Abstract

The concept of dynamic capability has emerged as a complement to the Resource Based View (RBV) as an attempt to explain competitive advantage in a rapidly changing environment. This paper brings out the ambivalence of the literature on the conceptualisation of dynamic capabilities by discussing the origin of dynamic capabilities and the ambiguities surrounding its definition and attributes. It makes an attempt to provide directions for working towards measurable constructs for dynamic capabilities.

Competition is the sine qua non of business in the current day market place, and one of the basic questions in the field of strategic management is how to attain and sustain competitive advantage. There have been different approaches to the study of the sources of competitive advantage, including the competitive forces approach, strategic conflict approach, competence based approach and the resource based approach. The focus of this paper is on the dynamic capabilities approach – an extension of the resource based approach. This approach stems from the innovation based competition proposed by Schumpeter to explain the success and failure of firms, and advocates the idea of ‘creative destruction’ of competencies.

The literature in this stream is nascent and the debates regarding its tenets are ongoing. The purpose of this paper is to assimilate the divergent views in the field and present a coherent picture of the current state of dynamic capabilities in the strategic management literature. In the process a hypothetical model of dynamic capabilities has been proposed. To carry the work forward, future research could aim at providing measurable constructs for dynamic capabilities.

Resource Based View of Strategy

The resource based view of the firm conceptualises the firm as a bundle...
of resources, including all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc. Anything that can be thought of as a strength or weakness of a firm is a firm’s resource. These resources are heterogeneously distributed across the firm and the differences in resources persist over time.

The resource based view (RBV) emphasises that competitive advantage lies in the ownership of scarce and valuable resources. Barney says that firms achieve sustainable competitive advantage when resources are valuable, rare, inimitable and non-substitutable (VRIN attributes). ‘The VRIN resources are identified by observing superior performance and then attributing that performance to the unique resources that the firm appears to possess’. When these resources have complementarities, it enhances their potential to create sustained competitive advantage.

### Origin of Dynamic Capabilities

The RBV gives a static view of the resource portfolio of the firm. It does not adequately explain the reasons for competitive advantage during rapid and unpredictable change. In high velocity markets, the strategic challenge for managers is to maintain sustainable competitive advantage. Here dynamic capability provides some explanations.

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### Ambiguity in Definition

There have been varying definitions of dynamic capabilities in the literature. But most of the definitions lack both a clear description of resources and capabilities, and a proper distinction between capabilities and dynamic capabilities.

Thomas and Pollock state that RBV and its associated terminologies, such as resources, processes and capabilities, lack clear definitions. Priem and Butler argue that this ambiguity stems from the fact that research on RBV mostly adopts and paraphrases Barney’s definition of a firm’s resources being all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc. Resources have been defined differently by different authors such as firm specific assets, specific physical, human and organisational assets, anything that can be thought of as a strength or weakness of a firm and assets used for value creating strategies. Similarly, capability has been defined as ability, potential ability to accomplish, set of business processes, socially complex routines, ability to act and grow, and capacity to deploy resources. Capability is usually termed as the ability to utilise the resources. Contrastingly, some consider it to be a special type of resource when it is not transferable and is...
organisationally embedded through complex path dependent development processes. To add to the ambiguity, the terms ‘capability’ and ‘competence’ have been used interchangeably in the literature by different authors. Competence has been characterised with adaptation, distinctiveness, organisational learning and long term growth and survival. While Teece et al refer to competence as representative of organisational routines, Sanchez et al consider it to be the ability of an organisation to sustain coordinated deployment of resources in ways that promise to help the organisation achieve its goal. Ray and Ramakrishna have sought to address the issue of definition overlap. They define competence as a combination of firm specific resources, and capability as a complex combination of appropriate competences.

The ambiguity arising out of the lack of a proper definition for resource and capability gives researchers the freedom to interpret dynamic capability in varying ways (Exhibit 1).

As Exhibit 1 shows, there is a need for a consensus on the definitions of resources and capabilities for clarity in conceptualising dynamic capability. Similarly the distinction between capabilities and dynamic capabilities in the literature is not lucid. Teece et al’s definition of dynamic capability is hardly different from their definition of capability, as argued by Wang and Ahmed. They also point out that Eisenhardt and Martin’s definition of dynamic capabilities as ‘the firm’s processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change’ does not lead to an understanding of the distinction between processes and dynamic capabilities. Winter views capability as ‘a high level routine’; his definition can be interpreted as routines to modify routines, which is recursive. The varied definitions of dynamic capabilities proposed by different authors are confounding. However, they provide critical insights into the way dynamic capabilities have emerged from the main stream of RBV literature.

### Exhibit 1 Definitions of Dynamic Capability

<table>
<thead>
<tr>
<th>Author</th>
<th>Definition of Dynamic Capability</th>
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<tbody>
<tr>
<td>Collis</td>
<td>The capability to develop the capability that innovates faster (or better), and so on</td>
</tr>
<tr>
<td>Helfat</td>
<td>The subset of competences/capabilities which allows the firm to create new products and processes and respond to changing market circumstances</td>
</tr>
<tr>
<td>Teece, Pisano &amp; Shuen</td>
<td>The firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments</td>
</tr>
<tr>
<td>Eisenhardt and Martin</td>
<td>The organisational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die</td>
</tr>
<tr>
<td>Griffith and Harvey</td>
<td>Creation of difficult to imitate combinations of resources, including effective coordination of inter-organisational relationships on a global basis that provide a firm competitive advantage</td>
</tr>
<tr>
<td>Lee et al</td>
<td>A newer source of competitive advantage in conceptualising how firms are able to cope with environmental changes</td>
</tr>
<tr>
<td>Zahra and George</td>
<td>Change oriented capabilities that help firms redeploy and reconfigure their resource base to meet evolving customer demands and competitor strategies</td>
</tr>
<tr>
<td>Zollo and Winter</td>
<td>Learned and stable pattern of collective activity through which the organisation systematically generates and modifies its operating routines in pursuit of improved effectiveness</td>
</tr>
<tr>
<td>Winter</td>
<td>Capabilities that operate to extend, modify or create ordinary capabilities</td>
</tr>
</tbody>
</table>

**Dynamic Capability as Organisational Process**

Dynamic capabilities have been viewed as complex processes constituted of underlying sub processes. Researchers have attempted to categorise dynamic capabilities in a hierarchy of capabilities. Collis has suggested a three level hierarchical classification of dynamic capabilities. A similar classification is adopted
by most authors, with subtle variations (Exhibit 2).

At the bottom or first level lie the functional capabilities essential for a firm’s day to day activities – variously described as zero-level, first order or ‘how we earn a living now’ capabilities. In the second level Collis talks of capabilities related to dynamic improvement of business processes. Amit and Schoemaker regard such capabilities as ‘repeated process or product innovations, manufacturing flexibility, responsiveness to market trends, and short development cycle’. The third level belongs to dynamic capabilities, or what Collis terms ‘creative’ capabilities, which he defines as capabilities related to a firm’s ability to develop novel strategies faster than its competitors through the recognition of the value of different resources. This is quite similar to ‘capability related to dynamics’ defined by him at the second level. It can be surmised from the above discussion that dynamic capabilities are latent second order capabilities constituted of strategically important core capabilities which in turn are comprised of functional capabilities.

Attributes of Dynamic Capability

The properties of dynamic capabilities have been debated at length by researchers. The following aspects of dynamic capabilities have received much attention:

- Dynamic capabilities as specific identifiable processes
- Dynamic capabilities exhibiting commonalities
- Dynamic capabilities being equifinal, fungible and substitutable processes
- Dynamic capabilities being idiosyncratic to a certain extent.

Dynamic capabilities were initially defined as ‘routines to learn routines’. This was said to be recursive, tautological and non operational. In defence Eisenhardt and Martin proposed that dynamic capabilities consist of identifiable routines that often have been the subject of extensive empirical research. For example, processes such as acquiring, alliancing, product development and strategic decision making are dynamic capabilities which require a firm to reconfigure its resources. They also say that by defining dynamic capabilities in terms of their functional relationship to resource manipulation, their value is defined independent of firm performance.

It has been suggested that dynamic capabilities exhibit commonalities (similar to best practices) across firms and are equifinal, i.e., approached from different paths. However, such commonalities have not been systematically identified. Different firms develop effective dynamic capabilities which could be common to a certain extent, but equifinal and with different starting points.

Although dynamic capabilities are equifinal across firms, performance differences arise between firms due to both the cost and differential timing with which the dynamic capabilities are used. Dynamic capabilities have been considered as path dependent processes which make them idiosyncratic and difficult to imitate. Eisenhardt and Martin however argue that they are fungible and substitutable.

While dynamic capabilities have commonalities, they are heterogeneously distributed. Their complex nature makes them difficult to describe and imitate. Due to their complexity, path dependence, and causal ambiguity, dynamic capabilities can be a source of competitive advantage. They are valuable not only in highly dynamic markets but also moderately dynamic markets.
Market Velocity and Dynamic Capability

The role of changing environment/markets has been a widely discussed stream in the development of dynamic capabilities. Effective strategies change with changing realities. Lengnick-Hall and Wolff discuss the issue of ‘core logics’ (capability logic, guerrilla logic, complexity logic) in different market scenarios. They analysed three strategy research streams (RBV, high velocity strategies, and chaos theory) to substantiate the appropriateness of core logics in different circumstances. Eisenhardt and Martin’s work is pioneering in terms of market dynamics and dynamic capability relationship. They identified markets ranging from moderately dynamic (low volatility) to highly dynamic (high volatility). Moderately dynamic markets are those with stable industry structure, defined boundaries, clear business models, identifiable players and predictable change, while highly dynamic markets are characterised by ambiguous industry structure, blurred market boundaries, fluid business models, ambiguous and shifting players, and unpredictable change. They observed that dynamic capabilities in highly dynamic markets tend to form out of simple rules, and are experiential routines implemented with carefully managed selection and iterative execution. In moderately dynamic markets, on the other hand, they are complex path dependent processes with linear execution embedded in organisational routines. They also tend to be detailed analytical routines with linear execution.

Volberda made a significant contribution to the literature by developing a typology of organisational forms to cope with hypercompetition, each of which shows a way of addressing change and preservation. He says that the dynamic capabilities endow the firm with organisational flexibility. This manifests as ‘flexibility mix’ which is a hierarchy of capabilities, each represented by a combination of more/less variety of capabilities and fast/slow response. In a conceptual model of organisational flexibility, Volberda proposes that the organisations have a rigid form under low competition, planned form under moderate competition and flexible form under hypercompetition.

Dynamic capabilities, in highly dynamic markets, tend to form out of simple rules, and are experiential routines implemented with carefully managed selection and iterative execution. In moderately dynamic markets, on the other hand, they are complex analytical path dependent processes with linear execution embedded in organisational routines.

There have been attempts to demystify dynamic capabilities by identifying its mechanisms, component factors, and key processes. Teece et al identified learning, reconfiguration and coordination/integration as the key processes in dynamic capabilities. Zott conceptualised dynamic capabilities as routines for evolutionary learning. He identified three mechanisms followed by firms to attain dynamic capability: variation, selection and retention practiced through experimentation and imitation. Pavlou and Sawy proposed five core processes within dynamic capabilities: reconfiguration, sensing, learning, coordinating, integrating and suggested reconfiguration as a latent second order construct consisting of the other four core processes. Wang and Ahmed identified adaptive capability, absorptive capability and innovative capability as the main component factors for dynamic capabilities. The differences arise when dynamic capabilities are viewed through varying lenses such as resource centric lens (resource as the unit of analysis), organisational lens (firm as the unit of analysis) and capability centric lens (capability as the unit of analysis). These conceptualisations have added different dimensions to the notion of dynamic capabilities.

Conceptualising the Core Processes in Dynamic Capabilities

This paper is an attempt to conceptualise the core processes of dynamic capabilities from the above literature. The intention is to identify the core processes of dynamic capabilities and delineate their inter-relationships. A second order formative model for dynamic capabilities has been proposed which constitutes three first order processes, namely learning, reconfiguration and coordination/integration. While the first order processes are the same as those proposed by Teece et al, the conceptualisation of the processes is different. Teece et al proposed learning as a dynamic process, reconfiguration as a transformational process, and coordination/integration as static processes. The proposed model conceptualises each of the processes as dynamic in nature. The core processes have been viewed
as concurrent processes. The current work can be extended to propose a set of measurable constructs for the core processes to capture the effectiveness of dynamic capabilities and the interrelationship of the underlying processes. Exhibit 3 summarises the references to learning, reconfiguration, and coordination and integration in the dynamic capability literature.

**Learning**

Learning is the process of generating new knowledge and building new thinking to enhance existing resources. Learning as a capability is the ability to acquire, assimilate, transform and exploit existing knowledge to generate new knowledge. Some examples of learning processes are knowledge brokering, knowledge articulation and codification, new thinking, pursuing new initiatives, innovative solutions, etc. Teece et al. say that learning processes are intrinsically social and collective and occur not only through imitation and emulation of individuals, but also because of joint contributions to the understanding of complex problems.

Learning as a dynamic process has its roots in the organisational learning literature. The notion of absorptive capacity has also influenced the concept of learning in dynamic capabilities. Absorptive capacity is considered a dynamic capability that influences the firms’ ability to create and deploy the knowledge necessary to build other organisational capabilities. Knowledge acquisition, assimilation, transformation and exploitation are the processes involved. References to learning activities in the dynamic capabilities literature have been listed in Exhibit 3.

**Reconfiguration**

The process of reconfiguration changes the existing configuration of resources into new ones that match the changing environment. Reconfigurability as a capability has been connected to the appropriateness, timeliness, and efficiency by which existing resources are reconfigured into new operational competencies.

This paper proposes a more specific definition of reconfiguration as the process which consists of any change in the pattern or degree of interaction between resources (existing and new). This notion of reconfiguration is different from the notion of operational routines proposed by other authors. Routines are identified as learned, patterned and repetitious behaviour or patterns of interaction that represent successful solutions to particular problems. The current conceptualisation of reconfiguration as patterns of interaction may or may not lead to solutions to particular problems. Moreover, they may not be repetitious as suggested by Winter et al., yet might lead to modified patterns of interaction due to subsequent learning.

A closer enquiry within the literature yielded three major mechanisms for reconfiguration. They are reconfiguration as gain or release of resources, reconfiguration as combination of resources, and reconfiguration as redeployment of resources. Apart from these primary mechanisms there have been other approaches to reconfiguration within the literature such as reconfiguration through innovation, imitation, experimentation, etc. References to reconfiguration activities in the dynamic capabilities literature have been listed in Exhibit 3.

**Coordination and Integration**

Coordination and integration in dynamic capabilities have been viewed as processes that help the deployment of reconfigured resources. They have been clubbed together since their roles are complementary within dynamic capabilities. However, the capability to coordinate has been distinguished theoretically and empirically from the capability to integrate.

While integration specifies the organising principles by which individual input is integrated, coordinating, according to Crowstone, is to manage dependencies among resources and tasks to create new ways of performing a set of activities. Coordination has been extensively discussed by Crowstone who describes it as the ability to manage dependencies among resources; task dependency, task-resource dependency and resource dependency. The primary activities involved in coordination are task assignment, resource sharing, and managing dependencies. Integration has been discussed by Crowstone and Krammer as ‘integrating patterns of interaction’.

The roots of integration as a dynamic process lie in the ‘collective mind theory’ proposed by Weick and Roberts. It discusses how individual members in the group can act in ways that produce overall reliability in the face of complexity especially when lack of comprehension could lead to disastrous consequences. The claim is that individuals develop a shared
understanding of the group’s task and of one another that facilitates group performance. The major tenets of integration as a dynamic process are the contribution of individuals to group outcome, representation (individuals build internal models of the group) and subordination (group goal is put above individual goals). References to coordination and integration activities in the dynamic capabilities literature have been listed in Exhibit 3.

**Interrelationship among the Core Processes**

Learning initiates reconfiguration. Learning capability shapes reconfigurability by effectively acquiring, assimilating, transforming, and exploiting knowledge. Cohen and Levinthal suggest that learning helps units...
become more proactive by enhancing their ‘creative capacity’. Van den Bosch et al\textsuperscript{125} argue that learning facilitates reconfiguration and innovation. Absorptive capacity also aids reconfiguration. Coordination and integration help deploy the reconfigured resources. Resources are allocated, tasks are assigned and activities are synchronised\textsuperscript{126} through coordination. Integrating capability helps deploy the reconfigured resources through effective contribution, representation, and interrelation. There is learning at the end of the cycle from the results obtained, which starts the cycle once again.

The proposed model of dynamic capabilities views the core processes as concurrent processes. Although concurrent there is a cyclical relationship between the processes. This cyclical relationship between the core processes is depicted in Exhibit 4.

**Discussion**

Empirical research on resources and capabilities has not reached maturity\textsuperscript{127} and dynamic capability as a field of research is nascent and under explored. There is a lack of consensus as to its constituents and how they can be shaped for different situations. In this paper learning, reconfiguration, coordination and integration have been proposed as concurrent processes constituting dynamic capabilities. The role of each of these core processes in shaping dynamic capabilities is highly context specific and dependent on the needs of the firm. Although concurrent, the thrust on each of these processes is not identical. These are certain considerations that require attention as researchers attempt to decompose dynamic capabilities. Future research could be directed towards developing and validating multidimensional constructs of dynamic capabilities.

Dynamic capabilities were proposed to be the source of competitive advantage. Eisenhardt and Martin\textsuperscript{128} extended the thought by stating that competitive advantage lay in the use of dynamic capabilities sooner, more astutely and fortuitously than the competition. They are a necessary but not sufficient condition for competitive advantage. The resource configurations that dynamic capabilities create have been speculated to be the source of competitive advantage. The theoretical roots of reconfiguration in dynamic capabilities can be traced back to Tushman and Anderson’s\textsuperscript{129} work on competence enhancing and destroying framework and on technological discontinuities. Technological discontinuities can be classified as competence destroying (generally led by new entrants in a dynamic market) and competence enhancing (led by established incumbents to retain their market power). This framework has traditionally treated capabilities as a ‘black box’ – a system viewed primarily in terms of its input and output characteristics. This stream of thought needs systematic enquiry. Wang and Ahmed\textsuperscript{130} say that there is a need to examine dynamic capabilities in a nomenologial network and provide a better understanding of the circumstances and processes of how firms should direct their resources in search of competitive advantage.

There is every chance that in the long run the impact of dynamic capabilities might transcend competition. It could create a domain for itself devoid of competition similar to Kim and Mauborgne’s blue ocean strategy\textsuperscript{131}. It is here that the sensing routines\textsuperscript{132} possessed by firms, and their ability to react proactively\textsuperscript{133} could provide them dynamism and help them go beyond competition. Such thoughts have not been probed in the extant literature, and could be one of the directions for future enquiry. Given our limited ability to explain the sources of sustainable competitive advantage in dynamic markets, there is a need for dynamic capabilities to get a greater share of scholarly attention.

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