

Dynamic capabilities as ‘becoming’: implications from learning theories

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Abstract

This paper challenges the traditional understanding of dynamic capabilities as firm-level resources suitable for volatile environments to extend our understanding of dynamic capabilities by incorporating learning and behavioural theories of organisational change in studying capabilities embedded in firm routines. Organisational learning rejects the idea of stability; organisations are seen in constant flux, in a continual state of ‘becoming’. Such a perspective leaps over the question of do organisations have dynamic capabilities, instead explores how capabilities are dynamised in this state continual state of change and what learning theories can tell us about the nature and scope of this dynamisation. I investigate these issues in six, mature, medium-sized companies that are operating in three different sectors with varying levels of market dynamism.

1. Introduction

To remain competitive in the face of increasing volatility and erosion of markets and market positions, firms need to adapt and evolve. The notion of capabilities suggests that some firms may be better at this adaptation than others (Helfat et al., 2007) leading to superior firm performance (Barney, 1991, 2001; Peteraf, 1993). It is within this background of a need for capabilities in adaptation that dynamic capabilities have come to occupy a central place in strategy research shifting the emphasis to the ability of firms to change and quickly develop new organisational capabilities for sustaining competitive advantage (Schreyögg and Kliesch-Eberl, 2007). Despite the development of the concept and the argued importance of dynamic capabilities to competitive advantage and firm performance in past research, many theoretical and empirical issues remain a source of debate.

First, the majority of studies argue that dynamic capabilities are most valuable when the external environment is changing rapidly or unpredictably (Teece et al., 1997; Teece, 2007) or frequently (Eisenhardt and Martin, 2000). While Zahra et al. (2006) and Zollo and Winter (2002) corroborated this unidirectional link by arguing that dynamic capabilities exist and are used even in environments characterised by lower rates of change, they still conceded that

dynamic capabilities may be of more value in rapidly changing environments. Second, often, scholars categorise capabilities as dynamic only “if they aim to promote seemingly large amounts of change in a short period of time” (Helfat and Winter, 2011: 1243) and the ones that are more focused on maintaining the static state are categorised as ordinary (or operational or substantial) and disqualified on the basis of not being change focused (Hine et al., 2013). The first and second points are primarily driven with an assumption that the interaction between dynamic capabilities and generic organisational capabilities and resources are triggered by exogenous shocks. Recently, several scholars have suggested and empirically evidenced that dynamic capabilities can be mobilised by endogenous factors such as entrepreneurship (Newey and Zahra, 2009) and other managerial proactive behaviour (Ambrosini and Bowman, 2009), managerial aspirations (Winter, 2000), cultural dispositions toward change (Zollo and Winter, 2002) and other internal pressures (Zahra et al., 2006) placing managerial choice at the centre of the conversation. This cognitive move towards conceptualising dynamic capabilities has changed the nature of discourse by focusing attention on ‘perceived’ environment instead of ‘objective’ environmental dynamism and managers’ interpretations of their business environment (Aragon-Correa and Sharma, 2003). Yet, it is still implicitly or explicitly assumed that, once these dynamic capabilities are acquired and/or built they become firm-wide resources that operate across the organisation (e.g. Schreyögg and Kliesch-Eberl, 2007) and across all firm capabilities (e.g. Strehle et al., 2010; Pavlou and El Sawy, 2011).

This paper challenges the traditional understanding of dynamic capabilities as firm-level resources suitable for volatile environments to extend our understanding of dynamic capabilities by incorporating learning and behavioural theories of organisational change in studying capabilities embedded in firm routines. Organisational learning rejects the idea of stability hence brings us to a different conceptualisation of organisational change (Schreyögg and Noss, 2000). From a learning perspective, organisations are seen in constant flux, in a continual state of change and ‘becoming’. By this *a la Heraclitus* view of change this study proposes that change is at the heart of organisation and hence its capabilities; as such the question of how dynamic organisational capabilities are constitutes a disparity with organisational reality and is replaced by the questions of what change does to dynamic capabilities and what type of dynamism do dynamic capabilities have.

A call to link the study of organisational change with learning theory (Hendry, 1996) has already been answered and the acknowledgement of organisational learning as a dynamic

capability (Bowman and Ambrosini, 2003) and several studies discussing the role of learning processes to shape the creation, development of dynamic capabilities (Eisenhardt and Martin, 2000) and their evolution (Zollo and Winter, 2002) and application (Zahra et al., 2006) have emerged. Yet these studies focus on the integrating and moderating influence of learning in the creative and dynamised use resources in firms (Easterby-Smith and Prieto, 2008) and typically represent learning as an antecedent of dynamic capabilities (Ambrosini and Bowman, 2009). This study puts learning at the heart of dynamic capabilities and explores how the learning orientation of the firm shapes the nature and content of dynamic capabilities. I investigate these issues in six, mature, medium-sized companies that are operating in three different sectors with varying levels of market dynamism.

This paper makes three contributions to the literature. First, it advances the understanding of dynamic capabilities with the realisation of change is always occurring to some extent, all processes that impacts upon resources are dynamic and change-focused, whether we call them as dynamic capabilities or substantive (or ordinary) capabilities. Second, it provides empirical support to the argument first brought forward by Ambrosini and Bowman (2009) and deepens the discussion by suggesting that capabilities dynamised towards ad-hoc problem solving and spontaneous reaction to change do still qualify as dynamic capabilities because they exhibit a learned and stable pattern of reacting to change as a process – a learned pattern of sporadic renewal, reconfiguration and modification of resources. Third, it joins the debate in the literature and agrees that volatile and changing environment is not a necessary component of the level of dynamic capability the firm invests in and extends the debate by showing how a firm's learning orientation and valuation of knowledge influences what type of dynamic capability it is going to exhibit.

The paper is organised as follows. First, I review the literature to show how dynamic capabilities have been portrayed in the literature. I then present a number of well-known learning theories and show how they might be integrated to studying dynamic capabilities. Next, I describe the methodology and describe the research context before moving on to develop propositions about the nature of dynamic capabilities observed and on their relationships to learning types by using case study findings. I conclude with a discussion of my propositions and consider the implications for the field.

2. Theoretical Background

2.1. Dynamic Capabilities: What are they and why are they important?

While resources are necessary to deliver capability, the resource-based view of competitive advantage is too static to explain how firms create new capabilities to exploit opportunities within dynamic markets (Teece et al., 1997; Lichtenstein and Brush, 2001; Lockett et al, 2009). Organizations confronted with changing markets or changing technologies must develop new capabilities to avoid the problem of ‘core rigidities’ (Leonard-Barton, 1994). ‘Dynamic capabilities’ thus refer to the ability to create innovative responses to a changing business environment.

Dynamic capabilities have been defined as abilities (or capacities) but also as processes (or routines). Following Teece et al. (1997) some authors have considered dynamic capabilities to be an ability to reconfigure a firm’s resources and routines (Zahra et al, 2006: 918), to sense and seize opportunities quickly and proficiently (Teece, 2000) or to be a “capacity of an organisation to purposefully create, extend or modify its resource base” (Helfat et al., 2007: 1). On the other hand, Eisenhardt and Martin (2000: 1107) presented dynamic capabilities as specific and identifiable “processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change”. In this view, dynamic capabilities are conceived as processes that impacts upon resources (Ambrosini and Bowman, 2009: 34) or a wider behavioural orientation that underlines “the processes of transforming firms resources and capabilities into outputs” (Wang and Ahmed, 2007: 36).

This partition might, on surface, appear to be a trivial terminological problem yet it has important consequences for conceptualisation and operationalisation of the concept. If we accept the latter view and conceptualise dynamic capabilities as processes acting upon the resource base of the firm any change and modification in the resource base that is intentional, deliberate, purposeful, and systematic might signal to the use of dynamic capabilities.

Several authors comment on types of dynamic capabilities. Collis (1994) proposes four categories of capabilities. The first category is “those that reflect an ability to perform the basic functional activities of the firm, such as plant layout, distribution logistics, and marketing campaigns, more efficiently than competitors” (Collis, 1994: 145). The second category of capabilities concerns the dynamic improvement of organisational activities. The

third category of capabilities is specifically about the ability “to recognise the intrinsic value of other resources or to develop novel strategies before competitors [do so]” (Collis, 1994: 145). The fourth category, which is referred to as meta-capabilities, includes “the flexibility to shift between capabilities more efficiently or faster than competitors, or the ability to respond to or initiate radical change” (Collis, 1994: 148) and is needed to outperform competitors in changing industry conditions. Winter (2003) proposes that there are zero-level capabilities (also called operational or ordinary capabilities), first-order capabilities (dynamic capabilities) and higher-order capabilities. Zero-level/operational capabilities are those that allow a firm to earn a living in the present. Whenever the firm implements a change in its operational capabilities it will put into practice its first-order capabilities, the so-called dynamic capabilities (Zollo and Verona, 2011). Similar to Collis’ (1994) meta-capabilities, higher-order capabilities operate on dynamic capabilities. He considers higher-order capabilities to be the outcome of organisational learning which creates or modifies a firm’s existing dynamic capabilities. Zahra et al. (2006) use a similar typology and suggest that there are substantive capabilities that facilitate the efficient and effective use of existing resources and dynamic capabilities, which are processes that alter that resource base. More recently, Ambrosini et al. (2009) have suggested that there are three levels of dynamic capabilities: incremental, renewing and regenerative. While incremental and renewing dynamic capabilities utilise and leverage the current resource base, regenerative dynamic capabilities are concerned with the adaptation of organisational resources by renewing the firm’s dynamic capabilities. As such, regenerative dynamic capabilities do not operate directly on the resource base of the organisation; rather, they impact on its incremental or renewing dynamic capabilities. Table 1 presents a comparison of the different typologies of levels of dynamic capabilities described above.

Collis (1994)	Winter (2003)	Zahra et al. (2006)	Ambrosini et al. (2009)
First category	Zero-level Operational Capabilities	Substantive Capabilities	Resources
Second category	First-order Dynamic Capabilities	Dynamic Capabilities	Incremental Capabilities
Third category			Renewing Capabilities
Fourth category – Meta-capabilities	Higher-order Capabilities		Regenerative Capabilities

Table 1. Typologies of Capability Levels

It might seem that the literature on dynamic capabilities suffers from what Dosi et al. (2000: 4) call “terminological flotilla”, but the common ground of all these typologies is that while lower-level capabilities refer to the organisation’s resource base, dynamic capabilities are about developing the resource base. As such, lower-level capabilities are about competing successfully in the present; in contrast, dynamic capabilities are future-oriented since they are about sustaining competitive advantage in the face of market dynamism (Ambrosini and Bowman, 2009).

The context in which dynamic capabilities operate and the kind of external environment they are activated in is also a major area of debate in the literature. Researchers within the field are divided among those who unequivocally ascribe the concept to volatile and dynamic markets (Teece et al., 1997; Teece, 2007), those who accept different degrees of environmental dynamism (Eisenhardt and Martin, 2000), those who acknowledge its relevance in both stable and dynamic environments yet concede that it will be of more value in rapidly changing environments (Zahra et al., 2006; Zollo and Winter, 2002), and those who posit that managerial perceptions of environmental dynamism is what should be inquired (Ambrosini et al., 2009; Aragon-Correa and Sharma, 2003).

This partition also has significant implications for the study of the concept. If we acknowledge that ‘objectively’ dynamic external environment is not a necessary component or antecedent of dynamic capabilities, then “some activities that are directed at the incremental development or enhancement of existing resources” (Ambrosini and Bowman, 2009: 40) to support existing operations in placid external environments with non-radical change (Heflat and Winter, 2011) could be considered dynamic capabilities.

With respect to outcomes of dynamic capabilities, early proposals in the field assumed a direct relationship between firm’s dynamic capabilities and its performance (Teece et al., 1997) and used the concept to explain enterprise-level sustainable competitive advantage (Teece, 2007) and generation of economic rents (Makadok, 2001). Zollo and Winter (2002: 341) also assumed a direct link between dynamic capabilities and competitive performance by saying that, in changing environmental conditions “both superiority and viability will be transient for an organisation that has no dynamic capabilities”. As noted by Cepeda and Vera (2007: 427), “if the firm has dynamic capability, it must perform well, and if the firm is performing well, it should have a dynamic capability”. In contrast, other researchers have shown less confidence in this direct link and asserted an indirect link instead. For instance,

Zott (2003) argues that dynamic capabilities are indirectly linked with firm performance as they modify a firm's bundles of resources which in turn affect performance. Similarly, Bowman and Ambrosini (2003) suggests that the resource base is directly linked to economic rent (or economic profits), but as dynamic capabilities are one step removed from the rent generation their effect is indirect and as argued by Eisenhardt and Martin (2000) it is the new resource configurations created by dynamic capabilities that may lead to competitive advantage. Finally, there are researchers who have decoupled the concept of dynamic capabilities and performance arguing that "dynamic capabilities do not necessarily lead to competitive advantage" (Helfat et al., 2007: 140) and may lead to failure if they are used when there is no need to use them (Winter, 2003) or when they are irrelevant to the market (Helfat et al., 2007). Moreover, even if they are successfully utilised and lead to competitive advantage, this will be transient rather than sustainable (Rindova and Kotha, 2001) as "the competitive landscape simply changes too much, too often, and too unpredictably for any capability to confer a permanently *sustainable* advantage" (Zahra et al., 2006: 950).

If the firm is hitting a moving target all the time to achieve a continuous sequence of temporary, short-lived advantages (Ambrosini and Bowman, 2009) a distant view at dynamic capabilities (rather than a close look in the short-run) would reveal that as long as the firm operates in the industry for a sustained period of time successfully we might talk about existence of dynamic capabilities in the firm as competitive parity is achieved even if the firm does not continuously outperform its rivals *ad infinitum*.

2.2. Organisational Learning to Effect Dynamic Capabilities and Capacity to Change

Organisational learning occurs if, through acquiring and utilising information, the range of potential behaviours is changed (Huber, 1991). It can be viewed as a mechanism by which firms acquire, build and adapt organisational capabilities to survive and prosper in the face of change (Dixon et al., 2006; Dosi et al. 2000: 16). Many recent studies on dynamic capabilities have suggested that learning plays a significant role in the creation and development of dynamic capabilities. Teece (2011) notes that in the dynamic capabilities framework, organisational learning is at the heart of organisational capabilities; dynamic capabilities evolve "with organisational learning that occurs through the acquisition of new internal and external knowledge" (Zahra et al., 2006: 945). Effective organisational learning requires dynamic capabilities (Easterby-Smith and Prieto, 2008), and organisational capabilities, whether dynamic or not, because they are built rather than bought in the market (Makadok,

2001), can only be developed via organisational learning processes such as learning by doing, accumulation of experience, knowledge absorption and codification activities (Zollo and Verona, 2011). Learning is also necessary for the maintenance, development and expansion of organisational resources and capabilities (Teece, 2011); thus it has critical importance in the development of dynamic capabilities. Zollo and Winter (2002) explain that learning is at the base of dynamic capabilities and guides their evolution. In a market context where technological, regulatory and competitive conditions change in rapid and unpredictable fashion, even dynamic capabilities will need to be updated frequently, and this requires higher-order learning approaches (Zollo and Winter, 2002).

From a conceptual point view, organisational learning rejects the idea of a stable organisation with extant routines and resources that enables it to earn a living. It starts with the insight that organisation, as a social entity, is inherently restless and as such is constantly involved in self-reflection on itself *vis-à-vis* its environment. Heraclitus' famous saying "no man ever steps into the same river twice" captures this conceptualisation nicely. Nothing ever stays exactly the same – neither the external world (the environment) nor the internal world (the organisation). The river never stays the same as it is always in flux and the 'you' who steps into the river today is not the same 'you' who steps in the river tomorrow. Because things are always changing to at least some extent we should expect the organisation to be in a continual state of 'becoming' which makes organisational learning and dynamic capabilities pervasive features of an organisation that manages to survive and remain competitive for extended periods, without which it cannot guarantee its existence in a complex and ambiguous environment.

But if all aspects of our life (including ourselves) are continuously changing, and if all organisations that capably 'surf' through small and large change waves all the time do by definition have dynamic capabilities (as this would imply that they manage to modify, extend, enhance, reconfigure its resources) how to study dynamic capabilities and what is value they add to the organisation? It may be more useful to consider the type and nature of learning that is embedded in a particular dynamic capability.

One of the most recurring classifications is the distinction between adaptive and generative learning (Senge 1990). Cyert and March (1963), considers firms as incremental or adaptive learning systems, which are engaged predominantly in what Argyris and Schön (1978) call single-loop learning, and detect and correct errors in certain operating procedures and

routines. Argyris and Schön (1978) stresses the importance of double-loop learning which requires the organisation to see beyond the situation, question operating norms and modify its underlying norms, policies and objectives (Smith, 2001) rather than engaging in quasi-automatic adapting behaviour. At almost the same time as Argyris and Schön, very similar typologies were suggested by authors such as Piaget (1969) and Watzlawick et al. (1974), among others. Piaget (1969) discovered that children learn in two different ways. First, they can learn through ‘assimilation’, when a new fact is understood through a previous model. A different type of learning is needed when a new fact cannot be assimilated through a previous model. In this circumstance, children need to ‘accommodate’ or change their model to a new reality. These two kinds of learning could be related to single and double loop learning, respectively. In the same way, Watzlawick et al. (1974) distinguishes between two types of change. First-order changes are incremental changes made within the system, the rules of which are not changed. In contrast, second-order changes imply that the rules of the system are challenged and changed. They are no longer changes within the system, but changes of the system itself.

Argyris and Schön appear to have introduced the distinction between adaptive and generative learning into the OL literature; however, they are not the only authors to consider these types of learning. Senge (1990), Lant and Mezias (1992), Virany et al. (1992), Sitkin (1992) or Fiol and Lyles (1985) mention and analyze the existence of these two types of learning in organizations. Fiol and Lyles (1985) differentiate between lower-level and higher-level learning. The former is a focused learning that may be mere repetition of past behaviours, adjustments in part of what the organization does. Higher-level learning is related to the development of complex rules and associations regarding new actions. Senge (1990) distinguishes between adaptive and generative learning. He affirms that generative learning, unlike adaptive learning, requires new ways of looking at the world. In order to look more deeply into generative learning, he introduces the concept of metanoia which he considers to be synonymous with generative learning. He explains that, for the Greeks, it meant a fundamental change, transcendence (meta) mind (noia). Senge (1990) affirms that to grasp the meaning of metanoia is to grasp the deeper meaning of learning, through which we recreate ourselves and perceive the world and our relationships to it differently. Recently, Senge et al. (2005) suggested that generative learning occurs through a process that entails sensing, presencing and realising. Sensing means becoming one with the world, mainly by observing. Presencing implies a state of becoming totally present to the larger space or field around us, to

an expanded sense of self and to what is emerging through us. Realising involves bringing something new into reality.

Organisational learning literature has also described what structural or cultural arrangements are likely to foster both adaptive and generative learning (Anderson 1999; Argyris et al. 1985; Senge 1990). Adaptive learning is related to rationality, defensive relationships, low freedom of choice and discouragement of inquiry (Argyris et al. 1985). In contrast, double loop learning is encouraged through commitment, minimally defensive relationships, high freedom of choice and inquiry. Chiva et al. (2010) distinguish between complex ‘adaptive’ systems and complex ‘generative’ systems. The former is related to adaptive learning, self-organisation, explicate order, concentration and improvement. The latter is associated with generative learning, self-transcendence, implicate order, dialogue and inquiry and related to Senge et al.’s (2005) presence.

There is a general consensus that a relation exists between organisational learning and dynamic capabilities, and that the creation and evolution of dynamic capabilities require learning. But in detailing this relationship learning is conceptualised as a moderator or an antecedent of dynamic capabilities which I believe is a highly stylised representation of the close intertwinement between the two concepts. If dynamic capability is the process that impacts upon resources by modifying, extending, enhancing and reconfiguring them organisational learning is embedded in the process throughout. Organisational learning is not a separate process that precedes dynamic capability (e.g. Zollo and Winter, 2002; Zahra et al., 2006), or a process that moderates the influence of dynamic capability in the use resources (e.g. Easterby-Smith and Prieto, 2008) but it is ingrained in the dynamic capability process starting from the awareness of the need to dynamise capabilities to the ultimate creation and development of the new capability. In this paper, I aim to explore the consequences of such contextualisation with a more fine-grained analysis by placing the learning perspective at the heart of my theory-building efforts.

3. Methodology

Case research was carried out in six Turkish mature, medium-sized companies. The companies are operating in three different sectors with varying levels of dynamism, ranging from slowly-evolving industries to high-velocity industries. In assessing environmental dynamism I adopted Eisenhardt and Martin’s (2000, pp. 1110-1111) distinction between moderately dynamic markets in which change occurs frequently, but along roughly

predictable and linear paths, and “high-velocity” markets where change is non-linear and less predictable. A third category was added, “slowly-evolving markets” in which change does not occur frequently and the level of dynamism in terms of competition and technological development is significantly lower when compared to other two types of markets. Olive oil processing, automotive component manufacturing and tourism industries were selected as representatives of slowly-evolving, moderately dynamic and high velocity markets, respectively in Turkey.

Olive oil processing is a relatively stable market as it relies on the same basic technological principles that were developed in Ancient Greece thousands of years ago. Technological developments clearly happened throughout that time that increased efficiency, quality and hygiene but the working principles remained mostly unaltered. Product differentiation is also relatively low and consumer demands relatively basic. Excluding some food aficionados who have more sophisticated demands around refinedness, acidity levels and so on olive oil can be considered as a commodity product. As part of the government policy to protect national, agricultural produces, olive companies are mostly shielded from international competition as well. OEM automotive parts manufacturing is more volatile and turbulent with intense competition between automotive manufacturers, ever-stringing government regulations and standards for safety and pollution and developing technologies. Yet, for parts manufacturers all these changes are somewhat buffered by the automotive manufacturers. OEM companies typically enjoy long-term contracts with automotive manufacturers and develop a close working relationship with them which acts as a stabilising mechanisms reducing the uncertainty to some extent. Tourism is categorised as a high velocity industry, in the Turkish context, which is affected from external changes quickly and directly. How customers (that are increasingly global) decide to spend their leisure time, how much disposable income they have, how their choice is constrained by visa regulations and how the political landscape shapes perception of Turkey as a holiday destination is ever-changing. All these external changes in the political, socio-cultural, demographic and economic environments have an immediate and direct impact on organisations operating in tourism industry.

From each sector, two companies were chosen, totalling to a sample size of six. All six companies have been successful in their respective industries for many years and have maintained their competitiveness (either in the form of competitive advantage or parity) for two generations more – i.e., for a minimum of 25 years. The motivation for exclusively focusing on successful mature firms was the assumption of the existence of certain dynamic

capabilities that had enabled them to remain competitive on the business landscape for a significant period despite numerous changes in the general business environment and their immediate competitive environment throughout all those years. It was assumed that in order to survive all these changes, they would have gone through a number of organisational renewals in terms of their resources, structures, capabilities, activities which may have necessitated breaking their path dependencies and undergoing a process of ‘learning to learn’ as they shift from exploitation to exploration (Jones, 2006) signalling the existence of dynamic capabilities. Key features of the six companies are summarised in Table 2.

Industry Dynamism	Industry	Site Name	Age	No. of Workers	No. of Interviewees	Family Firm	Management Structure
Slowly-Evolving	Olive Oil Processing	Gold	90	75	7	Yes	Owner-managers
Slowly-Evolving	Olive Oil Processing	Crystal	70	92	6	Yes	Owner-managers
Moderately Dynamic	OEM - Brakes Manufacturer	Accelerator	45	200	6	Yes	Owner-managers
Moderately Dynamic	OEM - Rubber Parts Manufacturer	Suspension	48	180	7	Yes	Owner-managers
High Velocity	Thermal Therapy	Seahorse	28	215	9	No	Professional managers
High Velocity	Thermal Therapy	Dolphin	34	109	7	Yes	Professional managers

Table 2. Brief Case Profiles

The objective is better understand the nature and content of dynamic capabilities in an empirical setting, thus in order to ensure the observation of a variety of dynamic capabilities online the companies were ‘matched pairs’. Gold Oil, Accelerator Auto and Seahorse Hotel were relatively more proactive in seeking technological and managerial improvements and hence embracing change more readily. This permitted literal replication (Yin, 2003) between the three cases. The other three companies, Crystal Oil, Suspension Auto and Dolphin Hotel also had reputation as successful players in their respective industries but sought more to maintain stability with far less attention to organisational renewal and innovative ideas. As they were demonstrating a slower pace of internal change with respect to the former group of companies, they would thus permit theoretical replication (Yin, 2003). With this research design, companies were expected to comprise a continuum of dynamic capabilities.

Semi-structured interviews were conducted as it was essential to gain an in-depth knowledge and understanding of the organisations, their processes and organisational improvement and renewal experiences (Rouse and Daellenbach, 1999). Respondents included the managing director and middle and upper managers representing different functions (e.g. HR, manufacturing, production, quality control, sales). 42 interviews were conducted with five to nine people in each company. Interviews lasted 60-90 minutes and were tape recorded and transcribed. During data collection, I spent 2-3 full days at each research site, which meant that along with formally organised interviews I had time and opportunity to interact with research participants in informal meetings over lunch and in between interviews.

Data analysis combined established methodologies for qualitative data analysis (Miles and Huberman, 1994) and grounded theory building (Charmaz, 2006). It involved traveling back and forth between the data and the emerging structure of theoretical arguments (Locke, 2001) in an evolving and iterative fashion.

Formal analysis involved four steps that took place roughly concurrently and over a period of several years. The first step was to write rich case study narratives (Patton, 2002) employing a thick description (Geertz, 1973) that would provide holistic portrayal of the cases. The themes that these narratives were structured around have emerged from the data and did not include the examination or integration of any literature, at this point. As Keen (1975, cited in Hycner, 1985: 280) states, “we want not to see this event as an example of this or that theory that we have, we want to see it as a phenomenon in its own right, with its own meaning and structure”. The second step included an open coding of the interview transcripts and further analysis of case study narratives in the light of the research questions. Pattern codes (Strauss and Corbin, 1998) were developed, for example, top-down management style, management aspirations, perceived environmental dynamism etc. As patterns began to emerge, the codes were clustered into groups (for example, organisational learning, change orientation etc.) which formed categories. The third step included developing a “partially ordered meta-matrix” as proposed by Miles and Huberman (1994) to assemble comparable data in one place, in a coherent fashion. I included all relevant data in a condensed format to a big, master chart, by placing categories in columns and individual cases in rows. Trying to fill out each cell entry forced me to think about individual cases from different angles and placing the data for all firms enabled me to compare not only firms that were matched at the data collection stage but to create new pairs across sectors. Once certain patterns and clusters started to emerge from this step, I tried to categorise each firm according to certain dimensions of

interest. A tactic that I used to do this was to draw scatterplots (Miles and Huberman, 1994) and to plot each of the cases on two or three dimensions (axes), so that similarities and differences among cases can be seen visually and spatially. In the second and third steps, I oscillated between inductively building concepts from the data and deductively searching for the data that would support and further refine the nascent patterns. The fourth step was writing up emergent theoretical propositions from the data, without the use of any relevant theoretical literature in order to maintain an inductive approach. I then looked into the general propositions case-by-case to see the degree of support for the proposition in each case. This approach suggests the constant comparison between data and propositions to accumulate and build evidence from diverse cases that converges on a single theoretical framework. The resultant theoretical framework was then compared with the literature, described as “enfolding literature” (Eisenhardt, 1989: 544).

4. The Capability Triad

By examining the nature of organisational capabilities, and how and why those capabilities are built, I propose three distinct types of organisational capabilities: incremental dynamic capabilities, adaptive capabilities and generative capabilities. The idea of categorising and typologising organisational capabilities may appear counter-intuitive, as capabilities are often characterised as being unique to individual firms (Teece et al., 1997). Yet, research data empirically indicate that specific organisational capabilities exhibit some common features across participant organisations, suggesting that a pattern exists across the organisational capabilities that are built by firms when dealing with specific organisational and technological challenges. The dynamics of industries that participant organisations operate in, and their assumptions about and interpretations of their respective industries’ dynamics, differ; thus the motivations for building a certain capability probably differ significantly, but research data on sources of firms’ competitive advantage still suggest that firms end up with capabilities that are similar in terms of key attributes, a phenomenon that Eisenhardt and Martin (2000) term “equifinality”.

The paper now will thoroughly describe the nature and content of three categories of organisational capabilities observed alongside research data exemplifying each of these capabilities existing in participant organisations.

4.1.Incremental Dynamic Capabilities:

Borrowing the concept from Ambrosini et al. (2009), incremental dynamic capabilities are focused on incrementally adjusting, adapting and improving the firms ordinary, first-order (Collis, 1994), zero-level (Winter, 2003) capabilities that are necessary for the firm's performance of basic operational and functional activities.

Table 3 summarises the research data for a selection of the incremental dynamic capabilities existing in participant organisations. As can be seen, all six firms have incremental dynamic capabilities. Given that all six firms are major players in their respective industries and have operated successfully for many years, it is not surprising to see that the concept is applicable to all six and that they have engaged in continuous improvement and incremental adjustments to their resource stock and capability base for maintaining their value.

Firm	Capability	Description	Function
Crystal Oil	Relationship management	Sales team know the sensibilities of their customers and distributors, as they have built a trust network by working with them over generations, and act accordingly by protecting the interests of their customers and distributors.	Sales
Gold Oil	Product differentiation through branding and packaging	Packaging is based on the customisation of product packaging in accordance with the point of sale's position in prestige-based business market segmentation.	Marketing
Suspension Auto	Integrated production model	Production system integrates all the manufacturing stages from compound and mould manufacturing to vulcanisation and testing.	Production
Accelerator Auto	Cost-effective production model	Production line improvement enables Accelerator to bring down their cost/quality ratio by simultaneously increasing their quality while decreasing unit production cost.	Production
Dolphin Hotel	Brand image and reputation	The brand name and the holding company owning it have a strong name in the consumer market. By using the advantage created by being the first big holiday village in Turkey, their marketing and all other activities maintain the brand image and live up to customer expectations.	Marketing
Seahorse Hotel	Knowledge-based approach to business development	The organisation prioritises scientific principles and the value of knowledge. Specialist knowledge and informed opinions is valued in scoping new services and applications.	Business Development

Table 3. Incremental Dynamic Capabilities in Participant Organisations

Contrasting with the mainstream view in the literature, despite being a lower-order capability, incremental dynamic capabilities are not static; they actually adapt incrementally. Even if their products and markets remain the same for long periods of time, firms can and have to renew their incremental dynamic capabilities during this period as and when new technologies become available or if new industry or regulatory standards are imposed; if not they will not be able to sell and generate revenue from the same product delivered to the same market. But it is important to note that, although incremental dynamic capabilities can be subject to change, their modification will always be targeted towards survival and this occurs often due to *force majeure* from the environment. Thus, management will consider reconfiguration, modification or the acquisition of skills technologies, knowledge and information only when change is unavoidable and after the change at stake has become a norm in the industry practised by all major competitors. And as such, the modification of a given operational capability *per se* would not make the firm more competitive. Changing incremental dynamic capabilities will only enable the firm to maintain its relative competitive advantage compared to the leading players in the industry.¹ From this perspective, although a given operational capability is subject to change, the relative competitive advantage of the firm remains static.

If differentiation is not possible through incremental dynamic capabilities, one might wonder whether it is possible to survive in an industry, for sustained periods of time, by focusing on and investing in incremental dynamic capabilities only. Crystal Oil presents an interesting example, demonstrating that an organisation can remain competitive through building mainly incremental dynamic capabilities only. In the case of Crystal Oil, one of the main reasons why they have managed to sustain their competitiveness in the olive-oil industry for over 70 years is because their skills of relationship management in sales and distribution. Their competitive advantage is less about their product – the product is of good quality but not significantly

¹ Hypothetically speaking, assume that your firm's operational capability lies in distribution. This is the functional activity that you perform better than your competitors. If your competitor's efficiency in managing distribution is represented by D – which is the minimum level of ability that is needed for any firm wanting to survive in the industry – let us represent your efficiency level by D+1. Then, assume that a new distribution management software program is released. Competitors adopting this software are now able to know the status of their customers' orders and suppliers' service levels. Because this software gives them control over their distribution network, assume that your competitors have increased their efficiency level to D+2. In order to maintain your competitive advantage, you will eventually adopt this particular software as well. When you adopt, the level of efficiency of your distribution system increases from D+1 to D+3. Because your competitors' level is D+2 – which is the new required minimum level of ability to compete successfully in the industry – although you have renewed your operational capabilities your competitive advantage relative to your competitors remains at the same +1 level.

better than those of major competitors – but a whole lot more to do with how they connect and engage with their distributors. Their skills have engendered trust in their distribution network – they have distributors that they have been working with for three generations – and this enables them to get under the skin of what is going in distributors’ companies and to watch over distributors’ interests and needs. While they protect their distributors from the negative effects of the competitive environment, such as price fluctuations, the distributors watch over Crystal’s interests in their sales area and also promote Crystal’s products to end consumers. But, as discussed earlier, incremental dynamic capabilities are not static and they are adjusted incrementally to keep up with new environmental exigencies. As Crystal Oil’s Chairman Norman notes, “We make our investment in piecemeal fashion, by slow degrees ... We implement whatever technology and quality ordain.” Hence, in order to maintain the value of their sales and distribution capabilities they make continual and often small adjustments to their extant sales and distribution resources and routines – such as integrating necessary technological tools to communicate with distributors, track prices in sales outlets and so on. Yet, the management refrains from drastic changes and large-scale investments and invests in satisfying the minimum requirements to ensure Crystal’s existence in the industry and its continued operation and revenue generation.

What happens when satisfying minimum requirements become inadequate for the survival of the firm in the industry? The answer is that they change when they are pushed into it by *force majeure*. Recently, Crystal started to have problems in hitting a consistent quality level for their products. Because this started to incur additional production costs and led to a drop in the desired level of profit, Norman decided to improve the oil refinery system single-handedly. This case shows us that when operational success is at stake, passive management can take on expensive commitments. But it is interesting to see that this commitment which calls for significant investment emerged in sporadic fashion as a solution to the firm’s operational problems and it is followed without thinking about its consequences. As Ripley explains, building a new refinery system in the middle of the factory land while production continues in the other corner might stall production and could create bigger quality and hygiene problems. He thinks that installing new machines and tanks will put production at risk. Because action to change is not taken in a planned and informed way, while trying to solve one problem they risk creating multiple problems that could have bigger repercussions. Since management only (re)acts to do what is necessary, they are fire-fighting, and if new fires are set then they will come up with alternative behaviours to fight those fires too until

survival and continued operation are guaranteed. So, speaking hypothetically, if construction work creates food safety issues and prevents the distribution and sale of products, then management will come up with a corrective action to fix that problem and go on with production.

Only doing what is needed for survival in a sporadic fashion interferes with the organisation's capacity to see and consider its next steps. As Ripley points out, the new refinery system will solve flavour and quality problems but it will not be possible to utilise its full capacity because the rest of the production process is not as sophisticated as the refinery system. In order to standardise the quality level of the raw material entering the refinery process, the system is computerised. In order to keep up with the speed and precision of the refinery system, the next steps of the production process should be fully automated as well. But at Crystal Oil the production is semi-automatic, meaning that they still rely on significant manpower for bottling, labelling and warehousing after the refinery phase. These will continue to be completed at the existing slower pace creating a bottleneck in the whole chain. While Ripley believes that full-scale investment is more advantageous in the long run, interpreting Crystal's overall approach to investing and modifying resource stocks, we can conclude that new technology will be adopted only when it becomes unavoidable. Even if the end result is a patchy business model, only the minimum condition for survival is met and the rest is put off until the next crisis hits the firm. If we use the automation example again, the new refinery system suggests that full automation is the rational action to be taken, but because full automation is not essential for survival at this stage, because they can continue to produce on this scale no matter what the difference is between the actual and potential speed of production, no further action to change the production system is taken.

Because incremental dynamic capabilities and changing them aim for survival of the firm and continuing operation in the industry, and because actions for change are not necessarily intended and well thought out, if I borrow Bateson's (1972) labels for categories of learning, it can be said that firms mostly investing in operational capabilities demonstrate "zero learning". In opposition to Vera et al.'s (2011) classification, where they identify operational/zero-order capabilities with single-loop learning (Argyris and Schon, 1978), I argue that learning at this level cannot be classed as single-loop because these organisations exhibit minimal change in their response to external and internal environmental changes which are a sensory input for the organisation. This finding is in line with what Fiol and Lyles (1985) argue: "change does not necessarily imply learning" (p.803). Although incremental

dynamic capabilities are not static and can change in line with unavoidable developments in the external or internal environment (such as new technological developments requiring new investment in machinery), organisational learning requires improvements to practice and taking change actions through knowledge and better understanding of the situation (Fiol and Lyles, 1985). Because the learning type needed to build and maintain incremental dynamic capabilities is defensive in nature, without understanding or thinking about the reasons beyond their immediate action, this unintended unrepeatable type of organisational learning can, at best, be labelled ‘ad-hoc learning’ or ‘coercive learning’, as it suggests a general unwillingness to learn within the organisation.

4.2.Adaptive Dynamic Capabilities:

Improvements in the basic functional activities and operational capabilities of the firm can be made in a less passive manner than at Crystal Oil. The behaviour of the firm, in focusing on adaptive dynamic capabilities is typified as refreshing and renewing its capabilities to match the level of environmental change beyond incremental adjustments and improvements. These firms will change, modify and renew their resource stock and capability base more systematically, intentionally. While management is not adopting a sceptical or passive stance towards change, the behaviour of the firm remains reactive. Hence, change is accepted to some degree, but it is not internalised; it is visualised as something that occurs beyond the organisational boundaries, as something that the organisation has no control over, and as something that the organisation should respond to. Table 4 summarises some examples from participant organisations. Five out of the six firms have adaptive capabilities, but Suspension Automotive and Dolphin Hotel are found to be the two firms predominantly investing in the development of adaptive dynamic capabilities. For this reason, these will be the two cases that will be further elaborated.

Suspension Automotive’s management decided to invest in new machines only after it became clear that their production capacity was inadequate to meet market demand. Only after customers started to place orders exceeding their capacity they invested in capability development by buying injection press machines that would allow raising production levels. Similarly, out of the six participants, Suspension is the firm that has the largest number (five) of quality-related certificates but, when probed further, the Quality Manager revealed that they chose to be certified because certain customers demanded that from them. For example,

they applied for a Q1 quality system because that was the prerequisite for Ford to consider them as a supplier candidate; they got 5S certification because their two major customers, Mitsubishi and Temsa, started to work only with suppliers that adhere to 5S principles. As the Factory Manager, Ian states: “...Thus, customer demand is the primary factor for investing in change. It is the most fundamental factor, in any case. Apart from that, competitors’ positions are another factor.”

Firm	Example
Gold Oil	Applied and qualified for a Kosher Certificate in order to be able to produce and sell private label products to interested buyers in the United States and Israel.
Suspension Auto	Adopted Q1 and 5S principles in the organisation in order to qualify as a potential supplier to big players in the automotive industry such as Ford and Mitsubishi.
Accelerator Auto	Hired a professional and experienced factory manager to solve a series of technical problems regarding production that were preventing the company from qualifying to undertake a major order from a German company for the last three years.
Dolphin Hotel	Signed a contract for cooperation with a physiotherapy branch centre in order to be approved as a Thermal Therapy Cure Centre by the Ministry of Health and thus be eligible to apply for EUROPESPA-med Quality Certification.
Seahorse Hotel	Raised hygiene standards (by for example introducing automatic touchless recycling bins) in the kitchen area in order to meet the requirements of the Norwegian Ministry of Health and start hosting and curing groups of patients from Norway.

Table 4. Adaptive Dynamic Capabilities in Participant Organisations

It can be inferred from this statement that Suspension would stand still if the competitors did not change their positions as they believe that otherwise customers would keep demanding the same product, on the same scale, in the same manner. But because change is inevitable, organisations with an adaptive approach find themselves in a situation where they need to align their internal resources with external demand continuously. In order to appreciate the difference between incremental dynamic capabilities and adaptive dynamic capabilities better, considering a hypothetical example might be useful. If Crystal Oil was operating in the automotive component parts industry, it would have acted differently when faced with prospective customers’ quality management demands. While Suspension adapted its operations and aligned its processes with Q1 principles in order to be considered by Ford Motor Company, Crystal would have tried its utmost to avoid working with Ford. Working with Ford is probably not essential for survival. It is an option to generate extra revenue without applying Q1 principles since no other automotive manufacturer other than Ford asks for a Q1 certificate. So Crystal Oil would not even want to work with Ford and would

continue to work with its existing customers by keeping its resource stock and capabilities unaltered, insofar as this continues to be a viable strategy for firm survival.

Firms investing in adaptive dynamic capabilities are good at scanning their immediate external environment for organisation-environment misfits. They are better at responding to change and benefiting from new conditions when compared to firms investing mainly in incremental dynamic capabilities. While the latter are worried only about immediate survival, firms belonging to the former category are worried mainly about alignment and maintaining their fittingness with the external environment.

Because change is less contingent and more prevalent when compared to firms belonging to the first category of capabilities, the organisations' behaviours towards change and learning are more routine and patterned at this level. As the focus is on alignment, these organisations intentionally check for organisation-environment misfits. While change decisions are intended, they suffer from sub-optimal tendencies. Firstly, responses to the environment are made by correcting an error within a set of alternatives. This choice mainly depends on the urgency of the matter. Hence some problems and misfits that are more important or more complicated might be brushed off. Secondly, there is a phenomenon of habituation. The likely behaviour in the face of a misfit identified is to take corrective action resting on a repertoire of knowledge sources and networks built over the years as by-products of recurrent cycles of adaptation-misfit-adaptation. These repeated short improvement cycles that are triggered by exogenous shocks are targeted towards adding bits and pieces to the way in which the business is run in order to stay on track and avoiding the risk of going through major disturbances and existence-threatening crises that might shake the ground the organisation stands on. Because change actions skilfully target gaps in optimal fittingness of the organisation with its environment, the type of learning at this level of capabilities is "lower-level" (Fiol and Lyles, 1985); it is focused on adjusting only certain parts of the organisations' functions and operations, mostly in a superficial fashion.

When viewed from this angle, these alignment cycles can be interpreted as cycles of adaptive, single-loop learning. Problems, misfits and irregularities are identified and corrective action is taken within the existing system, but the central features of the management approach and operations are maintained. If we examine Suspension Automotive's and Dolphin Hotel's application of ISO quality certification, we can see the superficiality of the learning efforts made in the adoption and implementation of ISO principles. As noted above, the central

reason for the adoption of quality certificates, including ISO for Suspension Automotive, was to conserve the existing customer base and attract new customers.² Suspension is not interested in modifying its management principles by adhering closely to ISO principles and its philosophy of continuous learning and continuous improvement; it wanted to have ISO for opportunistic reasons. As a consequence, ISO was used solely for error correction, rather than for error prevention. In this way, they managed to preserve the operating strategies and norms of the organisation while adjusting their management and production systems to fall in line with the competitive conditions. Similarly, ISO 9001 at Dolphin Hotel was implemented only superficially, and in most cases imperfectly, because they were interested in having ISO certification as a means to communicate their professionalism and institutionalism to customers and investors, rather than to internalise its principles and attain insightful learning outcomes. As Dolphin's General Manager openly states:

...this business cannot be run with so much paperwork [as required by ISO principles]. If we meet all these [requirements] we cannot possibly serve the customers ... When a box of tomatoes comes to the warehouse, if we need to fill out 10 different forms at all 10 points that these tomatoes go through, by the time the box arrives at the kitchen the tomatoes will be rotten and no food could be served to the customers.

Thus the organisation manages behavioural development without any associated cognitive development in the long-term implications of their actions.

To summarise, organisations valuing adaptive capabilities develop systematic patterns of organisational activity, which are aimed at the adaptation of behaviour, operating practices and knowledge. Although this characterisation may be associated with 'rote learning', the cyclical nature of organisational alignment suggests that the organisation gains the ability to offer different responses at different times in the face of a variety of internal or external situations. But the common ground is that all these responses aim mainly at the correction of errors and the alignment of the organisation with its environment. Firms investing mainly in adaptive capabilities are characterised by repeated short improvement cycles that are triggered by exogenous shocks.

² One of the requisites of ISO certification is that ISO-holding firms are obliged to use raw materials, intermediate goods and components supplied from ISO-holding suppliers. For this reason when an ISO quality management system diffuses throughout the automotive industry, Suspension Auto has to align its quality control process and apply for ISO in order to be able to sell its component parts to existing and prospective customers.

4.3. Generative Dynamic Capabilities:

Generative dynamic capabilities refer to a firm's conduciveness to develop and adopt new ideas. They enable firms "to recognise the intrinsic value of other resources or to develop novel strategies before competitors" (Collis, 1994: 145). Firms investing predominantly in generative dynamic capabilities exhibit an active interest in applying new ideas, modifying and renewing organisational practices, knowledge base and resource stock. Thus, in contrast to the reactivity of adaptive dynamic capabilities, generative dynamic capabilities are characterised by a proactive stance towards change and innovation. While change is triggered by external factors in firms investing in adaptive dynamic capabilities, firms operating at this level of capabilities are intrinsically motivated to change. In most cases, the rate of organisational change exceeds the rate of change in the environment. This suggests that firms investing in generative dynamic capabilities are generally first movers in the industry and that they actively enact the environment they are a part of.

Interestingly enough, the changes forced on firms operating at the level of adaptive dynamic capabilities tend to be changes initiated by firms with generative dynamic capabilities. In other words, firms with adaptive dynamic capabilities *respond* to the environment *enacted* by firms with generative dynamic capabilities. If we take the Seahorse Hotel and Dolphin Hotel pair, it is seen that after Seahorse invested in becoming a scientifically operated thermal therapy cure centre, Dolphin partnered with a physiotherapy branch centre and applied to be approved as a cure centre as well. Similarly, Seahorse's agreement with the Norwegian Ministry of Health was followed by an agreement between Dolphin and the Netherlands Ministry of Health; and, in the same way, after Seahorse got the EUROPESPA-med certification, Dolphin was inspired to apply for it also.

As discussed in the previous section, firms with adaptive dynamic capabilities assume change to be something that is injected from outside, and something to be addressed by aligning internal organisational resources with external environmental factors. This perception of change reifies the 'inside' and 'outside' separation between the organisation and its environment. In contrast, firms investing in generative capabilities act with a different ontology. According to them, change is not an exceptional event produced in specific circumstances, commanded by external environment factors. Rather, for them innovative ideas and change emerge from everyday practice, almost in an ongoing fashion. Change is an emergent self-organising process in these firms because the focus of management is not on

solving problems or correcting errors; they are actively inspired to play with and apply new ideas and new technologies. As such, their change practices go beyond the quasi-automatic stimulus-response behaviour. Organisational members – not only senior management – build an appreciation of deliberate learning and innovation projects, and the organisation overall achieves an increased level of understanding about why to change, how to change, and what does and does not work in the execution of certain organisational change tasks.

Let us study the quality management system in place at Seahorse Hotel. As mentioned in the previous section, Dolphin Hotel adopted ISO 9001 and then could not truthfully apply it because ISO does not fit the realities of the tourism industry. Meanwhile Seahorse Hotel *created* its own quality control and management system by acquiring knowledge about extant quality management systems and then assimilating and integrating them in such a way that the emergent system would suit the pace of the tourism industry and satisfy the quality standards expected. The creation and implementation of the Crea Quality Management System (henceforth Crea-QM), developed by and applied at Seahorse, shows that quality management is not just a process at Seahorse, it is an organisation-wide vision based on empowering employees, “[tapping] into the tacit ‘energy’ of the firm” (Wang and Ahmed, 2007: 35), through collective discussion and constructive confrontations on how to build a customer-oriented culture. The creation and implementation of Crea-QM at Seahorse is evidence of the management’s willingness to question and redefine basic taken-for-granted norms and widely held industrial modes of operating. Many firms would choose to apply for an existing quality management certification, acquire relevant knowledge from institutional bodies, and adopt the required practices regarded as the ‘industry standard’. Very few firms, if any, would engage in deeper problem-solving to take action regarding quality issues and consider creating their own system for managing quality. This proactive stance indicates the existence of generative, double-loop learning in organisations with generative dynamic capabilities. Another interesting example evidencing the relation between double-loop learning and generative dynamic capabilities is the case of Gold Oil.

Gold Oil, whose brand proposition was a high-quality refined olive oil, they faced a natural barrier. By the very nature of the olives cultivated in that geographical region, the quality of the olive oil produced in the area is of second quality when compared to the olive oil produced in other parts of Turkey, since the olives cultivated in Gold’s geographical territory has a significantly bitter and stronger taste due to climate and soil characteristics. But the management focused on solving the problem by questioning how the quality of the oil could

be improved. First, traditionally, farmers thought that olives should be harvested in December. Gold Oil managers discovered that this belief was not well-grounded and was in fact erroneous. Their research showed that olives start to mature in October but farmers wait until December because they think that the fat level in the olives will increase as the water level in the olives decreases after maturity. The research revealed that it was a false conviction that the level of fat will increase as time goes by. It was found out that the fat composition of olives stabilised in September and that what makes the taste of olive oil bitter is delaying the harvest until the olives run out water, as this increases the acidity level. Given this discovery, members of top management went to the fields to create awareness amongst farmers and convince them to harvest their olives in mid-October. As a result of harvesting the olives earlier, the acidity levels dropped from 0.8g to around 0.5g per 100g. But this did not completely eradicate the bitterness. During the production process the machines detach the stone from the olive and then the olive is smashed. The resulting paste moves into a tube surrounded by another tube filled with hot water. The paste is cooked with the heat coming from the outer tube but water is never in contact with the paste. Traditionally, the temperature of that water is around 30 °C. This was increasing the output efficiency but causing the taste to be bitter. With the encouragement of the management, employees experimented with what would happen if the temperature of the water was decreased; through a series of trials and errors, they discovered that 27°C was enough to cook the olive paste without the taste being bitter. But finding out that the paste would cook with water at 27°C was not a straightforward process. By default, the machines were set to work with water at 30°C and thus the related timer settings were programmed accordingly. In order to know whether the olive paste was cooked or not they needed to measure the temperature of the paste, whereas the machine was measuring only the temperature of the water. One of the front-line employees suggested adding a second thermometer to the machine at the point where it touches the paste. This was a risky suggestion because it could have damaged the machine, but the management decided to take the suggestion on board and it worked. Through a series of discoveries, altering the principles of olive-oil production, the firm managed to increase the olive oil quality. These cases can be interpreted as examples of how organisations with generative capabilities engage in knowledge creation through generative, double loop learning that challenges basic industry standards and practices.

While potentially requiring significant effort and commitment on the part of members of the organisation, learning efforts to achieve such fundamental changes are likely to produce

improved understanding of the performance implications of the actions taken to operate the business on a daily basis, and the potential effects on the environment surrounding the organisation.

5. Insights into the Capability Triad

The organisational capabilities described and discussed above are hierarchically ordered, incremental dynamic capabilities being lower-level and generative dynamic capabilities being higher-level. This hierarchical model of capabilities suggests that capabilities are cumulative; this means that a firm can only aim to develop higher-level capabilities on the premise that it has already built lower-level capabilities in an initial period. The order of implementing organisational capabilities is consequential; a property termed “sequenced steps” by Brown and Eisenhardt (1997). A firm first needs to understand and appreciate the critical success factors in the industry and be able to modify them (i.e. build and sustain incremental dynamic capabilities), and how to extend and reconfigure them to align with environmental changes (i.e. build and sustain adaptive dynamic capabilities), before being able to form a higher understanding of why it should change (i.e. build generative dynamic capabilities) in a continuous and intrinsic fashion (i.e. sustain generative dynamic capabilities).

Contrary to the current conceptualisations, all of these capabilities are dynamic to varying degrees since even incremental dynamic capabilities are not static; they actually adapt incrementally. Albeit Schreyögg and Kliesch-Eberl (2007) and Helfat et al. (2007) assert that organic development and gradual evolution of capabilities do not constitute dynamic capabilities a processual conceptualisation of dynamic capabilities disaffirms their argument. If dynamic capabilities is a process that impact upon resources and if learning, as a continuous self-reflective exercise, is embedded in that process, all capabilities (be it ordinary or dynamic) are change-focused. As Eriksson (2014: 66) notes “they are dynamic by implication as they operate in time and develop over time” (Eriksson, 2014: 66). The mainstream conceptualisations associate dynamic capabilities with something more radical (Helfat and Winter, 2011), and as such, things that focus on extending and enhancing existing products and services and supporting existing businesses are disqualified (as in the study by Drnevich and Kriauciunas, 2011). Yet, they can still be promoting economically important change, and while supporting existing businesses and seemingly non-radical change that may

be exhibit important dynamic attributes (Helfat and Winter, 2011: 1247). This is certainly so in the case of incremental dynamic capabilities.

Critiques might argue that incremental and adaptive dynamic capabilities should be disqualified, not because of their non-radical nature, but because they rely on ad-hoc problem solving and disjointed actions in the face of crises (Winter, 2003; Schreyögg and Kliesch-Eberl, 2007; Zollo and Winter, 2002). They would argue that to be a dynamic capability it should exhibit a “habitualised action pattern” (Schreyögg and Kliesch-Eberl, 2007: 915) which is “learned and stable” and which enables the organisation to “systematically generate and modify” its resource base (Zollo and Winter, 2002: 340). From a close look up, at first glance, it might appear that the fire-fighting mentality behind incremental and adaptive dynamic capabilities leads to sporadic, ad-hoc and disjointed actions and this might raise concerns about their nature. Yet when the organisation is viewed from a distance, over a long-period of time, it becomes clear that these capabilities do work “in a reliable manner” (Helfat and Peteraf, 2003: 999) and hence is in accordance with mainstream definitions of dynamic capabilities. These firms do not accidentally or by luck modify/extend their resource configurations (Zahra et al., 2006; Helfat et al., 2007; Schreyögg and Kliesch-Eberl, 2007); they manage to reproduce the same success in various situations and over time.

Feldman and Pentland’s (2003) notions of ostensive and performative aspects of routines can help us understand what happens inside firms with incremental and adaptive dynamic capabilities. The ostensive aspects is the structure of the routine, it “is the idea; performative aspect [is] the enactment” (Feldman and Pentland, 2003: 102), what happens in practice. Antonacopoulou’s (2006) distinction between practice and practise is also relevant. Practice relates to the ostensive aspect, practise to the performative: “the same practice has always the potential to be both performed and represented in different ways” (Antonacopoulou, 2006: 16). From this perspective, the sporadic fire-fighting and ad-hoc problem solving efforts are not routinised and habitualised at the performative, practise level, yet the process that firm uses to modify, extend and reconfigure its resource base has a stable, repeatable structure at the ostensive, practice level. The resource base is deliberately and intentionally changed by using this patterned behaviour of sporadic fire-fighting and ad-hoc problem solving and hence incremental and adaptive dynamic capabilities are in fact dynamic capabilities.

It is the different managerial motivations and organisational ontologies that help us to distinguish incremental and adaptive dynamic capabilities from generative dynamic

capabilities in practice. As noted earlier, while incremental dynamic capabilities can be subject to change, their modification will always be targeted towards survival and change occurs due to *force majeure* from the environment, adaptive capabilities are altered with the motivation for ensuring alignment and maintaining their fittingness with the external environment. On a stark contrast, generative dynamic capabilities are characterised by a proactive stance towards change and innovation. In such firms, change is not an exceptional event commanded by external environment factors. Change is an emergent self-organising process in these firms because the focus of management is not on solving problems or correcting errors; they are actively inspired to play with and apply new ideas and new technologies. As such, their change practices go beyond the quasi-automatic stimulus-response behaviour. The distinction between adaptive and generative learning, as discussed in organisational learning literature, captures this point nicely. Adaptive learning is about coping and is focused on pushing on symptoms rather than eliminating underlying causes. Incremental and adaptive dynamic capabilities are, thence, about coping while generative dynamic capabilities are about creating. As a learning process, they require new ways of looking at the world.

By putting managerial motivations, organisational ontologies and the resulting learning orientation to the focus of inquiring capability levels, I take the position that a volatile and changing external environment is not a necessary component of the level of dynamic capability to be invested, but the perception and current beliefs managers have about internal and external environmental dynamism is. Surely, things happen in the external environment that suggests some level of ‘objective’ dynamism; material elements in the business environment are real – governments impose new regulatory standards, new competitors enter the market, raw material prices increase, customer demand shifts. But all of these are meaningless and appear as random events until members of an organisation notice them, make sense of them, find patterns within them. The environment is dependent on the organisational member’s perceptions, interpretations and experiences. The character and dynamics of this ‘enacted’ environment depend on the affective predispositions and patterns of attention of key organisational members, their particular intellectual efforts to make sense of “a continuous stream of ecological changes and discontinuities that must be sifted through and interpreted... by engaging in an interpretive process that forms the basis for their organised behaviour” (Smircich and Stubbart, 1985: 739). In other words, how managers interpret environmental changes and whether they perceive any uncertainty or threat in the

environment will affect the deployment of dynamic capabilities within the firm. Thus, changes in dynamic capabilities are not solely based on exogenous factors; internal endogenous factors clearly drive the development and reconfiguration of organisational capabilities (Newey and Zahra, 2009). The case findings about dynamic capabilities deployed in firms within the same and single industry (e.g. Crystal Oil and Gold Oil, Dolphin Hotel and Seahore Hotel) shows how managers facing similar external conditions make different decisions regarding capability dynamisation in response to changes in the external environment. The intra-industry contrasts evidence that it is possible to have varying levels of firm dynamism, leading to varying capability levels, within the same external environment and still be able to maintain competitive advantage. These organisations have differing assumptions for the same industry, and this results in firms taking contrasting strategic postures and doing differing things to supposedly ‘align’ themselves with the environment. This finding provides empirical support for Newey and Zahra’s (2009) argument that investment in and the alteration of organisational capabilities can be driven by internal endogenous entrepreneurship as well, which seems to matter as much as exogenous shocks. This finding is also in line with Zollo and Winter’s (2002: 346) argument, when they suggest that “organisations differ in their dynamic capabilities partly because they inhabit environments with differing rates of change, but also partly because they place different bets, implicitly or explicitly, on the strategic importance of change in the future”.

The fact that all pairs are competitive despite differing managerial assumptions and differing levels of dynamic capabilities in the same industry is a curious finding. The literature that accounts for the role of managerial cognition and perceptions suggest that managers who ‘inappropriately’ diagnose the type of change needed and fail to develop the ‘appropriate’ dynamic capabilities will cause insufficient organisational adaptation resulting in declining market performance (Ambrosini et al., 2009). Yet, the proactive posture and aspirational approach of Gold Oil, which operates in a slowly-evolving industry does not lead to anticipated consequences listed in the literature such as the destruction of parts of the resource base (Ambrosini et al., 2009) or consuming unnecessary resources and energy incurring costs that would harm performance outcomes (Zahra et al., 2006). Similarly, depending on the actual degree of volatility in the external environment, Suspension Auto and Dolphin Hotel are risking to under-reacting with respect to Accelerator Auto and Seahorse Hotel. Yet, neither of them is experiencing a decline in performance suggesting that they may have misinterpreted or screened out any signals that would require more radical changes rather than

more basic adaptive behaviour. The fact that a firm that enacts a stable environment and does invest in incremental dynamic capabilities can successfully coexist, in the same industry, with a competitor that enacts a dynamic environment and continuously reconfigures its resource base via generative dynamic capabilities puts the idea of alignment advocated in the wider strategic management literature under scrutiny. The empirical findings suggest that within each industry (i.e., external environment) there is an ‘envelope’ of different levels of dynamic capabilities that is allowed for competitive parity and/or competitive advantage.

In this study, a certain degree of heterogeneity in capabilities within the organisation has been observed. This is an important contribution to the literature which (implicitly or explicitly) assumes that once dynamic capabilities are built they will operate across the organisation. For example, Strehle et al. (2010) and Pavlou and El Sawy (2011) refer to dynamic capabilities as metaphysical learning capabilities that act across all firm capabilities. On a similar vein, Schreyögg and Kliesch-Eberl (2007) proposed capability monitoring which a dynamic capability (as a process) that continuously observes the firm’s capability landscape across all functions to identify maladjustments. The case findings suggest that dynamic capabilities are not firm-wide processes operate across the firm in all of its functions. Although there is a dominant capability level which the organisation mainly invests in, it possesses a diversity of dynamic capabilities at other levels alongside. Hence, while a firm has adaptive capabilities regarding production-related functions, it can possess incremental dynamic capabilities for its sales and marketing activities but does not have any competitive organisational capabilities for the human resources management function. The paper provides empirical evidence to Zahra et al. (2006: 921) who assert that “just as a firm has many substantive capabilities of varying strengths, it has many dynamic capabilities of varying strengths” and utilises case findings to support this point. It is interesting to note that diversity can be observed not only within the organisation, but even within a department. This heterogeneity in terms of capability levels and internal dynamism observed within the organisation is related to the strategic posture of the organisation and the areas prioritised by management.

6. Conclusion

The purpose of this paper was to improve our understanding from an organisational learning perspective and a learning-based theory of change. I have presented case study findings from six mature, medium-sized firms that managed to sustain their competitiveness over

generations in environments with varying levels of volatility and turbulence. The case findings reveal a ‘capability triad’ that distinguishes between three types of dynamic capabilities: incremental, adaptive and generative. Three important points arise from this study and the resulting triad. First, each type of dynamic capability requires a different learning orientation. Generative dynamic capabilities is oriented towards opportunity search and experimentation, and is different from that of incremental dynamic capabilities, which often calls for quick fixes of particular problems. Second, incremental, adaptive and generative dynamic capabilities usually coexist, and every organisation owns each to some degree and in some combination. Contrary to the mainstream conceptualization of dynamic capabilities, different levels of dynamic capabilities can operate within one organisation and they can even co-exist within one function. Third, firms do not need to reside in high-velocity markets in order to develop dynamic capabilities. As such, a volatile environment is not a necessary component of a dynamic capability (Ambrosini and Bowman, 2009; Eisenhardt and Martin, 2000; Helfat and Winter, 2011; Zahra et al., 2006). Dynamic capabilities can operate in relatively stable environments; it is more contingent upon endogenous factors like the strategic posture of the organisation and the areas prioritised by management, rather than exogenous factors like environmental dynamism.

This paper, while careful in its observations and findings, has, like all other scholarly studies, limitations that need to be taken into account when considering its contributions. First, the analysis represents only a snapshot of a given moment in time, even though organisations are in constant motion. While the paper has argued that organisations and capabilities evolve continuously, and that learning is a process, the development of participant organisations could not be followed up due to lack of access, resources and time. Second, I did not have access to any confidential company data, but of course, collecting and analysing detailed performance data could help to understand, in greater depth, the relationship between organisational interpretations about the nature and process of dynamic capabilities, and firms’ competitive performances. Third, qualitative researchers expect to be able to gather multiple perspectives of one organisation that will enable them to gain a richer and more complete understanding of phenomena. In the context of this research, talking to several people from various departments with different backgrounds, and as such having multiple voices, should have provided multiple perspectives and multiple interpretations of the issues at hand. Surprisingly, except for few interviewees who differed from the main accounts, I was not able to uncover viewpoints that would disconfirm the ‘consensus’. Although some researchers

might prefer to interpret this consistency across members' accounts as cross-validation of their research results and an indication of strong and convincing findings, I think that this is an important issue to think through. This unity of perspective might be a consequence of Turkish culture which is characterised by high social distance where organisational members respect authority and avoid openly conflicting management's viewpoint. It might also be case that the interviewees were unsure about my relationship with the managing director and the level of trust between me and interviewees might have been insufficient for them to feel safe to express their 'personal' versions of the story. I would be curious to see what the results will be when similar studies are conducted in other cultural contexts; perhaps the lack of multiplicity of perspectives is a small firm phenomenon and the traits of Turkish culture have little effect on this.

The study identifies several issues that require further exploration and I highlight three main avenues that are likely to be fruitful. First, I think it is important to identify the appropriate balance between different levels of dynamic capabilities and their strength for different types of businesses, in different industries and at different stages of the organisational growth. Second, the case findings suggest that firms with varying degrees of internal dynamism, leading to different levels of dynamic capabilities can successfully compete in the same industry. An empirical study that researches the effects of over- and under-reaction by measuring internal dynamism, perceived and actual external dynamism would help to understand this curious result. Third, the nature of each distinct level of dynamic capability merits further exploration through intensive, and preferably longitudinal case studies which would provide opportunities to be observed 'in action'.

References

- Ambrosini, V. and Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management. *International Journal of Management Reviews*, 11(1), pp.29-49.
- Ambrosini, V., Bowman, C. and Collier, N. (2009). Dynamic capabilities: an exploration of how firms renew their resource base. *British Journal of Management*, 20(Special Issue), pp. S9-24.
- Anderson, P. (1999). Complexity theory and organization science. *Organization Science*, 10, pp. 216–232.

- Antonacopoulou, E. (2006). Strategizing as practicing: strategic learning as a source of connection, *AIM Research Working Paper Series*, London.
- Aragon-Correa, J.A. and Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of Management Review*, 28(1), pp.71-88.
- Argyris, C. and Schön, D. (1978). *Organizational learning: a theory of action perspective*. Reading, MA: Addison Wesley.
- Argyris, C., Putman, R. and McLain Smith, D. (1985). *Action Science, Concepts, Methods, and Skills for Research and Intervention*. San Francisco, CA: Jossey Bass.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), pp.99-120.
- Barney, J.B. (2001). Resource-based theories of competitive advantage: a ten year retrospective on the resource-based view. *Journal of Management*, 27(6), pp.643-50.
- Bateson, G. (1972). *Steps to an Ecology of Mind*. New York: Ballantine.
- Bowman, C. and Ambrosini, V. (2003). How the resource-based and the dynamic capability views of the firm inform competitive and corporate level strategy. *British Journal of Management*, 14(4), pp.289-303.
- Brown, S.L. and Eisenhardt, K.M. (1997). The art of continuous change: linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, vol. 42, no. 1, pp.1-34.
- Cepeda, G. and Vera, D. (2007). Dynamic capabilities and operational capabilities: a knowledge management perspective. *Journal of Business Research*, 60(5), pp.426-37.
- Charmaz, K. (2006). *Constructing grounded theory: a practical guide through qualitative analysis*. London: Sage.
- Chiva, R., Grandio, A. and Alegre, J. (2010). Adaptive and generative learning: implications from complexity theories. *International Journal of Management Reviews*, pp. 114-129.
- Collis, D.J. (1994). Research note: how valuable are organizational capabilities?. *Strategic Management Journal*, vol. 15, no: S1, pp.143-52.
- Cyert, R.M. and March, J.G. (1963). *A behavioral theory of the firm*. Cambridge: Blackwell.
- Dixon, S.E.A., Meyer, K.E. and Day, M. (2007). Exploitation and exploration learning and the development of organizational capabilities: a cross-case analysis of the Russian oil industry. *Human Relations*, 60(10), pp. 1493-1523.
- Dosi, G., Nelson, R. and Winter, S.G. (2000). *The nature and dynamics of organizational capabilities*. Oxford: Oxford University Press.
- Drnevich, P. and Kriauciunas, A. (2011). Clarifying the conditions and limits of ordinary and dynamic capabilities to relative firm performance. *Strategic Management Journal*, 32(3), pp. 254-279.
- Easterby-Smith M. and Prieto I. (2008). Dynamic capabilities and knowledge management: an integrative role for learning? *British Journal of Management*, 19(3), pp. 235-249.

- Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), pp.532-50.
- Eisenhardt, K.M. and Martin, J.A. (2000). Dynamic capabilities: what are they?. *Strategic Management Journal*, vol. 21, no. 10/11, pp.1105-21.
- Eriksson, T. (2014). Processes, antecedents and outcomes of dynamic capabilities. *Scandinavian Journal of Management*, 30, pp. 65-82.
- Feldman, M.S. and Pentland, B.T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly*, 48(1), pp.94-118.
- Fiol, C.M. and Lyles, M.A. (1985). Organizational learning. *Academy of Management Review*, 10(4), pp.803-13.
- Helfat, C.E. and Peteraf, M.A. (2003). The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, 24(10), pp.997-1010.
- Helfat, C.E. and Winter, S.G. (2011). Untangling dynamic and operational capabilities: strategy for the (n)ever-changing world. *Strategic Management Journal*, 32, pp.1243-1250.
- Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D. And Winter, S. (2007). *Dynamic capabilities: understanding strategic change in organizations*. Oxford: Blackwell.
- Hendry, C. (1996). Understanding and creating whole organizational change through learning theory. *Human Relations*, 49(5), pp. 621-641.
- Hine, D., Parker, R., Pregelj, L. and Verreynne, M.L. (2013). Deconstructing and reconstructing the capability hierarchy. *Industrial and Corporate Change*, 23(5), pp. 1299-1325.
- Huber, G.P. (1991). Organizational learning: the contributing processes and the literatures. *Organization Science*, 2(1), pp.88-115.
- Hycner, R.H. (1985). Some guidelines for the phenomenological analysis of interview data. *Human Studies*, vol. 8, no. 3, pp.279-303.
- Jones, O. (2006). Developing absorptive capacity in mature organizations: the agent's role. *Management Learning*, 37(3), pp.355-76.
- Keen, A. (1975). *A primer in phenomenological psychology*. New York, NY: Reinhart and Wilson Inc.
- Lant, T.K. and Mezias, S.J. (1992). An organizational learning model of convergence and reorientation. *Organization Science*, 3, pp. 47-71.
- Leonard-Barton D. (1994). Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, 13, pp. 111-125.
- Lichtenstein B. and Brush C. (2001). How do "resource bundles" develop and change in new ventures? A dynamic model and longitudinal exploration. *Entrepreneurship: Theory and Practice*, 25(3), pp. 37-59.

- Lockett A., Thompson S. and Morgenstern U. (2009). The development of the resource-based view of the firm: a critical appraisal. *International Journal of Management Reviews*, 11(1), pp. 9-28.
- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic capability views of rent creation. *Strategic Management Journal*, 22(5), pp.387-401.
- Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis: an expanded sourcebook*. 2nd ed. Thousand Oaks, CA: Sage.
- Newey, L.R. and Zahra, S.A. (2009). The evolving firm: how dynamic and operating capabilities interact to enable entrepreneurship. *British Journal of Management*, 20(Special Issue), pp.S81-100.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Pavlou, P. and El Sawy, O. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences*, 42(1), pp. 239-273.
- Peteraf, M. (1993). The cornerstone of competitive advantage: a resource-based view. *Strategic Management Journal*, 14(3), pp.179-91.
- Piaget, J. (1969). *Psychology of the Child*. New York: Basic Books.
- Rindova, V.P. and Kotha, S. (2001). Continuous ‘morphing’: competing through dynamic capabilities, form, and function. *Academy of Management Journal*, 44, pp. 1263–1278.
- Rouse, M.J. and Daellenbach, U.S. (1999). Rethinking research methods for the resource-based perspective: isolating sources of sustainable competitive advantage. *Strategic Management Journal*, vol. 20, pp. 487-94.
- Schreyögg, G. and Kliesch-Eberl, M. (2007). How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization. *Strategic Management Journal*, **28**, 913–933.
- Schreyögg, G. And Noss, C. (2000). Reframing change in organisations: the equilibrium logic and beyond. *Academy of Management Conference Proceedings*, Toronto, pp. B1-B6.
- Senge, P. (1990). *The fifth discipline: the art and practice of the learning organization*. New York, NY: Doubleday.
- Senge, P.M., Scharmer, C.O., Jaworski, J. and Flowers, B.S. (2005). *Presence: An Exploration of Profound Change in People, Organizations, and Society*. New York: Currency.
- Sitkin, S.B. (1992). Learning through failure: the strategy of small losses. *Research in Organizational Behaviour*, 14, pp. 231–266.
- Smircich, L. and Stubbart, C. (1985). Strategic management in an enacted world. *Academy of Management Review*, 10(4), pp.724-36.
- Smith, M.K. (2001). Chris Argyris: theories of action, double loop, learning and organizational learning. *The Encyclopedia of Informal Education*. Available at: <http://www.infeld.org/thinkers/argyris.htm>.

- Strauss, A. and Corbin, J. (1998). *Basics of qualitative research*. London: Sage.
- Strehle, F., Katzy, B. and Davila, T. (2010). Learning capabilities and the growth of technology based ventures. *International Journal of Technology Management*, 52(1-2), pp. 26-45.
- Teece, D.J. (2000). Strategies for managing knowledge assets: the role of firm structure and industrial context. *Long Range Planning*, 33, pp. 1319-1350.
- Teece, D.J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, vol. 28, no. 13, pp.1319-50.
- Teece, D.J. (2011). Knowledge assets, capabilities and the theory of the firm. In M. Easterby-Smith and M. Lyles, eds. *Handbook of organizational learning and knowledge management*. 2nd ed. Chichester: Wiley, pp.505-34.
- Teece, D.J. and Pisano, G. and Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, vol. 18, no. 7, pp.509-33.
- Vera, D., Crossan, M. and Apaydin, M. (2011). A framework for integrating organizational learning, knowledge, capabilities and absorptive capacity. In M. Easterby-Smith and M. Lyles, eds. *Handbook of organizational learning and knowledge management*. 2nd ed. Chichester: Wiley, pp.153-82.
- Virany, B., Tushman, M. and Romanelli, E. (1992). Executive succession and organization outcomes in turbulent environments: an organization learning approach. *Organization Science*, 3, pp. 72–91.
- Wang, C.L. and Ahmed, P.K. (2007). Dynamic capabilities: a review and research agenda. *International Journal of Management Reviews*, 9(1), pp.31-51.
- Watzlawick, P., Weakland, J.H. and Fisch, R. (1974). *Change: Principles of Problem Formation and Problem Resolution*. New York: Norton.
- Winter, S. G. (2000). The satisficing principle in capability learning. *Strategic Management Journal*, 21, pp. 981-996.
- Winter, S.G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, vol. 24, no. 10, pp. 991-5.
- Yin, R.K. (2003). *Case study research: design and methods*, 3rd ed. Thousand Oaks, CA: Sage.
- Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda. *Journal of Management Studies*, 43(4), pp.917-55.
- Zollo, M. and Verona, G. (2011). Understanding the human side of dynamic capabilities: towards a holistic model. In M. Easterby-Smith and M. Lyles, eds. *Handbook of organizational learning and knowledge management*. 2nd ed. Chichester: Wiley, pp.535-50.

- Zollo, M. and Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), pp.339-51.
- Zott, C. (2003). Dynamic capabilities and the emergence of intra-industry differential firm performance: insights from a simulation study. *Strategic Management Journal*, 24, pp. 97–125.