to respond to changes in the business environment is ultimately related to the firm's business processes, market positions, and opportunities (D. J. Teece et al., 1997, p. 518). These three factors form the basis for determining DC's. Processes encompass the way things are done in organizations and they have three roles; coordination, learning and reconfiguration (D. J. Teece et al., 1997, p. 518). Positions define specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and complementors(D. J. Teece et al., 1997, p. 521). Paths refer to the strategic alternatives available to the firm, these are defined by path dependencies and technological opportunities (D. J. Teece et al., 1997, p. 522). The organizational processes that are shaped by a firms asset positions and paths, explain the essence of the firms DC's and its competitive advantage (D. J. Teece et al., 1997, p. 518). The competitive advantage that is accompanied by these capabilities can be attributed to the fact that firm specific assets such as values, culture and organizational experience cannot be traded in the market (D. J. Teece et al., 1997, p. 528). This implies that distinctive competences and capabilities must be built within the firm (D. J. Teece et al., 1997, p. 518). The fact that DC's cannot be bought suggests that a firm's behavior is unique and hard to replicate. D. J. Teece et al. (1997, p. 510) argue that competitive advantage through competences can only generate rents if they are based on a collection of routines, skills, and complementary assets that are difficult to imitate.

The DCT views competition in Schumpeterian terms, where firms are constantly seeking to create "new combinations", and competitors in the marketplace are continuously attempting to improve their competences or to imitate the competence of their most qualified competitors (D. J. Teece & Pisano, 1994, p. 552). Rivalry is thus inevitable in Schumpeterian terms, which implies

that a firm's ability to improve or develop new types of competences is imperative in developing long-term competitive advantage (D. J. Teece & Pisano, 1994, p. 552). D. J. Teece (2007, p. 1341) suggests that the DC framework includes the key variables and relationships that need to be manipulated to create, protect, and leverage intangible assets so as to achieve superior performance and avoid bankruptcy. It is argued however that achieving this change is difficult and that long run success is likely to require achieving necessary internal creative destruction to help sustain performance (D. J. Teece, 2007, p. 1341). This brings into light the role of reconfiguration as the process of creative destruction will require the firm to reconfigure routines and processes to form new and improved ones. C.E Helfat et al. (2007, p. 2) argue that the processes that comprise DC's are assumed to include both organizational and managerial processes aimed at identifying needs and opportunities for change and at accomplishing that change. Véronique Ambrosini and Bowman (2009, p. 30) explain that the approach helps explain how a firms resource stock evolves over time and thus how advantage is sustained. DC's thus consider the firm to be a collection of "heterogeneous path-dependent resources" which allow firms to generate competitive advantage (Véronique Ambrosini & Bowman, 2009, p. 30). Eisenhardt and Martin (2000, p. 1106) explain that DC's vary with the level of competition in the market. In moderately dynamic markets where change occurs in the context of stable industry structure DC's reflect routines. They are "complicated, detailed, analytic and stable processes with predictable outcomes" (Eisenhardt & Martin, 2000, p. 1106). However in high velocity markets where industry structure fluctuates, DC's are "simple, experiential, unstable processes that rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable outcomes"(Eisenhardt & Martin, 2000, p. 1111). DC's in the context of competition can thus be seen as responses to the need for change or new opportunities (Easterby-Smith, Lyles, & Peteraf, 2009, p. 4) and these responses are deeply embedded in the firms' individuality. In the following section the main variables, hypotheses and the core model will be presented.

2.3 Processes, Positions and Paths form the Main Variables of Dynamic Capabilities

Several authors have made theoretical contributions to DC's in attempts to describe the main constituents. One such contribution comes from Adner and Helfat (2003, p. 1020) who introduced the concept of dynamic managerial capabilities to explain difference in managerial decisions and corporate strategy arguing that managerial guidance has a critical impact on firm performance. Thus managerial capabilities are rooted in three underlying variables; managerial human capital, managerial social capital, and managerial cognition. The argument is that because managerial decisions are based on the resource and capability base of an organization, differences between firms in their resources and capabilities may lead to differences in managerial decisions and thus to differences in corporate performance (Adner & Helfat, 2003, p. 1020).

Wang and Ahmed (2007, p. 31) contributed to the DC's approach by identifying three component factors which reflect the common features of DC's across firms; adaptive capability, absorptive capability and innovative capability. Adaptive capability is defined as a firms' ability to take advantage of market opportunities (Wang & Ahmed, 2007, p. 37). Absorptive capability is referred to as the ability to identify and apply external information for commercial means. Firms with higher absorptive capability are better able to learn from partners and transform learned knowledge into competences (Wang & Ahmed, 2007, p. 37). Innovative capability refers to a firms' ability to develop new products or markets. The argument is that these factors explain the confusion behind how resources and capabilities can be used to sustain long-term firm performance (Wang & Ahmed, 2007, p. 43). Additional contributions discuss enablers and antecedents of DC's. Véronique Ambrosini and Bowman (2009, p. 41) for example discuss external factors and internal factors as drivers and inhibitors for DC's. External factors such as the nature of the market and the firms' history for example determine the firms' ability to react to market fluctuations. Internal factors such as managerial behavior, social capital and trust for example determine the organizations ability to develop DC's (Véronique Ambrosini & Bowman, 2009, p. 42). Eriksson (2014, p. 71) also argued that the creation of DC's rests on internal and external antecedents. Internal antecedents; structural and social, and external antecedents; environmental, networks and relationships influence the organization ability to develop and sustain DC's (Eriksson, 2014, p. 71). There is a large variety of literature available that discusses the variables of the DCT. As discussed earlier, academics contribute to the theory with their own elaborations on the constituents of the theory. This continuous contribution to the theory leaves little room for consistency, nevertheless these contributions are mostly grounded on D. J. Teece et al. (1997) and D. J. Teece and Pisano (1994) initial discussions. In order to provide an elaborate understanding about the foundations of DCT the early these discussions will be used.

D. J. Teece and Pisano (1994) and D. J. Teece et al. (1997) proposed that DC's consist of several classes of factors that can help determine a firms distinctive competencies. These factors are processes, positions and paths and they can be considered as the main variables for the theory. Essentially these factors explain the firm's DC's and the sources of competitive advantage (D. J. Teece et al., 1997, p. 518).

2.3.1 Processes

Processes describe the way things are done in the firm and they have three roles (D. J. Teece et al., 1997, p. 518). The first role; coordination/integration is considered a static concept and it presents the idea that managers are in charge of coordinating and integrating activities within the firm (D. J. Teece et al., 1997, p. 518). The degree to which internal coordination and integration is effective and efficient can explain the difference between a firms failure and success. Evidence shows that the way in which production is organized and managed can determine the differences in firm competences (D. J. Teece et al., 1997, p. 519). An example could be Japanese manufacturing companies like Toyota, who are able to maintain competitive positions in global market places through excellent managerial and production practices such as total quality management (Phan, Abdallah, & Matsui, 2011, p. 526).

The second role; learning, is considered to be a dynamic concept and represents a process by which repetition and

experimentation enable tasks to be performed better and quicker (D. J. Teece et al., 1997, p. 520). It is explained that learning involves organizational as well as individual skills and that the organizational knowledge generated through learning resides in new patterns of interactions that represent successful solutions to particular problems (D. J. Teece et al., 1997, p. 520). The concept of DC's as coordinative management process provides potential for inter-organizational learning. Researchers have pointed out that collaborations and partnerships can be a driver for organizational learning, enabling the recognition of dysfunctional routines (D. J. Teece & Pisano, 1994, p. 545; D. J. Teece et al., 1997, p. 520). The important role of organizational learning was highlighted by Véronique Ambrosini and Bowman (2009, p. 35) who stated that learning allows tasks to be performed more effectively and efficiently as an outcome of experimentation. Also, Eisenhardt and Martin (2000, p. 1114) state that learning mechanisms, such as repeated practice guide the evolution of DC's because it helps gain a deeper understanding of processes and thus helps develop more effective routines.

The third role; Reconfiguration and transformation, presents the firm's ability to be aware of the need to reconfigure the firms' asset structure, and the ability to transform internal and external assets (D. J. Teece et al., 1997, p. 520). Organizations need to observe markets constantly to detect progressions in technologies and they need to be willing to adopt to these progressions in order to achieve best practices (D. J. Teece et al., 1997, p. 520). Karim (2006, p. 801) found that organizational structure reconfiguration was a DC because it enables business units to recombine their resources and to adapt to environmental changes, such as changes in customer demand.

2.3.2 Positions

Positions represent the organizations current portfolio of assets such as its plant and equipment and difficult to trade knowledge assets (D. J. Teece et al., 1997, p. 521). According to Véronique Ambrosini and Bowman (2009, p. 39) position lies on two dimensions, internal and external. Internal positions relates to the firms' internal assets such as its technological assets, complementary assets, financial assets, reputational assets, institutional assets and structural assets, while external assets relate to the firms' institutional and external environment (Véronique Ambrosini & Bowman, 2009, p. 39; D. J. Teece et al., 1997, p. 521) such as its current endowment in its customer base and its relations with suppliers (D. J. Teece & Pisano, 1994, p. 541). The firms' current position is determined by the, market assets and organizational boundaries that the firm employs (D. J. Teece et al., 1997, p. 521).

2.3.3 Paths

Paths refer to the strategic alternatives available to the firm, it history and path dependencies. Path dependencies explain that where a firms' future lies is a function of its current position and its history. Earlier on, D. J. Teece and Pisano (1994, p. 541) referred to paths as the strategic alternatives available to the firm, and the attractiveness of the opportunities which lie ahead. The technological opportunities that a firm has depend on how fast the industry is evolving and how fast scientific breakthroughs are being made (D. J. Teece et al., 1997, p. 523).

It can be said that together these three variables compose the core model of DC's (D. J. Teece et al., 1997, p. 518). The three factors determine the ability to react to market fluctuations appropriately and efficiently so as to use resources most efficiently to be able to outperform competition. In essence this can be considered as the main hypothesis of the theory as also stated by Li and Liu (2014, p. 2796), that DC's have a positive impact on competitive advantage. The argument behind this idea is that these factors can only provide competitive advantage if they are based on a collection of routines, skills and complementary assets that are difficult to imitate and replicate. The ease of imitation can determine the sustainability of competitive advantage. As discussed earlier, usually these firm specific assets cannot be bought, implying that they are embedded within firms which limits imitation, making it unique to a firm, this enables the firm to achieve a competitive advantage (D. J. Teece et al., 1997, p. 513).

2.4 The Dynamic Capabilities Approach can be considered a Theory that Lacks Consistency

In order to assess whether the DC's approach can be classified as a theory, the framework proposed by Vos and Schiele (2014) will be used. The framework provides a comprehensive list of characteristics that can be used to evaluate the validity and level of development of a theory (Vos & Schiele, 2014, p. 3).

Determining characteristics are those features of a theory that are obligatory. The determining characteristics are made up of two classes that explain the theories construction; theory construction and empirical construction. Theory construction characteristics are classed into five specific elements namely; *units/what, laws/how, boundaries/who, what, when and where, system states and why*. Empirical constructions are divided into four specific elements, namely; *propositions, hypothesis, empirical indicators, empirical research* (Vos & Schiele, 2014, pp. 4-5).

2.4.1 Theory Construction

Units/what – the unit of analysis in the DC's approach is the firm itself, and its ability to "sense and shape opportunities and threats, to seize opportunities and to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the businesses intangible and tangible assets" (D. J. Teece, 2007, p. 1319). In doing so the organization makes use of DC's that are embedded in the firms' processes, positions and paths (D. J. Teece & Pisano, 1994, p. 541; D. J. Teece et al., 1997, p. 518).

Laws/how – the underlying function of DC's is to enable firms to manipulate their resources in such a way as to achieve competitive advantage in the market place. Essentially DC's explain *how* the firms underlying processes and its current position, shaped by its path (D. J. Teece & Pisano, 1994, p. 541; D. J. Teece et al., 1997, p. 518)can be manipulated to reap the most benefits from its future opportunities.

Boundaries/who, what, when, and where – The DCT explains company performance in dynamic environments. As pointed out by Eisenhardt and Martin (2000, p. 1106), in high velocity markets DC's are "simple, experiential, unstable processes that rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable outcomes". While in moderately dynamic markets, DC's are "complicated, detailed, analytic processes that rely extensively on existing

knowledge and linear execution to create predictable outcomes" (Eisenhardt & Martin, 2000, p. 1106). This can be considered as a *space boundary* because DC's are related to environmental factors that influence the explanations and predictions of the theory. The formation of DC's takes time and effort. Unlike consulting services that aim to improve business performance, DC's cannot be bought and are embedded in the firms' processes, positions and paths (D. J. Teece & Pisano, 1994, p. 541; D. J. Teece et al., 1997, p. 518). The life cycle of DC's, implying that they evolve over time, either improving or deteriorating, adds a *time boundary* to the theory. The fact that in essence the DCT aims to explain the firm's ability to achieve a competitive advantage and thus earn increased returns on its investments adds a *value boundary* to the theory.

System states – in describing DCT's *inclusiveness*, Eisenhardt and Martin (2000, p. 1107) discuss that DC's are specific process that fluctuate with market dynamism. In moderately dynamic markets where change occurs frequently, but is roughly predictable and industry structure is stable, DC's are formed by the ability of management to develop efficient, organized and effective processes (Eisenhardt & Martin, 2000, p. 1110). In high velocity markets where change is unpredictable, and market boundaries are unclear, DC's are formed by situation specific reactions, which highlights the need for organizational flexibility (Eisenhardt & Martin, 2000, p. 1111). Both in times where the market is stable and dynamic, the underlying processes that create DC's are active, this is because DC's are embedded within the firm and are created and developed over time. In explaining DC's *determinant values*, it is useful to refer to D. J. Teece (2007) who proposed two yardsticks that can be used to measure *determinant values*; technical fitness and evolutionary fitness. Technical fitness is defined by how effectively a capability performs its function, regardless of how well the capability enables the firm to make a living. Evolutionary fitness references how well the capability enables a firm to sustain itself (D. J. Teece, 2007, p. 1321). DC's seem to portray a certain degree of *persistency and consistency* which varies with market evolution. As mentioned before, in moderately dynamic markets, DC's rely on prior knowledge which portrays a certain degree of consistency as DC's need to be maintained over time.

Why – the underlying factors and processes that justify the proposed interrelationships are reflected in the firm. The existence of the firm is the result of its processes, positions and paths (D. J. Teece et al., 1997, p. 518). The way in which these factors are managed ultimately lead to the success of the firm.

2.4.2 Empirical Construction

Propositions – the underlying proposition is that the units, namely; processes, positions and paths, that undergird a firms' ability to sense the environment, seize opportunities and reconfigure its resources, which are embedded within firms and shaped by its past (D. J. Teece, 2007, p. 1341; D. J. Teece & Pisano, 1994, p. 541; D. J. Teece et al., 1997, p. 518), can be manipulated in such a way as to achieve efficient, organized and structured processes that can become optimized ways of reacting to market dynamics (Eisenhardt & Martin, 2000, p. 1117).

Hypothesis – based on the proposition discussed, the main hypothesis underlying the DC's approach argues that DC's have a positive impact on competitive advantage. Indeed this hypothesis was supported by Li and Liu (2014) while studying the effect of DC's in emerging economies on enterprises in China. Additionally the authors also found environmental dynamism has a positive impact on DC's (Li & Liu, 2014, p. 2706).

Empirical Indicators – the DCT can be studied empirically by using its components as variables. Empirical indicators could be formulated in such a way as to receive both quantitative and qualitative results. These empirical indicators could be processes in forms of routines for example, positions in forms of the current financial assets employed by a firm and their asset portfolio and paths in the forms of R&D developments that enable new product opportunities. For example, the following DC's were used as empirical indicators by Wu (2010, p. 28); resource integration capabilities, learning capabilities and resource configuration capabilities. Other studies define and use other variables to study the effects of DC's such as Makkonen, Pohjola, Olkkonen, and Koponen (2014, p. 2712) who used reconfiguration, leveraging, learning and renewing capabilities such as sensing and seizing, knowledge creation and knowledge integration as DC's.

Empirical Research – the DCT has been subjected to empirical research by numerous authors. For example Lin and Wu (2014, p. 441) applied the resource based view to study the mediating effect of DC's on improved performance and found a positive correlation. They argue that *valuable, rare, imperfectly-imitable and non-substitutable* resources positively affect the development of DC's such as *integration, learning and reconfiguration* (Lin & Wu, 2014, p. 441). The results of this study emphasize that by accumulating VRIN resources and developing DC's firms can improve their competitive advantage and their performance (Lin & Wu, 2014, p. 441). This study and many more exemplify the fact that it is possible to study the DC's approach empirically.

Considering the analysis and characteristics of DC's it can be concluded that the DC's possesses all the factors that make up a theory, both determining characteristics and empirical characteristics. Nevertheless, different authors have different perspectives on DC's, which makes it difficult to assess exactly what DC's are and how they work. In the following section several empirical findings will be discussed, followed by a classification of the theory in the life cycle approach, followed by a critical assessment of the theory and a discussion on its evolutionary tendencies.

2.5 DC's are Deeply Rooted within the Processes of a Firm

At this point DC's have been discussed mainly from a theoretical perspective. In this section however DC's will be discussed from a practical perspective in order to understand how they function in organizations.

Augier and Teece (2007, p. 187) mention that the core of DC's consists of several fundamental management skills, namely; learning and innovation processes, business design competence, investment allocation decision heuristics, asset orchestration, bargaining and transactional competence and efficient governance and incentive alignment. Eriksson (2014, p. 69) found that many studies define the following activities as DC's; product or technology development and transfer, inter-organizational collaboration and capability acquisition

and organizational and business model restructuring. Other authors have defined specific processes as DC's. Karim and Mitchell (2000, p. 1079), for example, discuss how acquisitions are considered a DC. It was found that companies involved in acquisitions tended to discontinue more old production lines and to start new ones. These findings show that acquisitions result in major differences in business reconfigurations and are key mechanism by which firms change their mix of business resources (Karim & Mitchell, 2000, p. 1079). Danneels (2002, p. 1115) argued that product innovation is a DC's because it leads to organizational renewal overtime. It is argued that new product development is connected to the development and renewal of firm-level competences (Danneels, 2002, p. 1115). The focus of these studies shows how specific processes and inter-firm activities can be viewed as DC's because they contribute to the firms' ability to change and improve.

Perhaps a more elaborate description on DC's within firms comes from D. J. Teece (2007). D. J. Teece (2007, p. 1341) proposed an elaborated framework consisting of three factors; sensing, seizing, and reconfiguring. Sensing refers to the idea that in a fast-paced, competitive environment, where consumer needs are constantly changing, firms need to be able to detect opportunities. This requires firms to constantly scan, search and explore new market trends (D. J. Teece, 2007, p. 1322). Sensing requires organizations to invest in research activities and the monitoring of customer needs and technological possibilities (D. J. Teece, 2007, p. 1322). Once opportunities in the market place have been identified, firms' need to seize these opportunities. Seizing is done by introducing new products, processes or services to the market which requires investments in development and commercialization activities (D. J. Teece, 2007, p. 1326). Seizing also requires companies to improve technological competence and complementary assets, so that when an opportunity is ripe, they can secure an early entry into the market place(D. J. Teece, 2007, p. 1326). Once the opportunity has been seized, firms' will be able to grow, which will require the organization to augment its resources and assets, ultimately leading to a reconfiguration of business processes to maintain evolutionary fitness (D. J. Teece, 2007, p. 1335). Reconfiguration requires the company to maintain strong leadership, business model redesign and asset-realignment activities (D. J. Teece, 2007, p. 1336).

All in all, by assessing from the available literature, it can be said that there is no clear consensus as to what types of processes can actually be considered to be DC's as different authors argue that different processes can be considered DC's. For example Eriksson (2014, p. 69) found that many studies define product or technology development and transfer, inter-organizational collaboration and capability acquisition and organizational and business model restructuring as DC's, while (Karim & Mitchell, 2000, p. 1079) discussed how acquisitions are considered a DC and Danneels (2002, p. 1115) argued that product innovation is a DC. What is clear however is that DC's can take the form of various organizational processes, these processes are embedded within organizations and ultimately define how the organization uses its resources to achieve competitive advantages.

2.6 Empirical Findings Validate the Practical Applications of the DCT

2.6.1 Method: Literature review approach

Initially, the search for literature was done on two popular databases, namely; Scopus (www.scopus.com) and Sciencedirect (www.sciencedirect.com). The initial research was done in order to gather general information about the research topic, so the key words "supply chain management" (128672 total hits), "supply chain" (302723 total hits), "supply chain theory" (92284 total hits), "dynamic capabilities theory/approach" (130585 total hits), "dynamic capabilities" (288738 total hits) were used. Taking only into consideration the first page of results the most relevant articles where then sourced. Articles that had relevant titles from the first page of results were then further examined by reading the abstract. If an article was thought useful it would be downloaded and used for further research, irrelevant articles found through this search were disregarded. Once a substantial amount of relevant articles were found, they were read and relevant information was highlighted. This was mainly the case for the introductory sections. After the introduction the scope of the research had narrowed down substantially which required more specific literature. Specific papers were found because they were cited in other papers and were thought relevant and downloaded. Other specific papers were found through narrowing down the search criteria, for example a source was needed where the dynamic capabilities approach would be linked to supply chain management, thus the initial search on Scopus and Sciencedirect would be "supply chain management" (128672 total hits) and the term "dynamic capabilities" (18375) would then be searched within the results, from there relevant articles would be identified.

2.6.2 General Empirical Findings

DC's have been studied from an empirical perspective quite extensively. Interesting findings, perhaps on a more general level, come from Li and Liu (2014) in their study on DC's, environmental dynamism and competitive advantage. Using data received from surveys conducted with 217 enterprises in China, operating in dynamic environments, the authors were able to assess the role of DC's on gaining competitive advantage (Li & Liu, 2014, p. 2796). Their findings highlight that DC's have a significant positive impact on competitive advantage, and that environmental dynamism is an antecedent of DC's and facilitate their development (Li & Liu, 2014, p. 2797).

Further elaborating on the role of environment dynamics, the applicability of the resource based and DC views in volatile markets was studied by Wu (2010). The study examined 253 Taiwanese firms. The main hypotheses in this study proposed that a firms' DC's relate positively to firm competitive advantages and that volatile markets do not weaken the positive relationship between DC's and competitive advantage (Wu, 2010, p. 28). DC's were referred to as resource integration capabilities, learning capabilities and resource configuration capabilities. The competitive advantage of a firm in this study were defined by their speed of response to the market, its production efficiency, its product quality and speed of innovation. Environmental volatility in this context referred to the rapidity of technological change in the industry, the activities of major competitors, the changing demand of customers and the product life cycle (Wu, 2010, p. 29). The findings indicate that DC's, in highly volatile

markets, effectively enhance the firm's competitive advantage (Wu, 2010, p. 30). These finding correspond to the findings of Li and Liu (2014). More empirical research has been conducted which took into account the role of the external environment. For example (Wilden, Gudergan, Nielsen, and Lings (2013, p. 86)) found that DC's have a positive effect on sales growth and financial solvency when firms are faced with increasing levels of competitive intensity. To test their hypothesis the authors used data and financial data from large Australian firms with more than 150 employees and a sales volume of more than US$20 million. These organizations are believed to have high degrees of formalization and established specific procedures (Wilden et al, 2013, p.77).

Other studies have examined the role of DC's and their relation with internal processes. Makkonen et al. (2014, p. 2712) found that DC's have a positive effect on organizational change, which in turn positively affects product innovativeness. Improved product innovativeness means that firms are better able to develop and introduce new products in the market, this positively influences the growth of the firm. The study highlights that DC's and innovation give firms competitive advantage and increase their evolutionary fitness (Makkonen et al., 2014, p. 2712). The authors studied DC's in the form of regenerative capabilities such as reconfiguration, leveraging, learning and renewing capabilities such as sensing and seizing, knowledge creation and knowledge integration (Makkonen et al., 2014, p. 2712). The results were found through administering quantitative surveys and interviews within three industries and by using information retrieved from databases (Makkonen et al., 2014, p. 2710).

These studies highlight the relationship of the DCT with both the external environment and the internal performance of the firm. Li and Liu (2014), Wu (2010) and Wilden et al., (2013) emphasize on the importance of DC's in responding to external market dynamics while Makkonen et al., (2014) emphasize the importance of DC's in facilitating organizational change, product innovativeness and the growth of the firm. These findings however focus more on the general effects of DC's, in the next section however empirical findings that highlight the relationship between DC's and supply chain management will be presented.

2.6.3 Findings relating to supply chain management

Several authors have made efforts to link the field of supply chain management to the DCT such as Storer and Hyland (2009) Beske et al. (2014) and Alinaghian, Gregory, and Srai (2012). Storer and Hyland (2009, p. 913) argue that "supply chain relationships are strategically assembled by firms to acquire resultant competences and capabilities, particularly DC's that ensure competitive advantage through the innovation capacity of the supply chain". In this context the activities that are undertaken within the supply chain can be used to develop DC's. Their research was verified by a study of 32 respondents that were engaged in supply chain activities such as production, logistics and retailing, the authors found that there is potential of aligning and developing supply chain innovation capacity, through supply chain relationships . In turn supply chain innovation capacity can foster the ability to respond to dynamic changes in the business environment and customer demand (Storer & Hyland, 2009, p. 920). Alinaghian et al. (2012) also link DC's in the supply chain to the external environment. They discuss supply chain DC's to have several characteristics such as flexibility and agility (Alinaghian et al., 2012, p. 24). Flexibility they argue represents the supply chains ability to respond to changes while agility refers to the supply chains ability to deal with product volume and variety fluctuation (Alinaghian et al., 2012, p.24). While these studies emphasized the importance of the supply chains capacity to respond to the external market, which in turn becomes a DC, other studies focused on how DC are embedded within the supply chain.

Beske et al. (2012, p.01) for example, studied sustainable supply chain practices in the food industry and linked them to DC's, because of the dynamic environment that the food industry is embedded in. The study identified the following supply chain DC's; knowledge management, partner development, supply chain re-conceptualization, product and process development, relationship management, and reflexive control (Beske et al., 2014, p. 9). The authors argue that many of the DC's relate to building and maintaining relationships in supply chains through which firms can improve overall performance (Beske et al, 2012, p.10).

Observing from the previously discussed case studies, it is noteworthy to recap how DC's can become compatible with the field of supply chain management. On the one hand, Storer and Hyland's (2009, p. 920) and Alinaghian et al's (2012, p.24) findings indicate that DC's such as innovation capacity, flexibility and agility in the supply chain can facilitate competitive advantages in the market place. On the other hand Beske et al's., (2012, p.09) findings highlight that supply chain activities that occur between supply chain partners, can act as DC's. The findings imply that DC's apply in the supply chain at multiple levels, nevertheless highlighting the importance of DC's in supply chain management.

2.6.4 Classification in the life-cycle approach of theories

On determining the virtues of the DCT an analysis of its internal and external virtues is necessary (Vos & Schiele, 2014, p. 6). In terms of *internal virtues*, the DC's approach lacks a certain degree of *consistency and coherence*. As has been discussed earlier several authors stress that the DC's approach lacks exact definitions, measurability and other necessities that can enable the development and assessment of hypotheses and predictions (Pavlou & El Sawy, 2011, p. 240). Nevertheless the DCT has been *empirically validated* in many studies. Authors have managed to *operationalize* its' constructs and test its *hypotheses* (see: Li and Liu (2014); Wu (2010); Makkonen et al. (2014); Wilden et al., 2013).

In terms of *external virtues*; the DC's approach offers a high level of *scope* in that it helps explain a wide variety of issues. This is reflected in the variety of complex issues the approach has been applied to such as; innovation (Gebauer, 2011; Salunke, Weerawardena, & McColl-Kennedy, 2011; Weerawardena & Mavondo, 2011), environmental volatility (Wu, 2006, 2010), R&D (Constance E. Helfat, 1997), operations (Karim, 2006) and supply chain management (Beske et al., 2014) among others. The approach shows a certain degree of *external consistency* considering the wide amount of fields that it

has been applied to. Considering the fact that the approach was developed as en extension to the RBV because of its inconsistencies (Eisenhardt & Martin, 2000, p. 1106; D. J. Teece & Pisano, 1994, p. 538), it possesses a certain level of *conservatism*. The approach is *fruitful* in that it continues to be explored and studied by various authors in different fields up until today. After discussing the virtues of the theory it becomes useful to consider at what point in the life cycle of a theory the DCT lies. This is important because it defines whether the approach is still interesting or relevant for future studies.

Determining whether the DC's approach is at a progressive or degenerative stage can be done by evaluating the DCT against the four characteristics of degenerating theories proposed by (Vos & Schiele, 2014, p. 9).It can be said that the approach is in the progressive stage. This is because although new formulations of the approach are constantly emerging, as has been discussed, see; (Eisenhardt & Martin, 2000; Eriksson, 2014; D. J. Teece, 2007), they do create new insights and new models are put to the test and evaluated by authors, see (Pavlou & El Sawy, 2011). To conclude it remains necessary to stress on the fact that the DCT has been criticized extensively as will be discussed in the next section. Nevertheless the theory shows potential for future studies especially in terms of making the theory more concrete.

2.7 Despite Criticism the DCT has proven to be Widely Studied

As mentioned before the DCT is subject to criticism. First of all the approach lacks clear theoretical foundation (Arend & Bromiley, 2009, p. 80) and clarity in terms of its most basic aspects including how they are defined (Di Stefano, Peteraf, & Verona, 2010, p. 1188). This is reflected in the various assumptions adopted by theorists (Arend & Bromiley, 2009, p. 80). According to Zahra, Sapienza, and Davidsson (2006, p. 921) the greatest source of confusion comes from the disagreement about whether a "DC refers to substantive capabilities in volatile environments or to the organizations ability to alter existing substantive capabilities, regardless of the volatility". The inconsistencies regarding its foundations can limit "fruitful conversation", hamper progress, prevent empirical research and lead to illogical (Arend & Bromiley, 2009, p. 80; Di Stefano et al., 2010, p. 1188)

Returning to the point that the DCT lacks clear theoretical foundation, an interesting point was made by (Arend & Bromiley, 2009, p. 82) who argued that theories of organizational change should also explain when organizations do not change. The DCT explains how change occurs, through learning, and reconfiguring for example but it does not explain when an organization does not change. Additionally a theory of organizational change should be based on a theory of organizations, in this sense the DCT lacks a theoretical basis because it immediately sets out to explain the change performance relationship without the context (Arend & Bromiley, 2009, p. 82). Moreover the DCT was argued to be lacking in exact definitions, measurability and other necessities that can enable the development and assessment of hypotheses and predictions (Pavlou & El Sawy, 2011, p. 40)

Despite the argued critique however, the DCT has still managed to become widely studied. According to Di Stefano et al. (2010, p. 1187) the DCT has been one of the most active areas of research in the field of strategic management, it has been published in business and management journals at a rate of more than 100 per year. According to Zahra et al. (2006, p. 921) the theoretical and practical importance of DC's in explaining competitive advantage in different market environments, has led to wide interest in the approach. Additionally the variation in DC's research has led it to be a very vibrant field with a large scope (Di Stefano et al., 2010, p. 1188)

As a conclusion, the DCT has proven its worthiness in the academic field. The amount of literature available and the empirical studies that have been conducted are proof of this. Nevertheless it should be noted that there are several issues with the approach, although it has been argued that these issues may resolve themselves in time as the research domain evolves (Di Stefano et al., 2010, p. 1187).

2.8 Future Research Should Focus on Establishing Clear Definitional Constructs for the DCT

In differentiating the DCT to other theories David J. Teece (2014, p. 11) provides useful insight, by discussing the shortcomings of transaction cost based theories. It is argued that transaction cost based theories have not discussed the nature of capabilities, particularly because there is a little explanation for firm level asset ownership and capability advantages such as learning (David J. Teece, 2014, p. 11). Furthermore it is discussed how market creation and co-creation have been largely ignored by early transaction cost literature .Arguably, transaction cost based theories assume preexisting markets that fail, which necessitates the emergence of enterprises. Instead the DCT argues that markets only fail in perfect markets which rarely exist, therefore market creation and co creation are not responses to failed markets, but the markets have seized to exist and need to be created (David J. Teece, 2014, p. 12).

In discussing its evolutionary tendencies, it is noteworthy that the DCT appeared as an extension to the resource based view due to its vagueness and redundancies (Eisenhardt & Martin, 2000, p. 1106). Since its introduction the DCT has however also been criticized with the question of what exactly constitutes DC's and what their main attributes are, how they can be recognized and where they come from (Easterby-Smith et al., 2009, p. s2). The uncertainty pertaining to these questions has led to the development of a variety of perspectives. For example, Eisenhardt and Martin (2000, p. 1107) define DC's as "the firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match or even create market change". While Zollo and Winter (2002, p. 340) define DC's as "A learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness". Other studies have identified a various number of DC's constituents, Such as Adner and Helfat (2003, p. 1020) dynamic managerial capabilities,Wang and Ahmed (2007, p. 31); adaptive capability, absorptive capability and innovative capability,Véronique Ambrosini and Bowman (2009, p. 41); external factors and internal factors and Eriksson (2014, p. 71) internal and external antecedents. While the different perspectives do suggest that DC's are sets of processes that enable the achievement of competitive advantage through the manipulation of resources, a single definition is yet to be produced. However, according to Easterby-Smith et al. (2009, p. s3)

some progress towards a single definition has been made by C.E Helfat et al. (2007, p. 4) who defined DC as "The capacity of an organization to purposefully create, extend, or modify its resource base". This definition represents a cooperative effort to provide a single approach Easterby-Smith et al. (2009, p. s3). It remains necessary however to concretize the concept, to combat the confusing and abstract nature of DC's. Future research should focus on achieving more consistency for the view.

3. DYNAMIC CAPABILITIES AND ITS DECISION POINTS IN SUPPLY CHAIN MANAGEMENT

3.1 Make or Buy: Firms Should Balance Making and Buying Activities

The Purchasing function within organizations is essentially responsible for buying the materials that are needed for its operations and the related activities that organize the inflow of goods and services Monczka, Handfield, Guinipero, Patterson, and Waters (2010, p. 499). At the heart of this function lies the 'make or buy' decision which dictates whether a firm will produce in house or buy from an external supplier. The DCT is linked to the make or buy decision in two ways. The first relates to how the make or buy decision is made and the second relates to the actual activities being outsourced. For the first link, it is noteworthy to state that there are two arguments that the DCT offers for the make or buy decision. The first is explained by the organizations capability to influence competitive performance. The decision inherently lies within the firm's ability to invest in developing the in-house production of an asset. If a firm lacks necessary internal resources to produce in-house it will buy the product (White, 2000, p. 325) . In this sense the decision to make essentially lies on whether or not the firm has the DC's to produce in-house. The second argument by D. J. Teece (2007, p. 1330) proposes that a firm's chance of success is higher if it adopts a neutral perspective towards outsourcing decisions. This means that the DCT does not dictate a strict make or buy decision Pascucci, Royer, and Bijman (2012, p. 101). Instead firms should focus on both making and buying as complementary skills, an organization may invest in in-house production while maintaining external ties with research organizations for example (Pascucci et al., 2012, p. 101). This argument is highlighted by the second link, which is related to actual products or services being bought. It has been argued that DC's themselves cannot be bought since they are enterprise specific and require intimate knowledge of the company (D. J. Teece, 2007, p. 1345). Instead, the act of buying a product or outsourcing its production can become a DC itself. For example with the increase in the outsourcing of R&D due to globalization, relying on in-house R&D as the sole foundation of competitive advantage can become problematic (Augier & Teece, 2007, p. 187). Companies need to balance in house and outsourced R&D to remain competitive, because they might not be up-to-date with the market trend. In other cases firms might have to rely on buying because of the lower costs and increased efficiency associated with buying. Buying also gives the firm's the opportunity to focus on developing other DC's. Thus the buying of products and services is essential for the success of a firm. Apple buying chips from Samsung for its products (Arya, Mittendorf, & Yoon, 2013, p. 63) is a good example that highlights the need for buying. Furthermore it is noted that outsourcing is itself a form of DC due to the need for the *reconfiguration* of business processes (V. Ambrosini, Bowman, & Collier, 2009, p. 18). Moreover, the activities accompanied by outsourcing can also be considered DC's such as the governance methods that assist the transfer of technology while protecting intellectual property (D. J. Teece, 2007, p. 1339).The role of DC's in the make or buy decision is undoubtedly critical and exist on multiple dimensions, in making the decision, in supporting competitive advantage and developing DC's. Further research should focus on establishing a more consistent link between the two fields and their empirical validations.

3.2 Sourcing Decisions: Selecting Suppliers Based on DC's

If a firm has made the decision to buy, the need to find the right suppliers arises, which necessitates an appropriate sourcing strategy. Sourcing is critical to a firms' success because it ensures that the materials bought come from the most qualified supplier (Monczka et al., 2010, p. 28). There are various sourcing strategies with different aims for each such as supply base optimization, supply chain risk management and global sourcing (Monczka et al., 2010, p. 68). Findings indicate that the DCT affects sourcing in three main ways. The first relates to how organizations evaluate and choose suppliers. The second relates to how DC's can enable organizations to create value from sourcing relationships and the third implies that sourcing can be considered a DC.

In terms of supplier selection the DCT plays an important role. Zhang, Pawar, Shah, and Mehta (2013, p. 1093) argue that often supplier relationships have failed because buying firms based their sourcing decisions solely on potential supplier costs, while disregarding factors such as supplier locations and the involved risk. Instead it is proposed that sourcing organizations need to evaluate suppliers based on their DC's. Their study has revealed that pharmaceutical companies will use "contact research and manufacturing organizations" DC's as key criteria when evaluating and selecting suppliers (Zhang et al., 2013, p. 1093). Their study also proposes that buying firms will establish integrated outsourcing relationships with suppliers if they possess good DC's in terms of processes, positions and paths (Zhang et al., 2013, p. 1093). Furthermore the authors propose that supplier selection should be based on the supplier's resources and capabilities including human capital, communication capability, and market capabilities (Zhang et al., 2013, p. 1094).

In terms of how DC's enable organizations to create value from sourcing relationships the strategic fit between organizations is critical. Murray, Kotabe, and Westjohn (2009, p. 94) argue that superior performance will only be attributed to firms when there is a strategic fit between the sourcing strategy and the sourcing firms DC's on a knowledge intensive business services level. The authors describe *absorptive capacity* and *integrative capabilities* as DC's that support the sourcing strategy. According to the authors a sourcing firms *absorptive capacity* moderates the relationship between competitive advantage and the sourcing strategy because it has a strong impact on a firm's ability to acquire knowledge which in turn affects the ability to learn from the supplier (Murray et al., 2009, p. 99). The *integration capability* refers to the post-sourcing activities that have to do with aligning business

activities. It is an important part of sourcing because it allows the buying firm to integrate the outsourced activities into its business model. Many firms have reported that overall sourcing performance has been unsatisfactory due to the inability to "integrate globally sourced KIBS activities into an integrated KIBS system" (Murray et al., 2009, p. 99). Although the authors identified four global sourcing strategies namely; onshore insourcing, onshore outsourcing, offshore insourcing and offshore outsourcing, it is argued that no single strategy is the best. Moreover it is argued that competitive advantage gained by outsourcing should be grounded in the DC's that the supplier possess (Balaji & Brown, 2005, p. 2). Thus, the DCT helps explain how the firm can create value from a buyer-supplier relationship when there exists a strategic fit between both organizations. Sourcing activities themselves can also become DC's. This is reflected by Gosling, Purvis, and Naim (2010) who discussed sourcing flexibility. Sourcing flexibility is the ability to reconfigure the supply network quickly and cheaply. It involves reconfiguration, partnering flexibility and adaptability. Partnering flexibility reflects the ease with which a firm changes suppliers in response to changes in the business environment (Gosling et al., 2010, p. 13). Adaptability refers to a firm's ability to adjust the supply chain to accommodate market change (Gosling et al., 2010, p. 13). These propositions highlight how sourcing activities themselves can become DC's. Consequently, it can be argued that sourcing is critical for the buying firms' success. In terms of DCT the evidence shows a link between DC's and the ability for the buying firm to create value from the buyer-supplier relationship. All in all the DCT helps explain how to choose suppliers and create strategic fit between organization and finally it also explains how sourcing can become a DC. Future research should focus on empirically validating the relationship between the DCT and sourcing strategies.

3.3 Supplier Strategy Decisions: DC in Facilitating Supplier Strategies

The supplier strategy encompasses the type of relationship a buyer engages in with their supplier which vary depending on the strategic aims a buyer has. A buyer can aim to reduce costs, introduce a new technology or product or improve quality (Monczka et al., 2010, p. 65), each of which requires a compatible supplier strategy. For example; with the aim of improving quality a buyer can engage in a Total Quality Management approach with the supplier (Monczka et al., 2010, p. 68) or if the aim is to develop new products or technology they can engage in an early supplier design involvement strategy where the buyer and supplier can both work together towards new product development (Monczka et al., 2010, p. 69). Indeed the relationship between DC's and NPD processes involving suppliers was highlighted by Yung and Lai (2012) who studied Asus's competitive performance and its relationship with one of its top suppliers, Intel. The authors proposed that DC processes such as *integration, coordination, learning, practicing, reconfiguration and transformation*, and the accumulation of core competencies enhance the NPD process (Yung & Lai, 2012, pp. 1129-1130). Asus, which benefited from preferential treatment from Intel, was awarded discount advantages and early information on new 'chipsets', this *coordination* with Intel enabled Asus to *integrate* key parts from modules into their own products which lead to faster time-to-market (Yung & Lai, 2012, p. 1129). Particularly interesting in this context however were their propositions regarding supplier relations where they argue that collaboration with supply chain members enhance the DC's in new product development (Yung & Lai, 2012, p. 1131). The authors argue that the *collaborative* nature of Asus with its suppliers mutually benefits both parties. This *collaboration* included Intel sending prototypes to Asus for testing before release, which provided Intel with critical feedback. Furthermore Asus collaborated with local suppliers by helping in the co-design of products, which improved the quality of components in their own and their suppliers' products (Yung & Lai, 2012, p. 1132). Returning to the discussion on how DC's affect supplier strategies, and taking into consideration Yung and Lai (2012) study, it can be argued that DC's have a significant impact on the relationships between suppliers and buyers. DC's can enhance performance in new product development in terms of preferential treatment and time to market because suppliers are more willing to engage in relationships with buyers that possess superior performance that is linked to DC's. It is strongly suggested that future research focus on establishing a definitive explanation as to how firm specific DC's can facilitate other supplier strategies and collaborations. Nevertheless the applicability of the DC's in supplier strategies show potential.

3.4 Determining Contracts as a DC

Contracting is an essential element for establishing and maintaining successful buyers-supplier relationships. Essentially the intended relationship between a buyer and supplier dictates the nature of the contractual agreement. There are different types of contracts that vary depending on the nature of the product, the nature of the market, the degree of trust between both parties and the total value of the purchase (Monczka et al., 2010, p. 336). Research connecting the DCT to contract management in supply chains is limited therefore the following arguments are partially based on assumption. Some findings do however support a relationship between the DCT and contract management. For example, in the context of information services sourcing, Balaji and Brown (2005, p. 4) discuss how *contract facilitation* is a key capability for a buying firm, necessary to achieve competitive advantage in projects with suppliers. *Contract facilitation* encompasses activities that attempt to eliminate risks and ensure the success of existing contracts with IS service suppliers (Balaji & Brown, 2005, p. 4). This capability ensures firms are capable of choosing the right contract for a given situation, and thus the authors propose that "firms with superior contract building capability will choose the type of contracts that facilitate optimal resource configurations" (Balaji & Brown, 2005, p. 5). *Contract facilitation* is a subset of a set of DC's in the context of IS sourcing projects, namely; *vendor management, project management and process management* (Balaji & Brown, 2005, p. 5). Similar propositions are offered by Aleghehband and Rivard (2010, p. 2)who discuss two sets of DC's in the context of IT sourcing, the first set is IT architecture DC and the second, which is relevant for this section, discusses IT sourcing DC's (Aleghehband & Rivard, 2010, p. 2). These DC's are argued to help firms respond to rapid changes in the environment and adjust business strategy. The authors propose three sorts of outsourcing and three capabilities, of which two are relevant for this discussion, respectively that relate to the management of suppliers. *IT partnering capabilities*

enable the firm to negotiate contracts that put clear boundaries and responsibilities on the supplier in an effort to manage risk, this is because in a partnership the supplier is responsible for all activities. *IT transacting capability* relates to dealing with transactional exchange relationships, this capability enables the firm to carry out arm length relationships with suppliers where contracts are detailed, this is because in these relationships the outsourced activities are narrowly and specifically defined (Aleghehband & Rivard, 2010, p. 7). Drawing from (Aleghehband and Rivard (2010); Balaji and Brown (2005)) propositions, determining contracts for supplier relationships can be seen as a DC that facilitate competitive advantage in collaborative environments. Although the previously discussed findings are interesting in terms of how DC's can be used in managing contractual arrangements, it is suggested that more emphasis be put on determining the nature of contracts based on the intended relationship with suppliers. As mentioned before collaboration with suppliers is essential to establishing a competitive position in the market place, this is partially because collaboration with suppliers can facilitate the creation of DC's (Yung & Lai, 2012, pp. 1130-1131). Similarly the creation of DC's requires time and commitment, therefore long-term contracts could be useful. Long-term contracts ensure a higher degree of commitment from the supplier and access to supplier technology (Monczka et al., 2010, p. 337) which can be a useful tools in developing long lasting relationships that facilitate DC's. Contrastingly, if a buyers does not intend to engage in a strategic relationship with the aim of developing capabilities spot-contracts or short-term contracts can be used (Monczka et al., 2010, p. 336). It is argued that companies that invest in strategic partnerships and form close relations with suppliers can generate sustainable competitive advantage, partially because these relationships are not easily imitated by competitor's (Wagner & Boutellier, 2002, p. 87). Nevertheless it is argued that supplier management capabilities are dynamic because they enable firms to reconfigure supply networks in response to market changes, which highlights the need for supply chain flexibility, therefore long term relationships may not always be preferred (Wagner & Boutellier, 2002, p. 88). The findings indicate that there is no explicit prescription that the DCT offers in terms of awarding contract types, this indeed remains an issue for future research. The research does however indicate that the DCT potentially plays an important role in determining the types of contracts that are to be awarded to suppliers based on intended relationships.

4. THE DCT SHOWS POTENTIAL FOR FUTURE RESEARCH IN SCM

This paper set out to assess and evaluate the dynamic capabilities theory on two dimensions. Considering the first dimension, assessing the credibility of DCT, it is useful to note that increasing research has focused on defining and elaborating the DCT in recent years, however as research has shown the topic still remains vague to a certain extent. Authors have highlighted the shortcomings of the DC approach arguing of its redundancy and lack of theoretical underpinnings (Pavlou & El Sawy, 2011, p. 240) .Partially this can be attributed to the fact that there is no clear consensus among authors as to the definition of the DCT and its main variables. As has been discussed the DCT is subject of several definitions and several constituents that make up the DCT. Nevertheless extensive research has applied the DCT to explain complex phenomena such as competitive advantage in dynamic environments. Furthermore the DCT, despite the critique, has been empirically validated in numerous contexts. Thus, disregarding the inconsistencies, scholars have managed to elaborate on the groundings as well as the constituents of the DCT and its applications, further highlighting that it continues to be an interesting field of study. Finally, using the framework provided by Vos and Schiele (2014) the DCT was found to have all the characteristics of a theory, but indeed future research needs to focus on establishing more concreteness in the theory. In terms of the second dimension, the DCT possesses valuable applications for all four decision points on multiple dimensions. On one hand the DCT can facilitate decision making in terms of making or buying, choosing the right supplier and sourcing strategies and choosing appropriate contracts. On the other hand, it is argued that these decision making processes, themselves, can become forms of DC's. The DCT can explain how firms decide to make or buy by determining whether or not the organization possesses the DC to produce internally. More interesting though is that the DCT also argues that firms should not hold a strict make or buy dichotomy but should instead balance making and buying activities (Pascucci et al., 2012, p. 101), which can help diversify the firm's sources of value, in today's business environment this becomes particularly important as value creation increasingly occurs outside of the firm. The DCT become increasingly important in supplier selections, first the DCT helps assess suppliers based on their DC's, second, the DCT explains how a buying firms DC's are important for establishing successful supplier relationships and finally it explains how sourcing decisions themselves can also become DC's by enabling flexibility and adaptability in reconfiguring the supply base. In terms of supplier strategy decisions the findings indicate that the DCT plays an important role in facilitating the relationship between the supplier and the buyer, this was especially found to be true in the case of NPD (Yung & Lai, 2012, pp. 1130-1131). The last point, contracting, is also influenced by the DCT substantially, although it has not been widely discussed. Findings do show that in some cases designing the right contracts can be considered as a DC. Furthermore it is suggested that contracts can be determined based on whether or not strategic partnerships are intended for the development of DC's. There is no doubt that the DCT can have a major impact on the supply chain. This is particularly apparent when one takes into account the dynamics of today's supply chain networks which require speedy responses and flexible solutions. The DCT offers several insights into explaining how firms react in such dynamic environments and helps understand how competitive advantage is derived in these situations. Furthermore, in terms of the key decision making points, the DCT shows a high level of potential despite its critique, this is exemplified by the amount of literature that is available. Unfortunately however, the scope of this paper did not allow to study the individual relationships for each decision point to the full extent. Therefore, the discussions in this paper only provide an incomplete picture of the whole scenario. Thus, the findings here merely reinforce the existing correlations between the DCT and key decision points in supply chain management, and highlight the need for more in depth studies, that discuss each decision point holistically.

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6. APPENDIX

Table 1 – Summary of Variables Based on Different Authors

Authors	Variables	Argument
Adner & Helfat (2003)	Dynamic Managerial Capabilities • Managerial human capital • Managerial social capital • Managerial cognition	Managerial decisions are based on the resource and capability base of an organization, thus, differences between firms in their resources and capabilities may lead to differences in managerial decisions and thus to differences in corporate performance (Adner and Helfat, 2003, p. 1020).
Wand & Ahmed (2003)	• Adaptive capability • Absorptive capability • Innovative capability	These factors explain how resources and capabilities can be used to sustain long-term firm performance (Wang and Ahmed, 2007, p.43).
Ambrosini and Bowman (2009)	Antecedents of Dynamic Capabilities • External - Nature of the market - Firms' history • Internal - Managerial behavior - Social capital - Trust	External factors determine the firms' ability to react to market fluctuations while internal factors determine the organizations ability to develop DC's (Ambrosini and Bowman, 2009, p .42)
Eriksson (2014)	Internal antecedents • Structural • Social external antecedents • Environmental • Networks • Relationships	Internal and External antecedents influence the organization ability to develop and sustain DC's (Eriksson, 2014, p. 71).

Table 2 – Application of the DCT to Decision Points in Supply Chain Management

Decision point	Make or Buy	Sourcing Strategy	Supplier Strategy	Contracting
DCT theoretical contribution	- Help determine whether to make or buy - Can enhance the DC of the buying Firm	- Assisting in the development of an appropriate sourcing strategy - Sourcing suppliers based on their DC's	- DC can help buyer-supplier relationship strategies to achieve competitive advantage	- DC in determining contracts (*contract facilitation*) - Awarding different contracts based on the intended relationship
Strategic Direction	- Balance making and buying	- In developing a sourcing strategy ensure strategic fit with buying firms' DC's	- Facilitating successful collaboration between buyers and suppliers (NPD)	- Long term contracts can be awarded to suppliers with whom the buyer wants to engage in a long term relationship