



AENSI Journals

Australian Journal of Basic and Applied Sciences

ISSN:1991-8178

Journal home page: www.ajbasweb.com



Absorptive Capacity and Organizational Performance in Technology Intensive Firms: A Conceptual Framework

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ARTICLE INFO

Article history:

Received 2 March 2014

Received in revised form

13 May 2014

Accepted 28 May 2014

Available online 13 June 2014

Keywords:

Strategic management,

Absorptive capacity,

Organizational learning,

Organizational amnesia,

Technology-intensive firms

ABSTRACT

In today's world, newer and more knowledgeable economies spawn more technology intensive firms and these firms greatly depend on their persistently innovative capabilities to attain sustainable competitive advantage. The way the firms persistently innovate depends mostly on their ability to absorb knowledge from internal and external sources. This ability known as 'absorptive capacity' and its impact on organizational performance is the central motivation for this paper. More specifically, this study delves deeper into the literature pertaining to the absorptive capacity, organizational learning, organizational amnesia and their interrelationships and subsequent impact on predicting the performance of the technology intensive firms. This Paper methodologically reviews the extant literature thereby identifying the research need and proposes viable research propositions for the future empirical investigations.

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To Cite This Article: Haider Ali Malik, Ghazala Haider, Mohammad Adnan Bin Alias, Fazli Idris. Absorptive Capacity and Organizational Performance in Technology Intensive Firms: A Conceptual Framework. *Aust. J. Basic & Appl. Sci.*, 8(9): 270-274, 2014

INTRODUCTION

In the conventional and older markets firms had a choice between porter's three generic strategies as a source of the competitive advantage in market: cost leadership (doing things cheaper than competitors), differentiation (doing things better and different than competitors) and focus/niche orientation (Porter, 1985). However, rapid adoption and deployment of the technological changes, less asymmetry in information access, short product lifecycles and the globalization of trade and businesses gradually led to an erosion of the conventional causes of the competitive advantage for the firms (Jacome, Lisboa and Yasin, 2002; Morales, Moreno and Montes, 2007). These revolutionary changes in business processes and activities were an inevitability requiring adoption of the new or alternative strategic themes to create the sustainable competitive advantage (Jacome *et al.* 2002; Morales *et al.* 2007). The success in the newer more knowledgeable economies is defined by the firms' ability to acquire, assimilate, and apply knowledge faster than the competitors (Jacome *et al.* 2002; Morales *et al.*, 2007). In today's world, newer and more knowledgeable economies spawn more technology intensive firms and these firms greatly depend on their innovative-capabilities to attain competitive advantage (Mei, 2007). The ways a firm can innovate mostly depends on its 'absorptive capacity', which earlier studies defined as "the ability to recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal, 1990, pp.128).

Another important and effective concept to study the competitive advantage in the strategic management of the firms is the concept of organizational learning (Tan and Heracleous, 2001). Organizational learning (OL) and technology absorptive capacity are considered complementary dimensions. The capacity to absorb and especially to manage technological knowledge is the result of the firm's continuous endeavor to engage in learning. In the modern economies, organizations may become jammed with data and information that the firms may be incapable to decipher and use, thus, developing Organizational learning capabilities also contributes towards the sustainable competitive advantage of the firm (Goh, 2003; Morales *et al.* 2007).

Researchers have identified that in some organizations, Organizational Amnesia (OA) becomes an impediment in developing viable OL capabilities (Othman and Hashim, 2004). OA is generally defined as organizations' failure to use their learning to create the value (Othman and Hashim, 2004). Failure to apply knowledge to adapt to the change or to create the value can become a serious setback in organizational performance and may become a source of sustained disadvantage to the organizations' competitive position.

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This paper is an initial theoretical attempt to propose the causal relationship model between Absorptive Capacity-(ABCAP), Organizational learning-(OL), Organizational Amnesia-(OA) and Organizational Performance-(OP). The concept of Absorptive capacity has been applied and used in literature to understand the organizational learning outcomes (Koza and Lewin, 1998); strategic alliances and MNCs (Koza and Lewin, 1998; Lane, Salk and Lyles, 2001; Minbaeva, *et al.* 2003); technology and Knowledge Management (Jacome *et al.* 2002; Narasimhan, Rajiv and Dutta, 2006; Gray, 2006; Morales *et al.* 2007) etc. In this paper, we intend to study the effect of ABCAP on OL, OA and eventually the performance of the organization. Previous research indicates that ABCAP may also be used as a predictor of the organization's learning (OL) capabilities and organizational Amnesia (OA), as according to the Othman and Hashim (2004, pp. 281) "The absorptive capacity at the individual and organizational level needs to be enhanced to increase an organization's OL capabilities and reduce OA". This study will attempt to conceptualize that ABCAP may act as an antecedent to OL, OA and OP. In the following sections, we will discuss the major constructs of the study and formulate research propositions along the way.

Absorptive Capacity:

Over the last fifteen years the concept of absorptive capacity has been widely used and applied in the areas of Strategy, organization theory and economics (Lewin, Massini and Peeters, 2008). In 1990, Cohen and Levinthal recognized a fundamental difficulty faced by the organizations, their inability and ineffective management to acquire new knowledge and to apply knowledge to their advantage. According to the Cohen and Levinthal (1990) organizations usually require prior relevant knowledge to assimilate and utilize new knowledge. They called this the organization's "absorptive capacity", a notion that has been further widened to embrace a firm's overall capability for learning, applying new knowledge, spreading new knowledge internally and making use of new resources, including novel technologies. The construct of absorptive capacity encompasses the organization's current resources, existing implicit and explicit knowledge, internal routines, managerial competences and organizational culture (Lewin, Massini and Peeters, 2008). Zahra and George (2002) advanced the concept of absorptive capacity to take in the firms' routines and processes by which firms function and manage knowledge. They documented four dissimilar areas where knowledge was required to be successfully managed by the successful firms. These areas include acquisition, assimilation, transformation and exploitation. Acquisition and assimilation of new knowledge is referred to as 'potential absorptive capacity' while transformation and exploitation as 'realized absorptive capacity' (Zahra and George, 2002).

Usually organizations with higher absorptive capacity are more responsive to up-and-coming technological opportunities and are practical in seeking and utilizing them compared to firms with lesser absorptive capacity. The degree of a firm's ability to recognize the value of new, external information is path-dependent, i.e. subject to the preceding knowledge which it already possesses. In technology intensive organizations, absorptive capacity is defined as the capability to distinguish the value of new external knowledge, incorporate it and apply it to business ends (Lin, Chang and Chang, 2004). It specifies the capability to evaluate the possible performance of external technologies and to choose those that are reasonably effective, as well as the capacity to work with and use this technology to gain competitive advantage (Lin, Tab and Chang, 2002; Lin *et al.* 2004; Narasimhan *et al.* 2006; Morales *et al.* 2007). The resource-based view believes in absorptive capacity as a dynamic capability more like a strategically important capacity (Teece, Pisano, and Shuen, 1997). Additionally, absorptive capacity for technology intensive organizations may be considered as a dynamic capability that may influence the firm's ability to produce and apply the knowledge essential to construct other organizational capabilities like organizational learning. This can give the organization a base to build a competitive advantage to cause a required organizational performance.

Absorptive Capacity, Organizational Learning and Organizational Performance in Technology Intensive Organizations:

The literature on strategy, knowledge management and technology transfer has highlighted the significance of organizational learning for organizational survival and effective organizational performance (Fiol and Lyle, 1985; Senge, 1990; Nonaka and Takeuchi, 1995; Nonaka and Umemoto, 1996; Zahra and George, 2002; Ujari, 2002). Organizational learning plays a vital role in improving organizational performance (OP), and also in developing and reinforcing its competitive advantage. It usually has positive implications and is therefore normally related to enhancement in organizational performance (Fiol and Lyle, 1985). In general, the current performance of the firm comes from its past learning and its future performance depends upon what and how firms learn today. Nevertheless, some researchers are of the view that it may be a fallacy to assume that the greater organizational learning may at all times lead to growth in the organizational performance, since, due to other intervening elements like organizational amnesia (Othman and Hashim, 2004), learning may not always improve an organization's results (Hoopes and Postrel, 1999). Hence one of the objectives of the study is to propose the possible relationship between OL and OP with and without moderated effect of the OA.

Through Organizational learning process firms create knowledge. This knowledge is created by the individual people in the organizations and is augmented in an organized way and then transformed and embedded into the knowledge systems and memory of the organization. The ability to absorb and especially to manage technological knowledge is the result of the firm's continuous effort to engage in learning. Some researchers explain absorptive capacity of the technology intensive firms as the capacity to learn and resolve technological problems (Kim, 1998) or explain this capacity through the organizational learning point of view (Zahra and George, 2002). The capacity to absorb and apply new technology influences organizational learning. In this regard, it is prudent to point out that, even though the research on the absorptive capacity of technology intensive firms and organizational learning may have different beginnings, yet, the processes that both of these concepts attempt to portray—absorption of technological knowledge and organizational learning—are conceptually close (Renko *et al.* 2001).

Absorptive capacity in technology intensive firms begin with the interest in acquiring and absorbing external technical knowledge, and organizational learning essentially believes, among other dimensions, in regeneration of internal technological knowledge in the firm (Senge, 1990; Ujari, 2002). Researchers have explained that the firms ought to build the practices to incorporate successfully the technological knowledge obtained throughout the absorptive capacity of technology and organizational learning, two interrelated capacities (Ujari, 2002). Similarly Lin *et al.* (2002) accentuates that these interconnected capacities may have great impact on technology transfer performance. They indicate the importance of organizational learning for absorptive capacity in technology firms.

Researchers have indicated that without the absorptive capacity, organizational learning cannot take place in the sub unit of an organization or the organization as a whole, therefore technology intensive organization ought to invest continually in the enablement of acquiring absorptive capacity to increase its OL and eventually achieve required organizational performance (Lin *et al.* 2004; Narasimhan *et al.* 2006; Morales *et al.* 2007) if a technology intensive organization do not continually invest or stop investing in the development and enablement routines of absorptive capacity, the organization's ability to appropriate technological knowledge and to learn will decrease. It will thus be necessary to invest in each of the components of absorptive capacity (ability to understand external technological knowledge, to assimilate it, to transform it, and to apply it) to enable organizational learning and better organizational performance (Lin *et al.* 2002; Lin *et al.* 2004) As stated earlier, researchers in ABCAP and OL contend that in the absence of the absorptive capacity capabilities, the organizational learning may not occur in the organizational units or in the organization as a whole, therefore requiring continuous investment into acquiring ABCAP capabilities by the technology intensive firms (Lin *et al.* 2002; Narasimhan *et al.* 2006; Morales *et al.* 2007; Zahra and George, 2002). Having discussed this, we propose that:

Proposition 1a: in the technology intensive firm, Absorptive-capacity capability will have positive relationship with organizational learning i.e., an increase in ABCP will increase the OL of the firm.

Proposition 2a: in the technology intensive firm, Organizational Learning will have positive relationship with organizational Performance (OP) i.e., an increase in OL will increase the OP of the firm.

The Role of Organizational Amnesia:

As mentioned earlier in the paper, relatively new phenomena called Organizational Amnesia (OA) can hinder the unflinching requirements of organizations to develop the learning capabilities and pose major threat to the firms' performance and competitive advantage. Previous researchers have explained that organizations does not necessarily learn easily and sometimes fail to apply or forget how to convert their learning to create value [Conklin, 2001; Kransdorff, 1998, (cited in Othman and Hashim, 2004)]. OA is considered as the failure to communicate the knowledge within the organization and benefit from organization's history and memory. Othman and Hashim (2004, pp. 276) state that "Organizational Amnesia is basically the failure to utilize learning that has taken place to make the necessary adaptation or create value" they continued to say that "This can happen because the lesson is lost in history or because of the inability to effectively transfer the knowledge to the points in the organization where the lessons learned are absorbed and used. Thus, the learning could have happened at the individual level but that learning did not move to the organizational level"

Technology intensive firms are generally involved in R&D activities more than other firms and are able to enlarge their knowledge base, assimilate external technological knowledge better and apply it at individual and as well as firms' level (Cohen and Levinthal, 1990; Lin *et al.* 2002; Lin *et al.* 2004; Ujari, 2002). The efficacious development of absorptive capacity in technology intensive firms, therefore, reduces the possibility of failure to assimilate and apply knowledge due to OA. Othman and Hashim (2004) contend that in order to reduce OA firms must invest in the abortive capacity at individual and organizational level by training its workforce, improving R&D activities and effectively designing and deploying organizational communication structure. Thus the current study proposes that:

Proposition 1b: in the technology intensive firm, Absorptive-capacity capability will have negative relationship with organizational amnesia i.e., an increase in ABCP will lessen the OA of the firm.

OA, on the other hand can also impact organizational performance once the organizational memory of the learning has been forgotten in what researchers call 'corporate amnesia' (Kransdorff, 1998) As Othman and Hashim (2004) has suggested that OA reflects the failure to benefit from the learning that has taken place in organizations, this can impact the relationship between OL and OP. As mentioned earlier that increase in organization learning does not necessarily means that organization's performance will increase as well, since interacting variables like OA can come into play and may trigger memory failure even after the learning has been done initially, i.e., the lessons learned from earlier experiences, interactions and routines were forgotten and were not incorporated in handling recurring problems (Othman and Hashim, 2004). This can seriously impede the performance of an organization and in the long run undermine its competitive advantage in the market. From this discussion we can assume that organizational amnesia plays an important role in defining relationship between performance and organization learning. We can assume that the relationship between organizational learning and organizational performance is moderated by the organizational amnesia, such that, OA has a negative relationship with OL and OP. It means that the higher OA will weaken the positive relationship as hypothesized in proposition 2. And lesser OA will strengthen the relationship between OL and OP. Thus we propose:

Proposition 2b: in the technology intensive firm, Organizational amnesia will influence the relationship between OL and OP i.e., the higher/stronger OA will weaken the positive relationship as hypothesized in proposition 2. And lesser/weaker OA will strengthen the relationship between OL and OP. Figure 1 below presents the proposed conceptual model of this study.

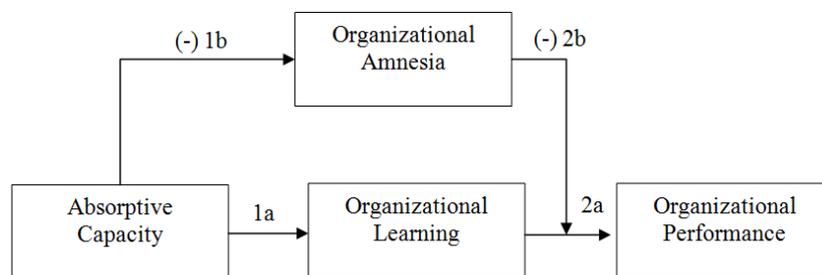


Fig. 1: Conceptual Model and Propositions.

Conclusion:

Many organizations learn but are not able to apply their learning effectively and one reason could be that of organizational amnesia which simply means that they forget or cannot recall their earlier learning when they need them. This study attempts to build a model and show that Absorptive capacity can influence organizational learning, organizational amnesia, and performance in technology intensive firms. It attempts to propose causal relationship between these constructs. There have been studies done on absorptive capacity and its impact on OL and OP, but studies proposing the influence of Absorptive capacity on an organizational amnesia are not that many. Through a brief review of the literature, we attempt to develop a conceptual frame work linking the constructs of ABCAP, OL, OA and OP and proposes that OA moderates the causal relationship between OL and OP, such that a high OA will weaken the relationship between OL and OP and vice versa. The study suggests that if organizations enhance their absorptive capacity management and acquisition capabilities that may improve their OL and reduce their OA thereby creating a sustainable competitive advantage in the market place.

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