

# Is Dynamic Capability View Relevant to the Higher Education Institutions for Innovation Capability?

Kashif Akram

PhD Scholar at School of business and Management, College of Business Universiti Utara Malaysia

Haim Hilman

School of business and Management, College of Business, Universiti Utara Malaysia

## Abstract

**Objective:** The basic aim of the research is to identify the dynamic capability view implication in the higher education institutions for innovation capability by exploring various dynamic capabilities pertinent to the higher education institutions. **Methodology:** This paper is qualitative in nature and based on immense literature review and synthesize the relevant literature about dynamic capability and innovation capability in the context of higher education institutions. **Findings:** The current study reveals that dynamic capability view is as important and relevant for higher education as for other industries. Various dynamic capabilities are an integral part of the higher education institutions and source of congruence to the ever changing/dynamic environment.

**Keywords:** Dynamic Capabilities View, Dynamic Capabilities, Innovation Capability, Higher Education Institutions, Dynamic Environment, Resources

**Jel Codes:** I23, M10, D80

## 1. Introduction

Education is an exquisite source to develop intellectual abilities, shaping thinking patterns, mold the attitudes and behaviors of the individuals that elevate the overall society's civilization. Social institutions (education institutions) provide mental, ideological and physical training to the individuals to contribute in developing the civilized society by achieving their personal mission, goals and dreams (Deem et al., 2008), and it ultimately enhances the overall competitiveness of the country (Phusavat et al., 2011). All over the world, education is considered the most valuable factor to improve the socio-economic conditions of the society.

Higher education institutions (HEIs) play an important role in the socio-economic development of the country by producing doctors, engineers, lawyers, religious scholars and economists to serve the country through greater knowledge creation and implementation (Blass and Hayward, 2014; Strydom, & Lategan, 1998; UNESCO, 2002). Furthermore, Ramoniene & Lanskoronskis (2011) argued that the competition among nations is largely dependent on the quality of HEIs because HEIs are responsible for producing and training skilled labor force that serves in the enterprises which ultimately compete with other multinational organizations.

However, in recent times, HEIs are facing numerous challenges and problems to survive including competitiveness (Haan, 2015; Sum and Jassop, 2013; Lynch and Baines, 2007; Robertson, 2010), government budget cuttings (Sum and Jassop, 2013), government research fundings (Knight, 2003; Marginson, 2007), reputation (Edwards, 2007), innovation (Blass and Hayward, 2014; Vila et al., 2012; Saginova and Belyanski, 2008), and change both by accidently and design (Tierney and Lanford, 2016; Adcroft et al., 2010). These challenges and problems drive HEIs towards changing their internal and external resources and capabilities to be compatible with the highly turbulent and uncertain environment.

Dynamic capability view (DCV) provides insights about how to align internal resources and capabilities with the external changing environment by constantly upgrading internal resources and capabilities (Teece et al., 1997). Furthermore, it determines the intensity at which the firm's particular resources can be aligned and realigned to match the requirements and opportunities of the business environment so as to generate sustained abnormal (positive) returns (Teece, 2012). DCV has been discussed in the context of various industries and concepts such as innovation capability (Hertog et al., 2010), services (Kim et al., 2014), firm performance (Giniuniene and Jurksiene, 2015; Chien and Tsai, 2012), micro enterprises (Inan and Bititci, 2015), supply chain management (Masteika and Cepinskis, 2015), and competitive advantage (Breznik and Lahovnik, 2016; López, 2005). However, merely a few studies discuss dynamic capabilities (DC) in the context of the higher education institutions in the relationship of Innovation capability (IC); that create a theoretical gap in the context of DCV concept. Therefore, the current study seeks to fill this gap by exploring and discussing different dynamic capabilities (DC) in the relationship of innovation capabilities (IC) in the context of high education institutions.

## 2. Dynamic Capability View

Teece et al's (1997) seminal work on dynamic capabilities (DC) ignited immense research work in the form of more than 1534 articles, from 1997 to 2007 (Barreto, 2010). Although we can find the fuzzy concept in the earlier work of these authors Teece and Pisano (1994), and Teece et al (1997) but this paper is considered as a

seminal work on the DCV. DCV having roots as much older as work of Schumpeter (1934), and Penrose (1959). Barreto (2010) construed an extensive literature review on DCV and concluded that there is still a confusion and vagueness in the concept of DCV that is hindering the progress of the concept. The DCV approach has been criticised for being more theoretical and fuzzy like resource based view (RBV), and having less empirical evidence (Ambrosini et al., 2009), only a few studies provide empirical evidence (Li and Liu, 2014; Lin, & Wu., 2014).

Teece (2007) asserted that DC approach is beyond the traditional approaches as it thoroughly explains and discusses strategic issues needed to determine as to, how opportunities should be grabbed, once they seize and how business activities and systems can be reconfigured. DC are defined by the Teece et al. (1997, p. 516) as “the ability to integrate, build, and reconfigure internal and external competencies to address the rapidly changing environments”. This definition (Teece et al., 1997) is cited by the numerous authors and urged subsequent scholars to refine and add different dimensions. Eisenhardt and Martin (2000, p. 1107) discussed DC in terms of “processes that use, integrate, reconfigure, gain and release resources to match and create changes in the environment”. Teece et al. (1997) discussed DC as distinctive, however, Eisenhardt and Martin (2000) contrastingly, argued that DC might be unique but merely in details. Moreover, they argued that DC have many commonalities across the organizations, labeled as “best practices”. Moreover, Teece et al. (1997) discussed DC are heterogeneous in nature across the firms due to their distinctive position, processes, and specific paths, and they evolve and build over the years. Zollo and Winter (2002, p. 340) further asserted DC as “a learned and stable pattern of collective activities through which firm systematically generates and modifies its operating routines in pursuit of improved effectiveness”.

Winter (2003, pp. 991-993) defined DC from a different angle as “extension, modification, and creation of ordinary capabilities”. He further added that DC are structured, complex and, multifaceted in nature and long term commitments are prerequisite to unique resources. Zahra et al. (2006, p. 918) defined DC as “abilities to reconfigure a firm’s resources and routines in the manner appropriate by its principal decision maker(s)”. Recently the DC approach has got little progress from key authors/contributors of the concept. They defined DC as the “capacities of a firm to purposefully create, extend, and modify its resource base” (Helfat et al., 2009, p. 3).

More recently Teece again redefined the definition of DC by stating that “Dynamic capabilities are higher-level competencies that determine the firm’s ability to integrate, build, and reconfigure internal and external resources/competencies to address, and possibly shape, rapidly changing business environments” (Teece, 2007, 2010; Teece et al., 1990, 1997). Wang and Ahmed (2007, p. 35) offered a more detailed definition of DC as a firm’s “behavioural orientation to continuously integrate, reconfigure, renew, and recreate its resources and capabilities, focusing on upgrading and reconstructing its core capabilities in line with dynamic, changing environment to obtain and sustain competitive advantage”. The review of these definitions can make a clear picture of DC and allow us as Ambrosini and Bowman (2009) pointed out the core concept of DC as organizational processes that have a key responsibility to change firm’s resource base in order to be compatible with the external environmental changes.

Previous authors relate and label DC with different typologies like capability, capacity, competence, resource base, resource, routines, and processes. Barney and Clark (2007, p.249) also recognise the use of different typologies, they state “labels, by themselves, would not change the central propositions of resource based theory”(p. 249). On the basis of Barney and Clark’s (2007) proposition, we can evaluate the DC approach as well. Previous literature reveals more diversity in explaining and effect of DC approach such as (e.g. Teece et al., 1997) relate it to environmental dynamism, whereas others relate it to more static environment of business (e.g. Breznik and Hisrich, 2014; Zollo and Winter, 2002; Zahra et al., 2006), and few researchers do not see any link with business environment (e.g. Makadok, 2001).

However, the majority of the key contributors are agreed that DC approach can be valuable and suitable in the dynamic environment. Further, various opinions and linkages exist with various concepts in the literature regarding effect and link of DC, such as competitive advantage (e.g. Teece et al., 1997), Zollo and Winter (2002) correlate it with effectiveness, Breznik and Hisrich (2014) linked it with innovation capability while few ignore the direct relationship/linkage with corporate performance e.g. (Zott, 2003). Thus, a diverse opinion can be found in the literature regarding the typology capabilities ranging from the usage of the word dynamic categorically while others inclined towards more general characterisation.

### **3. A Conceptual linkage between Dynamic Capabilities and Innovation Capability**

The notion of conceptual linkage between seemingly heterogeneous concepts DC and IC can be identified in the previous literature. Teece et al. (1997) claim that DC has roots in the Schumpeterian world of competition based on innovation. Thus, DC approach is built on the core idea of Schumpeter, and hence, many commonalities can be found (Breznik and Hisrich, 2014). Delve literature review reveals that there is a conceptual linkage between DC and IC. Continuous learning and knowledge asset enhancement fosters the firm’s IC. Indeed, knowledge transformation, implementation and continuous learning are core components of the firms to produce and improve

the products, services and processes of the firms to develop and enhance IC (Lawson and Samson, 2001). Conversely, DC is largely dependent on the firm's learning processes (Zollo and Winter, 2002).

Innovation capability requires constant searching, scanning, exploration and implementation of the new internal and external opportunities (Hii and Neely, 2000), and market/customer demands and preferences (Mintzberg et al., 2003). Moreover, DC aim to identify opportunities by scanning, searching and exploring technological and market changes to match the resources and capabilities with the market changes (Eisenhardt and Martin, 2000; Teece et al. 1997; 2007, 2009;). Therefore, "Dynamic Capabilities and Innovation Capabilities are capabilities, and capabilities are often firm-specific" (Amit and Schoemaker, 1993, p. 35; Birchall and Tovstiga, 2005). Thus, we can understand that both DC and IC are firm specific and may be heterogeneous and differentiated across the firms.

Hertog et al., (2010) discussed the linkage between DC and IC in the context of services industry and presented various IC based DC coined as "dynamic service innovation capabilities". He further presented modified definition of dynamic capabilities of (Teece, 1997) in the context of service innovation capabilities as "dynamic service innovation capabilities as those hard to transfer and imitate service innovation capabilities which organizations possess to develop, (re-)shape, (dis)integrate and (re-)configure existing and new resources and operational capabilities" (Hertog et al., 2010, p. 498).

#### **4. Identification of Different Dynamic Capabilities for Innovation Capability**

Previous literature extensively discussed and identified several DC that provide benefits to the organization in a several ways including competitive advantage (Teece et al., 1997), organizational performance (Teece, 2012), innovation capability (Hertog et al 2010; Kim et al., 2014; Vila et al., 2012; Breznik and Hisrich, 2014). There are various DC that have been identified in the previous literature such as collaboration/Alliances (Ritala and Ellonen, 2019; Kim et al., 2010), customer needs assessment (Hertog et al., 2010), technological adoption (Blass and Hayward, 2014; Kindström et al., 2009; Teece, 2007), managerial (Teece, 2012), knowledge and skills acquisition (Saginova and Belyansky, 2008), scaling and stretching (Winter and Szulanski, 2001), learning (Zollo and Winter, 2002). Certainly, the previous literature reveals extensive work in the DC literature. However, the dearth of literature regarding DCV in higher education is quite evident. Whereas, the education system is under constant change around the globe (Peris-Ortiz, et al., 2014). Higher education institutions have to be dynamic and keep on acquiring new knowledge, skills, and capabilities in order to be relevant to the ever changing environment. Higher education institutions not only prepare to grab knowledge and skills regarding subjects and programs but technology, structural adjustments, and operational processes as well.

#### **4.1 Dynamic Capabilities in Higher Education Institutions**

Higher education institutions lie in the services sector and service-oriented firms operate in a complex and dynamic environment with respect to open market characteristics, which emphasize dyads between the service providers and the recipients. These actors perform vital tasks together to produce unique products and services distinctive design, efficient production, swift delivery to the ultimate consumers (Kim et al., 2014). In service, innovation based DC have got immense importance due to today's prevailing hypercompetitive marketplace. These capabilities are particularly important in the era of rapid technological change, shorter product life cycles and fierce competition (Reuters, 2013). Higher education institutions possess various activities that can be labeled as DC, the following section discusses each DC in a relationship with IC in the detail.

##### **4.1.1 Dynamic Curriculum as Dynamic Capability for Innovation Capability in HEIs**

The corporate sector is undergoing through a fierce competition that has transformed the whole industry as a dynamic market. Constant change and dynamism urge the organization to hone their resources and capabilities constantly to be compatible with the dynamic environment. Organizations take their fresh human capital from the universities in the form of the fresh graduates by considering that the fresh human capital is aware of the emerging issues, problems, and challenges facing the industry. The success of the fresh graduates solely depends on the ability to understand the changes in the business environment and the opportunities and threats that come out of it. This ability can be created by the students during their classrooms through creating a good curriculum, based on the latest concepts that are emerging in the business world. As Blackmore and Kandiko (2012) argued that the curriculum is a social construction, a site for 'socio-political and cultural decision making' and the 'locus and transmitter' of values. It is also a source of power in institutions and decisions that bring with them financial implications (Burkill, 2015). The dynamic curriculum would be helpful to enhance one's personal competence including communication, interpersonal skills ability to socialize and adapt new environment (Saginova and Belyanski, 2008). Moreover, this dynamic curriculum which is based on the latest concepts of the industry would create more value to the ultimate customers (students/industry) in the form of service offerings (Frei, 2008).

The dynamic curriculum would enhance the knowledge sharing, creation, and dissemination of the new knowledge that is the foremost responsibilities of higher education institutions (Vila et al., 2012). Societies and individuals share and provide a substantial volume of resources to HEIs as they are considered to be more

influential on people to enhance their innovation capability and aggregated productivity. HEIs foster innovation capability in three ways. First, through basic and applied research that is conducted in the HEIs. Second, people who serve in the R&D unit are qualified and trained from the research oriented universities. Third, HEIs also produce innovative workers for future industry, employee driven innovative approach to focus on the relevance of the innovative behaviors of the employees who are not specifically assigned to the generation and implementation of new ideas and knowledge (Kesting and Parm Ulhøi, 2010). Therefore, dynamic curriculum concept would be more fruitful for the higher education institutions to align their curriculum to the ever changing business environment that produces unique concepts and problems to learn. Higher education institutions should incorporate these new concepts and unique problems as case studies in the curriculum, to constantly upgrade the knowledge and capabilities of the students.

#### **4.1.2 Relations/Collaboration as Dynamic Capability for Innovation Capability in HEIs**

Resource based theories explain the interfirm relationship to some extent, but these theories have been criticised for being more focused on the value appropriation from the perspective of the single firm rather than value appropriation in relation and collaboration in networks (Gulati et al., 2000; Duschek, 2004). Dyer and Singh (1998) first addressed this criticism and introduced a relational approach to attain competitive advantage. Interfirm relationing/ collaboration provides supernormal rents also termed as relational rents (Ritala and Ellonen, 2010).

Higher education institutions should also focus on building the linkages and collaboration with various partners including students, industry, and government institutions. By building relationships with the aforementioned partners, HEIs would enable themselves to acquire new knowledge that would, consequently, enhance the IC. Literature has gone beyond the conventional concept of linkages and relations by discussing value co-creation concept (Prahalad and Ramaswamy, 2004; Kim et al., 2015). They argued that the customers want a pleasant experience with the company, not merely a product or services. When organizations involve customers, the literature indicates that it impetus the process of the value co-creation between a firm and its customer. Moreover, value co-creation also provides a source to produce and capitalize the inimitable knowledge to gain higher economic rent (Cool and Jemison, 1989).

Higher education institutions would involve the ultimate value creation partners such as students, industrial organizations, and government institution through strong social and contractual ties. It would be more beneficial for the HEIs to enhance innovation capability while conceptualising the current needs and requirements of the students, industrial organizations and government. These social and contractual ties would help the HEIs to understand unique and current requirements through frequent interactions. It would also increase the relational capital that is hard to imitate and cultivate (Srivastava, 2001). Higher education institutions functionality, in this relationship, would be multifaceted. First, HEIs would glean new ideas, concepts, and values from the value creating partners. Second, HEIs implement unique ideas, concepts, and values withing processes and make part of their dynamic curriculum. Third, after implementation HEIs would create new knowledge by indulging into different research activities at various levels. Fourth, Relationing and collaboration are fundamental to leverage the existing organizational resources and especially in the process of value co-creation, strong ties with customers become more important (Hertog et al., 2010). Finally, Giner et al., (2016) argued that co-creation is a vital concept for education markets. It is inevitable due to hyper competition and dynamism; we utilise this concept generally in all levels of education and particularly in postgraduate studies, where the opinion of research scholars, faculty, staff and employees is the significant driver that stimulate and leverage the innovative educational courses and programs. As the Fraunhofer Institute research studies found that HEIs are lagging far behind to glean optimum benefits from co-creation activities by excluding their students thereby, lacking significant improvements (Gallouj and Djellall 2011 ). Therefore, in this context, HEIs should forge their networks by indulging in network relationing and collaboration with network partners.

#### **4.1.3 Technological Adoption as Dynamic Capability for Innovation Capability in HEIs**

Teece et al (1997) indicated the technology protection and utilization as a source of differentiation for the organizations. Technological emergence and advancement led the customers to explore and enjoy new horizons of quality and innovation. Technology has become vital for organizational innovation capability and competitiveness. Current technological developments are based on continues learning, digital technology advancements and the emergence of the internet which is heir to the “adaptive learning” or “intelligent tutoring” statements that proposed the use of computers as interactive teaching devices as far back as the 1970s, due to the rocketing computer power leading to the emerging capabilities. Today, the emergence of the internet, coupled with the mobile telephone services, transformed and converged into an almost paperless era that opened up new ways of swift learning through open access to any kind of learning material.

Technology has changed the dynamics of education institutions by affecting its compatibility with the ever changing needs of the students, industry, and government in terms of courses and programs. This hegemony of the technology urged the education institutions to alter their routines, systems, culture, courses, and programs. Various innovative programs are being offered by the education institutions through technology such as massive

online open course (MOOC) (Cormier 2008; Blass and Hyaward, 2014), augmented learning (Plasencia and Navas, 2014), Flipped Classroom model (Bogost, 2013), and blended learning system & distant learning (Valverde-Berrococo & Coca-Pérez, 2014).

HEIs could glean various benefits by adopting new technology. First, sensing and identifying the customers needs on one hand and adopting technology on the other hand. The first and foremost is to frequently interact with customers to know their potential needs. Dialogues with the customers, joint projects, and experimentation, account management system, prototyping, customer profiling, and trend analysis are a useful tool to sense customer changing or emerging needs and requirements, and would consequently lead to firm innovation capability (Hertog et al., 2006).

The second variety included under this capability is to signal and sense new technologies or technological options (Kindström et al., 2009; Teece, 2007). This provides opportunities to innovate the overall service portfolio, that includes exploring new ways to interact with customers, offering a variety of customised services, and on demand service offerings. In order to innovate, service providers must be aware of new and idiosyncratic technological option available in the market and industry. It would be beneficial for the organizations to make a separate department that has a responsibility to continuously scan, forecast and take information about various technological options to make service innovative.

Third, Technological adoption would allow the students to interact with the other students who are enrolled in other institutes in different parts of the world. Students could combine research projects, discussion and, debates that would be a source of knowledge sharing and acquisition. Consequently, HEIs can take benefit of this knowledge acquisition and share to produce new curriculum, programs, and systems within themselves. Thus, technology and education offerings should coalesce together as it can increase the effectiveness of different courses and programs. HEIs should be aware of modern technological equipment, pertinent to deliver education services as it enhances organization technological capability which leads to continues improvement and innovation (Renko et al., 2009; Yam et al., 2011; Zhou and Wu, 2010).

#### **4.1.4 Administration as Dynamic capability for Innovation capability in HEIs**

In HEIs, the core value is generated and delivered by the teaching staff, however, supporting staff include clerks, accountants, security guards and IT experts. They all add augmented value in the overall service to satisfy the students. Administration in HEIs being a support staff plays an important role to introduce new programs and activities that ultimately enhance the innovation capability in HEIs (Saginova and Belyansky, 2008).

The success of university courses and program offerings are largely dependent on the combination of core value delivering activities (teaching) and support activities (administration). The impact of a combination of both aforementioned activities is twofold. Firstly, it would enhance the students overall satisfaction because, after classroom activities, students have to interact with the administration staff for their scholarships, fee and dues issue, time tables etc. Secondly, it would also impetus the innovation process regarding courses and programs by providing necessary support and assistance in the form of proper allocation of sufficient budgets when it is required, IT support to maintain student lab and portal, maintaining and updating the library, and different marketing function, including advertisements and promotion.

#### **4.1.5 A New Revenue Model as Dynamic Capability for Innovation Capability in HEIs**

As mentioned above, HEIs are facing several challenges and problems to survive in the prevailing turbulent and dynamic environment. To sustain in such kind of environment HEIs have to change their internal systems to identify and cater opportunities and abstain from external threats. Recent financial crunch compelled the governments to cut down their education budgets which is a major source of HEIs revenue especially public sector HEIs. This budget cutting led the HEIs to financial instability and an impediment to leveraging their innovation capability process in the form of courses, programs, and other internal systems.

HEIs should, of course with other systems, have to change their revenue model as well. Because, many times the success of service innovation is dependent on the matching of cost and revenue based model (Paällyaho and Kuusisto, 2008; Chesbrough, 2006; Johnson et al., 2008). Therefore, in this kind of landscape HEIs should be less dependent on the governmental budgets and students fee and try to find out new ways to generate revenues. There are various ways through which HEIs can generate their revenues. First, HEIs possess the pool of highly skilled and experienced human capital in the form of teachers; HEIs can liaison with the industry and provide them different pieces of training like accounts, marketing activities, leadership development, salesforce training etc. Second, HEIs can liaison with the industry and government to produce different softwares and other equipment for them to make their processes efficient. Third, in many departments student's annual projects are a mandatory part of the degree accomplishment; HEIs can exhibit those new products and sell to those who wish to buy. Hence, all these means can be utilised to generate revenues for meeting the cost for different innovation processes in the HEIs.

## **5. Conclusion and Recommendations**

Change is a permanent reality of the environment and business environment is not an exception to it. Higher

education institutions need to align themselves with the ever-changing business environment by developing dynamic capabilities. Moreover, the current study highlighted the emergence and importance of dynamic capability in the ever-changing business environment. The basic aim of the paper was to identify the implication of various dynamic capabilities for innovation capability in the context of higher education institutions. In order to fulfill the research aim, this study revealed and discussed various dynamic capabilities and its implications for innovation capability in the context of higher education institutions. Five dynamic capabilities have been discussed in relationship with innovation capability in the context of higher education institutions, namely dynamic curriculum development, Technological adoption capability, administration capability, and a new revenue model for HEIs. It is concluded that in order to develop innovation capability and to be compatible with the dynamic environment that HEIs is currently confronting; these DC can play a pivotal role.

We can put forward various recommendations to coalesce both concepts DC and IC in the context of HEIs. Firstly, HEIs should focus on internal resource and capabilities building for innovation capability by producing more efficient employees like Ph.D. doctors, upgrading IT system, Building libraries, and formulate and implement efficient training mechanism for all employees. Secondly, By and large, HEIs lacking or having weak external ties, linkages/collaboration with the external stakeholder like government, industry, and society, so, HEIs should develop and strengthen these ties and linkage/collaboration because HEIs are social institutions that can not nurture in isolation. Thirdly, HEIs should formulate or reformulate their business models in order to reap benefits from business concepts and theories because education institutions have turned into education industry (Haan, 2015), and the concepts that apply in the business world can also be implemented in the education industry (Mathooko and Ogutu, 2015). Fourth, HEIs should take input from the industry expert while developing their curriculum because these experts can give better insights about prevailing problems and issues about the industry. Consequently, it would be helpful for the students to aware of prevailing problems and issues of the industry. Fifth, HEIs should be more be operated like business enterprises by hiring professionals from the industry for effective strategy formulation and implementation as happening in the developing world where traditional university structure has been changed through the hiring of managers (Mathooko and Ogutu, 2015).

## 6. Future Direction for future Research

The current study has contributed theoretically in existing theory by discussing the relationship and implications of DC and IC in the context of the HEIs. Further research should be conducted to empirically prove the relationship and existence of DC and IC in the HEIs. Moreover, further research should also be conducted on the comparative analysis of public and private HEIs to analyze both DC and IC existence and implications.

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