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Absorptive Capacity in Small and Medium Enterprises

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ABSTRACT

In the era of industry 4.0 and society 5.0, the ability to absorb knowledge, share, use and store it becomes very important in order to survive and. The situation is exacerbated by the emergence of the corona pandemic and the new normal situation which poses many new challenges. The purpose of this literature research is to identify what SMEs have done to absorb knowledge, especially from outside the organizational environment. The results show that the ability to absorb knowledge is initiated through the formation of networks with similar companies, internet databases, social media while assimilation is carried out with involvement in training and counseling activities, the implementation is adjusted to the context of the company.

Keywords: Absorptive Capacity, Measurement, Performance, SMEs

1. INTRODUCTION

In the era of industry 4.0 and society 5.0, every enterprise is required to have the ability to absorb information quickly and use that information to achieve goals efficiently and effectively (Galkina & Lundgren-Henriksson, 2017). The acquisition of knowledge and its use has become one of the most important aspects for companies in order to achieve competitive advantage (Baškarada & Watson, 2017). Effective use of knowledge in the form of new products and processes initiation may lead companies to renewal, growth and competitiveness (Lichtenthaler, 2009). To be a survive enterprise, an enterprise has to have high absorptive capacity.

Absorbing capacity that determines the degree of openness of a company, identified as: one of the important factors that provide competitive advantage in the same industry (Deepak & Subrahmanya, 2017). Depending on the degree of absorption of capacity, firms exposed to the same amount of external knowledge benefit to varying degrees (Thomas & Wood, 2014). In addition, a firm's absorptive capacity is a function of the firm's knowledge base (Yu, 2013). In turn, the company's knowledge base is a function of previous experience.

In such a context, small and medium enterprises (SMEs), which are limited in financial resources, should acquire external knowledge through exchanges between firms (Elsetouhi & Elbeltagi, 2013) and optimize their organizational learning processes to utilize this knowledge and achieve business sustainability. In such a context, small and medium enterprises (SMEs), which are limited in financial resources, should acquire external knowledge through inter-firm exchanges (Kotabe, Jiang, and Murray, 2011) and optimize their organizational learning processes to utilize this knowledge and achieve business sustainability.

SMEs are vulnerable to such structural uncertainties, especially in developing countries (Benhayoun-Sadafiyine, Le-Dain, & Dominguez-Péry, 2018). Since knowledge has emerged as one of the most important strategic resources for companies (Lee et al., 2010), a company's competitive advantage stems from the effective utilization of knowledge (Indarti and Postma, 2013) in the form of products and services, new processes that can lead to organizational renewal, growth and competitiveness.

Knowledge enable inovation (Camison and Forès, 2010; Anderson and Eshima, 2013; Flatten et al., 2011; Heiz et al., 2014; Lau & Lo, 2015). Innovation as a new recombination of the knowledge that individuals have and the new knowledge they have acquired, allows companies to explore new opportunities and exploit existing opportunities more efficiently (Hung and Chou, 2013). Innovative behavior generally occurs at the individual level (Hogan & Coote, 2014), as individuals can generate new and novel ideas that regularly reflect broad shifts in perspective and reorientation of existing activities (Johannessen, 2013). According to Kastopoulos, Papalexandris, Papachroni, and Iannou, (2011), when individuals demonstrate creativity and innovation, they can complete their tasks better, which in turn, improves organizational performance and competitive advantage in an uncertain environment (Kotabe, Jiang & Murray, 2011). In the long term, individual innovation behavior is a key factor in the survival and growth of the organization.

Many researches on absortive capacity for large companies have been carried out, but are still very limited for small companies. Therefore, this study aims to identify the ability to absorb knowledge in SMEs context.

2. THEORETICAL BASIS

2.1. Concept of Absorptive Capacity

Cohen and Levinthal (1990) who first proposed the absorptive capacity term define a firm's absorptive capacity as the intra-firm ability to acknowledge new value, external information, assimilate, and apply it to commercial ends. Recognizing the importance of absorptive capacity, Miguelez and Moreno (2015) considered absorbtive capacity as the range of skills required to modify the implicit or tacit components of acquired knowledge to meet local needs. Noblet, Simon and Parent (2011), consider a company's ability to learn and solve problems dynamically as an absorbency, determined by the intensity of its learning efforts. So absorptive capacity can be define as dynamic capabilities embedded in organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to gain and maintain competitive advantage (Saad, Kumar & Bradford 2017).

The dimensions of absorptive capacity can be classified into two components: 1) potential absorptive capacity which takes into account acquisition and assimilation and 2) realization of absorptive capacity which accounts for transformation and exploitation (Noblet, Simon, and Parent, 2011). The absorption potential of capacity affects competitive advantage through management flexibility and the development of resources and capabilities, while realized absorption capacity has an impact on competitive advantage through the development of new products or processes (Camisón and Forés, 2010).

2.2. Dimension of Absorptive Capacity

There are four dimensiof of absorptive capacity that will be discussed in this section

2.2.1. Knowledge Acquisition

Acquisition is defined as a firm's capacity to identify external knowledge that is critical to enterprise's operations. According to Roberts, Galluch, Dinger, and Grover (2012), new knowledge is usually brought to the firm in inappropriate forms; thus requiring coordination and socialization of capabilities to assist in the process of assimilation and transformation to embed it

in the knowledge base of the company. In addition, job rotation can be a functional strategy for the assimilation of ideas that do not fit into existing cognitive structures. For example Strategy involves the introduction of diverse knowledge structures, improving problem solving skills, and increasing socialization between individuals (Cohen and Levinthal, 1990). The individuals involved determine it; therefore, the experience, skills and qualifications of these individuals matter.

In addition, the intensity of effort, meaning the amount of emotional, intellectual, and physical energy that individuals in organizations invest in acquiring and transforming knowledge, determines the speed of knowledge conversion (Belso-Martinez, Exposito-Langa, and Tomas-Miquel, 2016). Firms' capacity to evaluate and use external knowledge increases in relation to the consequent accumulation of knowledge and expertise (Cohen and Levinthal, 1990). In addition, Barbaroux, Attour and Schenk, (2016) discussing the ability of organizations to generate innovation and technological progress in a turbulent environment, concludes that prior knowledge is fundamental to maintaining absorptive capacity. However, the routines and methodologies that are instituted within the firm can reduce their absorption due to the problem of path dependence (Chauvet, 2014). Thus, the roles of knowledge receivers and transmitters are very important for the successful exploitation of such knowledge.

Knowledge acqusition has been measured through research and development (Cohen and Levinthal 1990l; Delmas, Hoffmann and Kuss, 2011). According to Jimenez-Barrionuevo, García-Morales, & Molina (2011), the intensity of R&D alone is not sufficient to fully explain the absorptive capacity because it focuses on technological knowledge and ignores other types of acquired knowledge. Thus, additional steps are needed to fully capture the essence of the absorptive capacity construction. For example, employee skills, organizational memory, and previous organizational experiments and experiences are part of such a complex construct (Flatten et al., 2011). Furthermore, the exploration of absorptive capacity in non- R&D contexts by including measures for each dimension has been a subject of interest among researchers.

2.2.2. Knowledge Assimilation

Knowledge assimilation refers to a firm's capacity to process, examine, interpret, and understand newly acquired knowledge and can include: incorporating it into routines (Lewin, Massini & Peeters, 2011). Knowledge assimilation occurs when an employee discovers a new idea, and must 'fit' that idea into what she or he already knows (Silva et al., 2014). Knowledge assimilation requires an understanding of how new information fits into what is already contained in the knowledge base and how this existing information should be modified so that it reflects the expert's view of the domain.

Through assimilation, we take new information or experiences and incorporate it into our existing ideas (Valentim, Lisboa, & Franco 2015). The process is somewhat subjective, as we tend to alter experiences or information to fit our pre-existing beliefs. Assimilation plays an important role in how we learn about the world around us. In early childhood, children are constantly assimilating new information and experiences into their existing knowledge of the world. However, this process does not end with childhood. When people encounter new things and interpret these experiences, they make small and large adjustments to their existing ideas about the world around them.

2.2.3. Knowledge Transformation

Knowledge transformation refers to the capacity to incorporate new knowledge within the organization. For example, improved internal routines can be created that facilitate the combination of prior and newly acquired knowledge. The process changes the form of knowledge that is constructed in the context of the source into a form that can be used in the context of the target.

The knowledge transformation process is understood as a set of descriptions or a collection of facts and rules to be transferred to fellow employees through internalization as a social construction. Studies have found that good fit leads to better performance whereas poor fit is associated with poor performance but this pattern is not always consistent as different types of uncertainty create different demands for transformation.

By investigating the variability in knowledge transformation processes that arise under these conditions of uncertainty, this study supports research findings that demonstrate the importance of a multidimensional approach to environmental uncertainty for the study of processes. Thus, the knowledge transformation process is investigated along two dimensions; 1) comprehensive – identify objectives/problems, generate alternatives and evaluate based on the risks associated with each option and 2) interpretive – validate the relevance of knowledge to the problem at hand, understand the unique value of knowledge in the context of its original source and transform it into another form that is uniquely valuable for the receiving company.

2.3. Exploitation

Knowledge exploitation consists of the capacity to refine and incorporate new knowledge into a firm's current operations through routines to create operations, competencies, routines, or goods (Camisón and Forés, 2010). The essence of exploitation is the improvement and expansion of existing competencies, technologies, paradigms; improvement that will result in a positive, imminent, and predictable one. The knowledge exploitation strategy consists of organizational learning practices for optimization of existing processes and enhancement of existing knowledge assets.

2.4. Dimension of Absorptive Capacity

Most of the early literature positioned absorptive capacity as a unidimensional construct (Ter Wal, A., Criscuolo, P. & Salter, A. 2011), with recent researchers investigating its sub-dimensions, realized potential and absorption capacity, claiming it to be a distinctive organizational capability (Spithoven, Vanhaverbeke & Roijakkers, 2013). While investment in potential absorption capacity ensures new interpretations of diverse ideas, realization of absorptive capacity produces innovation outcomes (Sáez-Martínez et al., 2014). Recently, the increasing significance of absorptive capacity has sparked calls for future research on the determinants of absorptive capacity, in particular absorption potential and capacity realization.

The concept of "absorption capacity" focuses on the fact that knowledge beyond the boundaries of the firm is not freely and easily absorbed by the firm, even if it is in the public domain. Instead, the efforts, expertise, and deliberate actions on the part of corporate researchers are required to identify, assimilate, and exploit this external knowledge (Nieves, Quintana, and Osorio, 2014). To explore the role of various corporate strategies in providing absorptive benefits the absorptive capacity provides the ability for a company to rearrange its resource base and dynamically adapt to changing market conditions to achieve better performances. Furthermore, the factors that determine the absorption capacity of a company can be grouped into internal factors/company level and external factors/industry level (Le Roy & Fernandez, 2015).

3. RESEARCH METHODS

This paper relied on literature review and the method of analysis as well as comparison between relevant previous studies and to come up with an opinion about absorptive capacity in SMEs Context.

4. RESULT AND DISCUSSION

The literature review highlights several determinants of absorptive capacity which apply to SMEs. The determinants are:

a. External activators: They reflect the uncertain environmental conditions that drive the organization to intensively activate its absorptive capacity (Anderson and Eshima, 2013). Some of these external drivers stem from technological evolution or the high frequency of innovation that can affect the future of the industry in which the organization operates (Fajriah et al., 2021). In addition, Bouncken, Gast, Kraus, Bogers, 2015) highlight other external drivers that can cause absorptive capacity to be more intense, including frequent changes in market trends, as well as high levels of competitiveness and regulation (Indarti and Postma, 2013). Therefore, the more SMEs are subject to these external activators, the more it is necessary to develop their absorptive capacity to adapt to the turbulence of their environment (Othman, Arshad, Aris and Arif, 2015).
b. Internal activators: Some internal conditions can also make an organization more motivated to acquire and integrate knowledge that is different from its own (Cabrilo, Nesic, and Mitrovic, 2014). Organizations thus deploy intense absorptive capacity to achieve specific performance goals (Yu, 2013), enabling them to recover for example from crises (Thomas and Wood, 2014) or from successive failures (Silva et al. 2014). It may even be motivated to absorb knowledge to initiate profound changes that redefine its strategy (Saad, Kumar & Bradford, 2017). Thus, the more SMEs integrate partnerships to address internal challenges, the more necessary to develop their absorptive capacity.
c. Central role: Finally, in the particular context of knowledge absorption for innovative purposes. Delmas, Hoffmann, & Kuss, (2011) emphasize that power relations can have a contingency effect on organizational absorptive capacity. This relationship involves the use of power and other resources by an actor to achieve certain desired outcomes (Chauvet, 2014). Powerful actors are generally efficient exploiters of new knowledge (Camison and Forès, 2010), mainly because they intensively deploy their absorptive capacity to take advantage of the knowledge available through their privileged position. Indeed, Deepak and Bala Subrahmanya, (2017) argues that units with a central role in the innovation network can efficiently use new knowledge only if they deploy the relevant absorptive capacity. The better a unit can access the knowledge of another unit, the more it requires absorption capacity to benefit from that knowledge (Lee, Park, Yoon, & Park, 2010). Consequently, the more central the SME's role in the networking power, the greater the need to develop its absorptive capacity to effectively use the new knowledge accessible to its position.

The construct of absorptive capacity, measurement and source found in the literature review are provided in table 1.

Table 1
Construct, Item Of Measurement And Source Of Absorptive Capacity

Construct	Item's Scale Measurement	Source
Environmental conditions pushing the SME to absorb external knowledge	The technological environment in your industry evolves rapidly	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	The political environment in your industry is highly regulated	Jimenez-Barrionuevo et al., (2011); Benhayoun-Sadafiyine et al., (2018)
	The innovation in your industry is highly frequent	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	The market in your industry is highly competitive	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
The degree to which the SME's role is central in the networking	Strongly involved in the interactions with the targeted market	Jimenez-Barrionuevo et al., (2011); Noblet et al., (2011); Benhayoun-Sadafiyine et al., (2018)
	Strongly involved in the project management aspects	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011);
	Strongly involved in the project technical coordination aspects	Noblet et al., (2011); Benhayoun-Sadafiyine et al., (2018)
	Strongly involved in the intellectual property of the generated innovation	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
Internal motivations of the SME to absorb knowledge	To generate substantial financial benefits	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	To acquire new learnings	Flatten et al. (2011); Noblet et al., (2011)
	To reinforce its social network	Benhayoun-Sadafiyine et al., (2018)
	To initiate a change in its strategic orientation	Jimenez-Barrionuevo et al., (2011); Benhayoun-Sadafiyine et al., (2018)
Characteristics of the SME's relationships with the other actors	Their disciplines are distant from yours	Benhayoun-Sadafiyine et al., (2018); Jimenez-Barrionuevo et al., (2011)
	Their organizational structures and/or industrial cultures are different from yours	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Their activities and/or expertise are similar to yours	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Their commercial orientations are similar to yours	Noblet et al., (2011); Benhayoun-Sadafiyine et al., (2018)

Acquisition by the SME of external knowledge from the other network actors or outside the network to contribute to the network setting-up	Explore technical and/or technological knowledge related to the targeted innovation	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Explore Supply Chain knowledge related to the targeted innovation	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Explore market knowledge related to the targeted innovation	Noblet et al., (2011); Benhayoun-Sadafiyine et al., (2018)
	Explore knowledge related to the management of an innovation project	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Explore knowledge related to interorganizational collaboration	Flatten et al. (2011); Noblet et al., (2011);
	Use data sources (Scientific databases, press, Internet, monitoring tools ...)	Flatten et al. (2011; Jimenez-Barrionuevo et al., (2011)
	Get informed through the other actors of the network that are likely to provide you with useful elements	Flatten et al. (2011); Noblet et al., (2011);
	Get informed through experts (Associations, clusters, consultants…) external to the network	Benhayoun-Sadafiyine et al., (2018)
	Get informed through the client if applicable Attend scientific or industrial events (Fairs, conferences ...)	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Be open to explore any knowledge domain that might be useful to the targeted innovation	Flatten et al. (2011); Noblet et al., (2011)
Assimilation by the SME of external knowledge from the other network actors or outside the network to contribute to the network setting-up	Actively involve the client if applicable or an end user	Flatten et al. (2011); Noblet et al., (2011);
	Organize exchanges with the other project actors to ensure the coherence of the overall vision	Benhayoun-Sadafiyine et al., (2018)
	Use boundary objects (Presentations, Supporting documents, Simulation ...) to better exchange with the other actors and/or the client	Flatten et al. (2011); Noblet et al., (2011)
	Assess the risks and benefits to integrate a project including unusual actors to your organization (Large groups, researchers, competitors, entities you didn't know before)	Benhayoun-Sadafiyine et al., (2018)
	Be open to integrate a project including unusual to your organization (Large groups, researchers, competitors, entities you didn't know before)	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011) Jimenez-Barrionuevo et al., (2011)

Application by the SME of external knowledge from the other network actors or outside the network to contribute to the network setting-up	Define and communicate to the other actors your contribution to the budget Define the project management modalities (Planning, deliverables…)	Flatten et al. (2011); Noblet et al., (2011)
	Define and communicate to the other actors your proposition of contribution to the development phase	Flatten et al. (2011); Noblet et al., (2011)
	Appoint within your organization the human resources to be involved in the project	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Identify the actors that are at the interface of your contribution (Who impact your contribution and whose contributions you impact)	Camison & Forès, Camison & Forès, (2010). (2010).
	Define the modalities to manage the performance of the targeted innovation (Expected objectives, evaluation criteria, steering mode)	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Set up the collaborative tools that are necessary for steering the interfaces between the different actors (Collaborative platforms, shared databases …)	Camison & Forès, (2010); Noblet et al., (2011)
	Communicate your own collaboration terms (Own objectives, cultural peculiarities …) to be taken into consideration by the other actors	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Define a business model of the targeted innovation that is commonly approved by the concerned actors	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Appoint the necessary boundary actors of the network (Project manager, technical coordinator, commercial interface)	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Make sure to appoint boundary actors that are approved (Legitimate and non-conflicting) by all the network actors	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Contractualize the relationships with the other actors that might be risky	Flatten et al. (2011); Noblet et al., (2011)
	Assess the coherence between the project objectives and the strategic orientation of your organization (Risks and eventual impact on your own business)	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Be open to eventually adjust your own objectives according to the common orientation of the project	Camison & Forès, (2010); Jimenez-Barrionuevo et al., (2011)
Acquisition by the SME of external knowledge from the	Get informed regarding the constraints and requirements of the other project actors (and the client if applicable)	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)

other network actors or outside the network to contribute to the innovation development	who impact the accomplishment of your contribution	
	Get informed regarding the constraints and requirements of the other project actors (and the client if applicable) whose contributions you impact	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Get informed through the other actors of the network that are likely to provide you with useful elements	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Get informed through experts (Associations, clusters, consultants…) external to the network	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Get informed through the client if applicable Use data sources (Scientific databases, press, Internet, monitoring tools ...)	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Attend scientific or industrial events (Fairs, conferences ...)	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Be open to explore any knowledge domain that might be useful to the targeted innovation	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
Assimilation by the SME of external knowledge from the other network actors or outside the network to contribute to the innovation development	Actively involve the client if applicable or an end user	Camison & Forès, (2010); Jimenez-Barrionuevo et al., (2011)
	Use IT means (Shared databases, SharePoint ...) to share knowledge with the other actors and/or the client	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Use boundary objects (Presentations, Supporting documents, Simulation, Prototypes ...) to better exchange with the other actors and/or the client/end user	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Organize exchanges with the project actors at the interface of your contribution	Camison & Forès, (2010); Jimenez-Barrionuevo et al., (2011)
	Organize exchanges with all the actors to ensure the coherence of the overall project vision	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Question the interventions of the other actors and/or the client that are likely to alter the quality of your own contribution	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Be careful when exchanging with other actors about knowledge that is key for your organization	Camison & Forès, (2010); Jimenez-Barrionuevo et al., (2011)
	Be open to eventually integrate knowledge and uses other than your own knowledge or ways of doing	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)

Application by the SME of external knowledge from the other network actors or outside the network to contribute to the innovation development	Jointly work with the actors that are at the interface of your contribution	Flatten et al. (2011); Noblet et al., (2011)
	Test the generated innovation with the client or a potential user prior to its commercialization	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Promote the generated innovation in events (Trade fairs, conferences ...)	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Use appropriate means (Technological platform to create, website to communicate, demonstrators ...) to accomplish your contributions to the project	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Provide a description documenting your accomplished contributions	Flatten et al. (2011); Jimenez-Barrionuevo et al., (2011)
	Question your contributions to reach the highest possible performance levels	Camison & Forès, (2010); Jimenez-Barrionuevo et al., (2011)
	Rapidly raise any doubts within the network in order to avoid any misunderstanding that would inhibit the accomplishment of the common project objectives	Flatten et al. (2011); Noblet et al., (2011); Benhayoun-Sadafiyine et al., (2018)
	Be open to eventually allocate additional resources (Human and financial) to the project	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)
	Be open to provide help to any actor within the network	Camison & Forès, (2010); Benhayoun-Sadafiyine et al., (2018)
	Be open to possible modifications of your contributions based on the project needs	Flatten et al. (2011); Benhayoun-Sadafiyine et al., (2018)

Source : literature review

Absorptive capacity provides an ability to firms to reorganize its resource bases and dynamically adapt to constantly changing market conditions to achieve a better performance.

5. CONCLUSION

Based on the literature review, several conclusion can be made:

1. Acquisitions reflect an organization's ability to identify and access external knowledge that is potentially useful for SMEs operations. This includes mastering exploratory techniques and relying on interpersonal skills to gain valuable knowledge from external experts.
2. Assimilation involves interpreting and confrontational activities between new knowledge and previous organizations, and communication skills to effectively disseminate new knowledge.
3. Application or exploitation involves retrieving created and internalized knowledge for effective use and requires the internalization of new knowledge by combining it with previous organizations to achieve new integrative schemes

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