

Knowledge Absorptive Capacity (KAC) perceptions among Algerian top managers: A case study of a public company

MENANA NEKKAL ^{*1}, ABDELBAKI BENZIANE ², HADJ NEKKA ³

¹ Laboratory of Sustainable Development Engineering, University Responsibility and Social Integration (IDDRUS), Oran 2 University Mohamed Ben Ahmed (Algeria),
nekkal.menana@univ-oran2.dz

² Research Laboratory on Euro-Mediterranean Economies (LAREEM), Oran 2 University Mohamed Ben Ahmed (Algeria), benziane_baki@yahoo.fr

³ Angevin Research Group in Economics and Management (GRANEM), Angers University (France),
hadj.nekka@univ-angers.fr

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Abstract:

The study aims to gain a deeper understanding of the Knowledge Absorptive Capacity (KAC) concept and its dimensions and to explore how managers within Algerian companies perceive it and comprehend its significance. This qualitative exploratory research relied on semi-structured interviews with 22 top managers from SONELGAZ Gas Transport (SGT) company. The results highlight that the majority of respondents demonstrate a broad and imprecise apprehension of this concept, exhibiting a limited awareness of the existence of certain dimensions inherent to the knowledge absorption process.

Key Words: Absorptive capacity, perceptions, Knowledge transfer, dimensions of Absorptive capacity, power sector.

JEL Classification: M19 ∙ L29 ∙ D83

* - Corresponding author: MENANA NEKKAL, e-mail: nekkal.menana@univ-oran2.dz

1. Introduction

Organizations increasingly recognize knowledge as a critical strategic resource in contemporary business landscapes characterized by rapid technological advancements and global competition (Irain et al., 2022). Identifying, integrating, and effectively utilizing external knowledge have become key determinants of organizational success and innovation (Cohen & Levinthal, 1990; Gignac P., 2017; Nonaka, 2009). This capability, known as « Knowledge Absorptive Capacity » (KAC), is vital for enabling companies to manage changing environments, innovate, and maintain competitive advantages (Zahra & George, 2002).

Cohen and Levinthal (1990) first introduced the concept of Knowledge Absorptive Capacity (KAC), which was initially defined as "a firm's ability to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends" (p. 128). In the last three decades, this concept has gained significant traction in organizational research, with researchers exploring its various dimensions, antecedents, and outcomes (Lane & Pathak, 2006; Volberda et al., 2010). The concept has been commonly used in research of the performance of firms in competitive environments, particularly in terms of innovation and knowledge management (Apriliyanti & Alon, 2017).

While research on absorptive capacity has been commonly used in research such as the transfer of knowledge, organizational learning, innovation, performance of firms or strategic alliances. Some elements of the capacity to absorb remains unclear. Many investigations focused on large firms in Europe and America, leaving a significant knowledge deficiency on the way KAC manifests in developing countries (Abas et al., 2015; Rezaei Zadeh et al., 2020). This bias toward geographic regions limited our capacity to understand the impact of cultural, economic, and institutional factors on the development of absorptive capacity.

Moreover, additional researches are necessary to explore the perceptions of KAC and its stages, practically from the view point of managers. This gap is particularly evident in Algeria, the specific challenges and benefits associated with KAC have not been adequately explored yet.

Third, despite the significant advancements in the literature regarding KAC, there is still a necessity for more empirical validation of KAC constructs in different situations (Apriliyanti & Alon, 2017; Engelman et al., 2015). The significance of this is illustrated by the ongoing debate about the stages and processes of KAC models (Ambrosini & Altintas, 2019) and the different origins, mechanisms and results of their discussion (Chaudhary & Batra, 2018).

This study examines how top managers in Algerian companies perceive Knowledge Absorptive Capacity and its dimensions. We embrace Lane et al. (2006) approach to understanding absorptive capacity, which they define as "a firm's ability to utilize externally held knowledge through three sequential processes: (1) recognizing and understanding

potentially valuable new knowledge outside the firm through exploratory learning, (2) assimilating valuable new knowledge through transformative learning, and (3) using the assimilated knowledge to create new knowledge and commercial outputs through exploitative learning" (Lane & Pathak, 2006, p. 856).

Our approach allows us to examine the existence of KAC practices and managers understanding of their implementation. Lane et al. (2006) framework was chosen due to its holistic approach, which examines both the processes and outcomes of knowledge absorption. Our study gains from this definition as it provides a possibility to examine the factors that may impact the comprehension of KAC in the Algerian setting in depth.

Thus, the main question guiding this study is: ***How is Knowledge Absorptive Capacity and its dimensions perceived by top managers in Algerian companies?***

To answer this question, we choose Sonelgaz Gas Transport (SGT), a company operating in the Algerian power sector. This sector is an important part of the Algerian economy[†], and, due to its knowledge-intensive nature, is an ideal context for studying absorptive capacity. Furthermore, the strategic importance of the sector and its presence in global markets provide a valuable environment to examine how KAC is perceived and implemented in a developing country context.

To gain a deeper understanding of managerial perceptions of KAC, we adopted a qualitative research approach. This approach, allows as to discover the intricacies of how KAC is understood and implemented.

The study implications for leaders in developing countries can be seen by linking theoretical models to real-world applications and introducing empirical evidence from a different context.

The first section presents the literature review on Knowledge absorptive capacity (KAC) and highlights its conceptual development, critical debates and various dimensions. In the next section, we present our methodological approach and explain our data collection and analysis methods. We then present our results and discuss how they relate to the current literature and what new insights they provide. Finally, we discuss the theoretical and practical implications of our findings, acknowledge the limitations of our study, and suggest avenues for future research.

2. Literature review:

2.1 Knowledge Absorptive Capacity (KAC): conceptualization and dimensionality

Knowledge absorptive capacity (KAC) is considered one of the most important constructs in organizational research in recent decades (Lane & Pathak, 2006; Rezaei Zadeh et al., 2020). Cohen and Levinthal (1989, 1990, 1994) introduced it as: « the ability of individuals within an organization to recognize the value of new external information, to assimilate it, and use it as a knowledge resource for commercial purposes. » (Cohen & Levinthal 1990, p. 128).

[†] The power sector includes natural gas and oil, account for about 20% of Algeria's GDP and 85% of its export earnings.

The Recognizing of the value of new knowledge, refers to an organization ability to locate, identify, evaluate, and acquire new knowledge relevant to it.

The second dimension in the KAC process is **Assimilation**, where newly learned knowledge is integrated into existing knowledge before being distributed throughout the organization (Lane et al., 2006). According to Jansen, Van Den Bosch, and Volberda (2005), assimilation refers to actions or procedures that enable knowledge to be examined, processed, understood, and internalized.

Eventually, **Exploitation** enables organizations to incorporate new information into their daily operations (Cohen & Levinthal, 1990). It enables businesses to innovate, develop new skills, and enhance existing ones (Zahra and George, 2002). Later, it can boost an organization competitive advantage (Todorova & Durisin, 2007).

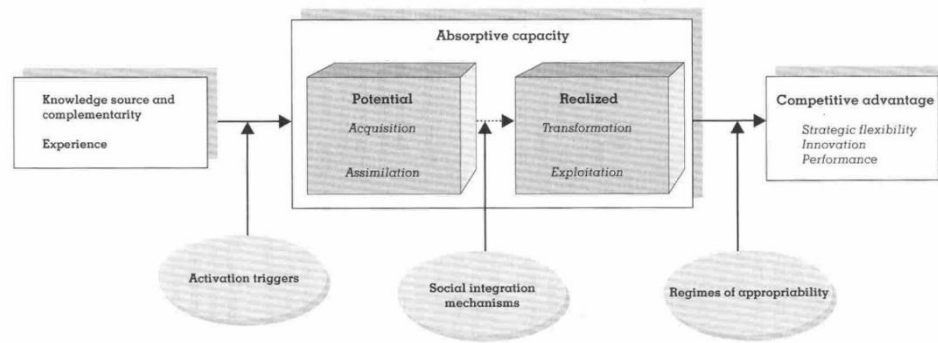
A firm ability to understand and use new knowledge grows over time. It depends on what the company has learned before. The more a company knows, the better it can learn new things related to what it already knows (Cohen & Levinthal, 1990; Liao et al., 2007). The knowledge base exists at the organisational and individual employee levels (Brinkerink, 2018; Cohen & Levinthal, 1990; Eniola, 2023). Consequently, the internal sharing of knowledge among employees is crucial, enabling others to acquire this knowledge and facilitate innovation (Daghfous et al., 2023). However, lacking internal absorptive capacity, ambiguities, and communication difficulties can hinder this knowledge transfer process (Pütz & Werner, 2024).

Moreover, the initial conceptualization by Cohen and Levinthal (1990) restricts the concept of Knowledge Absorptive Capability (KAC) to depend only on a company prior knowledge. However, this limited perspective needs to capture the full complexity of the construct (Balle et al., 2020; Lane & Pathak, 2006).

Under these conditions and based on the primary foundation laid down by Cohen and Levinthal (1989, 1990), the KAC definition has been significantly developed by many authors, Dyer and Singh (1998), Kim (1997, 1998), Van den Bosch et al. (1999), but most notably by Lane et al. (2006) and Zahra and George (2002).

Zahra and George (2002) began to clarify the concept of KAC concerning its domain, their research expands on Cohen and Levinthal (1990) work by viewing KAC as a dynamic and multidimensional construct that includes the acquisition, assimilation, transformation, and exploitation of knowledge, they conceptualize KAC as « **a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic capability**” (Zahra and George 2002, p. 186). They consider KAC at the organizational level, suggest a conceptual model and identify its antecedents, components, contingencies, and outcomes (Figure 1).

Fig.1. Absorptive capacity according to Zahra & George (2002), p. 192



In addition, Zahra and George (2002) expressed disapproval of using metrics such as R&D expenditures or the number of R&D technical workers in a department to assess a firm absorptive ability. They argued that such data overlooks the contributions of the department's members (Liao et al., 2007). They identified the Knowledge Absorptive Capacity (KAC) concept as a learning process consisting of two different consecutive moments: Potential Absorptive Capacity (PAC) and Realized Absorptive Capacity (RAC). Though both are rooted in Cohen and Levinthal's definition of KAC, they substitute "acquisition" for "recognizing the value" and add the dimension of knowledge "transformation" (Hussain et al., 2022).

The subdivision of KAC into potential and realized forms enables a detailed examination to explain why some companies have better dynamic capabilities than others and thus have a competitive advantage (Makhloufi et al., 2024; Pütz & Werner, 2024; Todorova & Durisin, 2007; Zahra & George, 2002).

The first ability, which represents the **“potential AC” (PAC)**, is seen as a rule and process of acquisition and assimilation of new external knowledge (Zahra & George, 2002). PAC is based on two components or capabilities: attaining and integrating new external Knowledge (Hussain et al., 2022). Assimilation ensures that this acquired knowledge is understandable. Subsequently, it needs to be transformed and exploited within the organization. More the effort invested, the faster the ability emerges (Lukito-Budi et al., 2022).

The authors refer to the second capability as **“realized AC” (RAC)**. This includes the company ability to transform and exploit the assimilated knowledge. It refers to create processes that combine both existing and newly acquired knowledge (Zahra and George, 2002). This dimension illustrates an organization's competence to develop and improve routines that facilitate the combination of new external knowledge with existing knowledge (Lukito-Budi et al., 2022).

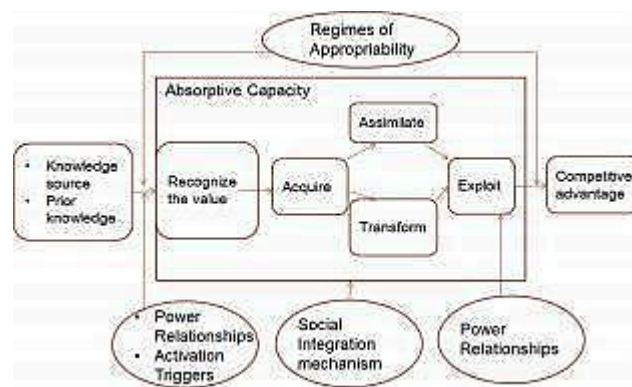
According to Zahra and George (2002), companies can acquire and integrate knowledge but may require additional resources to exploit and capitalize on this knowledge to generate profits effectively. Prior to Zahra and George, most research focused on the « skills » aspect of absorptive capacity, emphasizing the skills and abilities that employees should possess while neglecting to examine their desires and commitment to their work. Commitment is the essential factor that determine the company potential for success (Balle et al., 2020; Pütz & Werner, 2024; Zahra & George, 2002).

The dynamic exchange between PAC and RAC demonstrates the spread of knowledge over time and enhances individual knowledge by facilitating the process of knowledge creation (Nonaka and Takeuchi, 1995). This exchange occurs through interactions among different levels, individuals, and groups (Vasconcelos et al., 2019).

After, the literature shows that Zahra and George definition (2002) was first tested by Jansen, Bosch, and Volberda (2005). The distinction between PAC and RAC was made by analyzing the impact of organizational procedures on each dimension (Jansen, 2005). The KAC mechanisms were categorized into coordination, systematization, and socialization. The authors suggest that the coordinating mechanisms enhance PAC, while the other two focus on RAC.

After that, Todorova and Durisin (2007) criticize Zahra and George (2002) reconceptualization based on the Cohen and Levinthal (1989, 1990, 1994) studies. They proposed a refined model. Their model addresses all ambiguities and limitations by offering substantive changes to Zahra and George model (Hussain et al., 2022).

Fig .2. Absorptive Capacity according to Todorova & Durisin (2007), p. 776



An essential criticism is the omission of "recognizing the value" in Zahra and George model. Todorova and Durisin (2007) argue for its reintroduction as a crucial first step in the KAC process, emphasizing a firm ability to identify valuable external knowledge. They also challenge the sequential nature of the model, particularly regarding assimilation and transformation. They state that knowledge transformation is not the step after knowledge assimilation but represents an alternative process linked to assimilation by multiple paths" (Todorova & Durisin, 2007, p. 775). This re-conceptualization suggests a more dynamic interaction between these processes, potentially blurring the distinction between potential and realized absorptive capacity proposed by Zahra and George (Versiani et al., 2021).

Todorova and Durisin (2007) suggested substantial modifications to contingent elements, asserting that social integration mechanisms impact all components of the KAC. The authors offer the concept of "power relationships" as a novel factor that affects the relationship

between KAC and competitive advantage, as well as the relationship between prior knowledge and KAC.

Todorova and Durisin (2007) and Patterson and Ambrosini's paper (2015) emphasise that KAC is an iterative process and rejects Zahra and George's more linear process model. They indicate that knowledge assimilation occurs not only in one component or step in the KAC process but should be recognized continuously throughout the acquisition, transformation, and exploitation phases. For this reason, they split the component of Assimilation into two sub-components: "assimilate before" and "assimilate after acquisition."

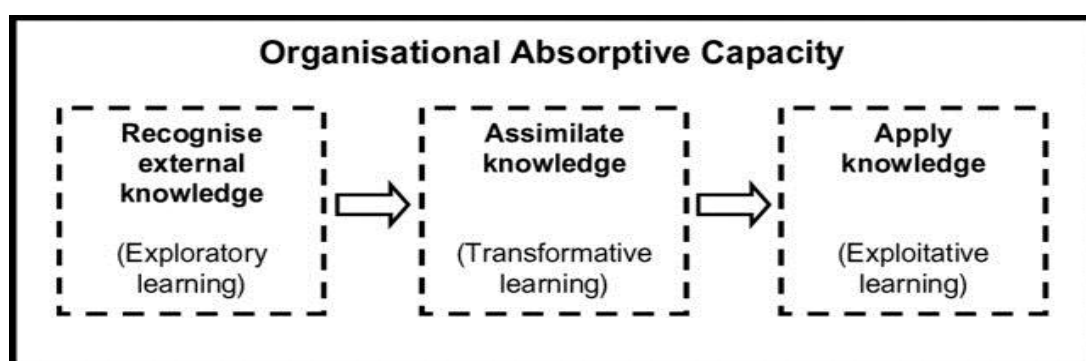
While these refinements offer valuable insights, it is essential to note that they approach KAC from a different perspective than that of Zahra and George (2002). As Versiani et al. (2021) emphasize, Todorova and Durisin focus on the degree of knowledge change and combination, while Zahra and George point out knowledge transformation processes. This distinction suggests that both models offer complementary rather than contradictory views on the contrast of absorptive capacity.

Teece (2018) emphasizes the importance to acquire essential resources and stay informed about critical trends to support the development of organizational capabilities. Complementing this view, Gross (2017) highlights the role of managers in these processes. The multifaceted nature of absorptive capacity encompasses various dimensions, including internal knowledge sharing and integration, which collectively enhance a firm's ability to recognize, assimilate, and apply new external knowledge (Hussain et al., 2022).

2.2 Dimensions of Knowledge absorptive capacity (KAC): choice of Lane, Koka, and Pathak model (2006)

We deploy **Lane, Koka, and Pathak's (2006)** conceptualization in this study for several reasons. This model conceptualises absorptive capacity as "a firm's ability to utilise externally held knowledge through three sequential processes : (1) recognising and understanding potentially valuable new knowledge outside the firm through exploratory learning, (2) assimilating valuable new knowledge through transformative learning, and (3) using the assimilated knowledge to create new knowledge and commercial outputs through exploitative learning" (Lane et al., 2006, p. 856).

Fig .3. Absorptive Capacity according to Lane & al (2006).



A key aspect of this model, that is consistent with our research context is the recognition of the broader influence of the institutional environment on absorptive capacity. Lane and Lubatkin

(1998) emphasize that the institutional context significantly influences the extent and relative importance of absorptive capacity. This view admit that organizations are embedded in an institutional framework, suggesting that their culture and practices, especially those related to knowledge absorption, are often either direct reflections or considerations to the rules and structures in their environment (Paauwe & Boslie, 2003). This considerations are crucial, in our study as they allows us to explore the influence of the institutional context on the process of knowledge absorptive capacity.

Lane et al. (2006) revisit Cohen and Levinthal's (1990) basic definition, by introducing a comprehensive and nuanced approach of the notion of knowledge absorptive capacity that overcomes the limitations of previous models. Their work extends beyond the focus on R&D intensity as the only measure of absorptive capacity. They acknowledge that factors such as a firm's size, age, organizational routines, HR practices, and practices of knowledge management can impact its ability to absorb and exploit external knowledge (Mowery et al., 1996; Lane & Lubatkin, 1998 ; Lane et al., 2001 ; Meeus et al., 2001 ; Szulanski, 1996).

By this approach, organizations can be able to conduct a more analysis of how they identify, assimilate, transform and exploit external knowledge (Zahra and George, 2002 ; Todorova and Durisin, 2007).

Integrating the notion of organizational memory, Lane et al model skillfully aviod the contentious debate surrounding the dimensions of assimilation and transformation processes (Garud and Nayyar, 1994). By acknowledging the dynamic and iterative nature of knowledge acquisition and transformation within organizations, this model effectively incorporate memory into its conceptual framework.

The importance of the model to our research context is enhanced by its adopting a holistic perspective, it effectively apprehend the cyclical process of knowledge absorption and use within organizations, incorporating feedback loops that connect commercial and knowledge outcomes to absorptive capacity.

That's why we position our research within a framework that apparencies the complexity of the concept of absorptive capacity and allows a strong base for exploring its multidimensional nature and contextual conditions (Hussain et al., 2022). This approach allows us to contribute to the ongoing refinement and extension of absorptive capacity theory by addressing methodological flaws identified in previous conceptualizations and facilitating a more exhaustive interpretation of this vital organizational ability.

3.Methodology:

The current study employs an inductive, qualitative approach that employs a single case study design (Levitt et al., 2018), to explore the understanding of the concept of KAC and its dimensions. The purpose is to obtain the views of top managers on the importance of each

dimension of knowledge absorptive capacity (exploration, transformation and exploitation) for their company -Sonelgaz Gas Transport (SGT), a subsidiary of the Algerian national energy

company (SONELGAZ) operating in the strategic area, catch up with power sector. SGT plays a crucial role in Algeria energy infrastructure and is responsible for the transport and distribution of natural gas throughout the country.

The selection of a single case study allows an in-depth study of the phenomenon in its context and the strategic importance of the energy sector in Algeria, a country heavily dependent on its hydrocarbon resources for its economic development. Yin (2009) states that a case study examines a modern phenomenon in its actual environment, especially when the distinction between the phenomenon and the environment is unclear. By the focalization on the experiences of top managers, we aim to discover the nuanced ways in which knowledge absorption manifests or not itself in the organizational context of SGT.

Furthermore, the study purpose is to shed light on the multidimensional character of the knowledge absorptive capacity, the deficit faced by the company in developing this capacity, and the potential opportunities to develop it, particularly in the context of the Algerian power sector.

The top managers designated from different directions and departments including technical, operating system, strategy and human resources to ensure an exhaustive view of the organization knowledge absorptive practices. The face-to-face interviews each lasted between 45 and 90 minutes and enabled an in-depth discussion of the participants' perspectives and experiences. Verbatim were recorded and transcribed to ensure the accuracy of data analysis. By the 22nd interview, data saturation was attained, indicating that no new themes or insights emerged from the additional data collection.

Based on the theoretical framework an interview guide was developed. It was organized to examine key topics such as the organization's knowledge exploration, transformation and exploitation processes, internal knowledge sharing mechanisms and the application of new knowledge in decision-making. An invitation letter explaining the objectives of the research and the expected contribution of their participation was sent to the email addresses of potential participants. Initially 30 participants answered, but some annulled due to time and work constraints.

To better understand the firm and their environment, observations and documents analyses contributed as complementary evidence in data collection. This included participation in management meetings, observing sessions and examining internal reports, strategic plans and training programs. These supplementary data sources provided useful context and helped triangulate the data collected from the interviews.

The content analysis method was chosen to describe and interpret the content of the interviews, it allows the identification, analysis and reporting of patterns within the data (Braun & Clarke, 2006). This method was used for its flexibility and faculty to provide a comprehensive, detailed data report while maintaining theoretical framework. NVivo 14 software was employed to facilitate the coding process and to organize the emerging themes, improving the accuracy and transparency of the analysis. The coding process involved multiple iterations, moving from initial descriptive codes to more explanatory themes that apprehended

the underlying patterns and connection between the data.

All data were anonymized and stored securely to ensure confidentiality, with access restricted to the research team. Participants were assured that their answers would not be identifiable in the published results and encouraged them to speak openly about their experiences and perspectives.

4. Results from the interviews content analysis and discussion:

Analyzing the content of the interviews was the most appropriate method for confronting theoretical constructs with empirical observations. In this context, we will present the main results related to the studied concepts. It should be noted that the research aims to avoid generalizing the results. Nevertheless, it provides a contextual perspective on managers perceptions of knowledge absorptive capacity and its dimensions.

4.1 Absorptive capacity dimensions analysis:

4.1.1 Content Analysis of « Knowledge Exploration Dimension »:

Our interviews showed that most respondents often mentioned knowledge acquisition and assimilation simultaneously, even if the nature of the actions associated with the realization and stage transitions differed, making it difficult to identify each dimension separately.

According to **Table 1** presented below, several categories of elements are associated with the dimension of knowledge Exploration.

Table 1. Themes retained for Knowledge exploration dimension.

Dimension	Interpretation Themes
Knowledge Exploration	-Information search. - Resource mobilization. - Staff motivation. - Strengthening communication. - Collaboration with external partners. - Communication of newly acquired knowledge. - Experience sharing. - Promotion of collective work. - Calling upon specialists. - developing competencies by implementing appropriate human resources management practices.

Source: own elaboration (from Nvivo 14)

According to the interviewed top managers, their company is committed to identifying and assimilating new knowledge from various external sources. A specific area highlighted in terms of inter-company knowledge acquisition is learning from other subsidiaries of the Sonelgaz group and sharing experiences and best practices. In this perspective, employees actively participate in trade shows, exhibitions, training sessions, professional meetings, and conferences. These initiatives aim to discover new solutions applicable within the company.

Subsequently, the interviewees link the dimension of knowledge assimilation to disseminating new knowledge to subordinates or colleagues during work meetings and encounters. The objective is to evaluate the effectiveness of this new knowledge and its potential to impact the company. Moreover, employees meet to share newly acquired knowledge from training sessions. Company top managers also provide presentations to transmit new ideas learned to others.

A crucial finding emerged regarding cooperation with other organizations. The top managers unanimously view the development of both national and international collaborations as vital for the company growth and knowledge exploration. One top manager emphasized, *"Expanding and formalizing our domestic and international cooperative networks is beneficial and essential for our future competitiveness and innovation."*

The company underdeveloped international relations hinder its ability to fully understand and contextualize global knowledge. A technical director explained, *"Without regular interaction with international counterparts, we struggle to grasp the nuances of how advanced practices could apply to our specific circumstances."* Another top manager admitted, *"Our engagement with international partners and practices is minimal. We know global trends, but our connections beyond our borders are few and far between."* Another director remarked: *"Historically, our focus has been predominantly local and regional. While we recognize the potential value of international knowledge, our limited global engagement has been a significant barrier to leveraging it fully."* While current collaborations contribute to knowledge exchange, top managers recognize the need to strengthen and formalize these relationships, especially in the international arena.

The respondents are particularly keen on intensifying personnel exchanges. *"Facilitating more hands-on experiences with partners is a priority. It is crucial for improving our ability to assimilate and apply new knowledge effectively,"* stated an HR director.

Overall, the interviewees speech demonstrates a strong emphasis on the importance of creating an open environment, as discussed by Camisón and Forés (2010), and on fostering relationships and collaboration with other institutions to gather information, acquire new knowledge, and stay updated on trends (Zahra and George, 2002; Daghfous, 2004).

Several top managers also mentioned shared decisions. For the interviewees, sharing decisions with team members promotes engagement and a feeling of belonging.

Sunday and thursday formal meetings are the central moments of sharing between the managers; everyone can make suggestions about internal processes. Management makes decisions but with the input of teams and employees.

This result shows that employees more significant participation in decision-making has turned them into prospective recipients of new knowledge (Cohen and Levinthal, 1990; Jansen et al., 2005). The interviews show that their company has managers with a diverse knowledge base, and the assimilation of external information acquired is facilitated by the employees diverse levels of education and technical knowledge. (Cohen and Levinthal, 1990; Zahra and George, 2002).

Content analysis of the verbatims from top managers at Sonelgaz Gas Transport (SGT) also reveals significant challenges in the company training programs and their impact on Knowledge Absorptive Capacity. The data highlights three primary issues: centralization of decision-making, lack of flexibility, and misalignment with strategic objectives. A top manager explains the centralized nature of training decisions: *« Our training programs, while regular, often seem disconnected from real-world challenges and needs. It feels more like a bureaucratic exercise than a genuine attempt to develop our skills improve »*. This centralization contributes to a lack of flexibility, as another director points out: *"Our activities are constantly changing, but our training programs are not keeping pace. We need more flexible, responsive learning opportunities that quickly adapt to new technologies and market dynamics."*

Furthermore, the mismatch between training programs and SGT strategic goals is highlighted by a top manager who explains: *"The generic nature of our training does not take into account the context of Algeria power sector and the specific knowledge gaps in our roles. This misalignment affects our ability to absorb and use new information effectively."*. These findings indicate that the training programs of SGT, need to more adequately support the development of the organization absorptive capacity. This situation limits the ability of the company to effectively identify, assimilate and apply new knowledge in the dynamic power sector.

The results regarding the exploration dimension of absorptive capacity in SGT are consistent with Lane et al. (2006) definition. The company show its commitment to valuing and acquiring knowledge from the external environment through various activities. This approach mirrors that of Lane et al. Described exploratory learning process in which organizations aim to value and acquire knowledge from the external environment.

However, the findings also highlight some challenges that contrast with the ideal theoretical scenario. The underdeveloped nature of SGT international relations hinders its ability to fully understand and contextualize global knowledge, potentially limiting the breadth of its exploratory capabilities. Additionally, the rigid and poorly aligned training programs suggest that while exploration is present, it may not be as effective or strategically focused as the theory proposes. These challenges indicate that while SGT engages in exploratory activities,

there is hope for improvement to fully realize the potential of this dimension as outlined in the theoretical framework.

Following the same work logic, we will conduct a content analysis of the knowledge transformation and exploitation dimensions.

4.1.2 Content Analysis of « Knowledge Transformation Dimension »:

Based on our qualitative research, the identified verbatim can be restructured according to the information drawn from respondents. The transformation dimension of knowledge can be approached as a set of themes presented in Table 2 below.

Few managers address **the knowledge transformation dimension**; for most of the interviewed persons, this dimension is non-existent in their perceptions, or they are unaware of its existence: *"We do not have to change or rectify acquired knowledge because often these present answers to our specifications."*

Table 2. Themes retained for Knowledge transformation dimension.

Dimension	Interpretation Themes
Knowledge Transformation	- Knowledge structuring - Sharing information - Ensuring employee motivation and involvement - Adapting organizational structure to objectives

Source: own elaboration (from Nvivo 14)

Our analysis of verbatim reveals structured processes for identifying knowledge gaps but a notable absence of explicit knowledge transformation practices. The top Managers describe activities for identifying deficiencies and initiating learning, yet their statements do not directly express the transformation of knowledge into organizational practices. This absence may be attributed to rigid organizational structures, resistance to change, and limited motivational tools, as evidenced by comments like *"There is a comfort in maintaining the status quo that's hard to overcome"* (Top Manager). Implementation challenges and limited global exposure further hinder knowledge adaptation.

These findings contrast absorptive capacity theories (Zahra and George, 2002), emphasizing transformation as crucial. The lack of explicit transformation processes, likely due to organizational rigidity and inadequate incentives, highlights a critical area for improvement in SGT absorptive capacity, necessitating attention to structural and cultural factors.

Furthermore, the analysis by Sonelgaz Gaz Transport (SGT) stressing the crucial contribution of informal communication in knowledge transformation, a key element of absorptive capacity. However, the design of the workplace hinders these spontaneous interactions, as one top manager noted: *"We miss a space where we can have spontaneous conversations with colleagues from another departments. These informal chats often lead to valuable insights and collaborations."* This limitation directly affects the company ability to transform acquired knowledge into new insights.

The knowledge transformation dimension of absorptive capacity in SGT diverge meaningfully from the theoretical framework of Lane et al. (2006). While theory emphasizes the importance of developing routines to combine existing and new knowledge, our results show that this dimension needs to be recognized and embraced by SGT top managers. The lack of explicit knowledge transformation practices contrasts sharply with theoretical expectations. Although there are structured methods for identifying knowledge gaps, there needs to be more routines for integrating new knowledge into existing knowledge. Rigid organizational structures, resistance to change, and limited motivational tools likely contribute to this gap.

These results highlight a critical area for developing SGT absorptive capacity and suggest the need to develop explicit strategies and routines for knowledge transformation to better align with the theoretical model.

4.1.3 Content Analysis of « Knowledge Exploitation Dimension »:

The interviewees described a limited information exchange system in SGT company. One participant noted, *"We have a sharing tool, but it's mostly for company indicators and goals. Many employees can access and enter the necessary information."* However, this system needs to be revised for comprehensive knowledge management. Another respondent highlighted a key weakness: *"our routines for storing information and acquired knowledge are fragile. It creates obstacles for many employees to access and apply previously internalized knowledge"*. This suggests a gap in the company ability to effectively store and use its collective knowledge.

Our analysis of knowledge exploitation in Sonelgaz Gas Transport (SGT), also shows that political decisions have a significant impact on the implementation of the acquired knowledge. Despite SGT efforts to absorb and transform new knowledge, project implementation often depends on factors beyond the company's immediate control. A top technical manager highlighted this challenge : *"We may develop innovative solutions based on our market research and benchmarking, but often the final go-ahead depends on decisions made at the governmental level."* This political dimension increases the complexity of the knowledge exploitation process and sometimes leads to promising projects being put on hold due to mismatch with political priorities.

These results reveal a potential gap between SGT absorptive capacity and its ability to fully use acquired knowledge. While the company demonstrates the ability in identify and assimilating new knowledge, translating this knowledge into concrete projects may be delayed or changed due to political considerations. These findings underscore the need for strategies to balance organizational innovation with political realities in the knowledge exploitation process, particularly given SGT status as a state-owned enterprise in the energy sector.

Table 03 summarizes the primary interpretation of the Knowledge exploitation dimension based on the interviews with the Top managers.

Table 3. Themes retained for Knowledge exploitation dimension.

Dimension	Interpretation Themes
Knowledge Exploitation	- Development and application of new knowledge/new projects - Technology adaptation - Accomplishment of strategic objectives defined by the company - Problem-solving - Succeeding in challenges

Source: own elaboration (from Nvivo 14)

In addition, our content analysis reveals that organizational culture presents significant challenges to generating and applying new ideas, primarily due to resistance to change and a need for more practical motivational tools in human resource management practices. Unlike the ideal scenario where idea generation is embedded in the company culture, SGT needs help motivating employees to participate in knowledge application and innovation. The company HR practices are limited in their approach to motivation, relying primarily on an individual performance bonus and an annual performance bonus. This narrow focus must address the broader aspects of employee engagement and innovation.

A top manager expressed this concern: *"Our current reward system does not encourage thinking outside the box. The performance bonuses are nice but do not specifically reward innovation or knowledge sharing."* Another interviewee echoed this sentiment: *"We have talented employees with fresh perspectives, but there is little incentive to propose new ideas beyond the standard bonuses. It feels like a missed occasion"* (Top Manager).

This situation is in stark contrast to factors that have a positive impact on knowledge exploitation. According to research, an open organizational climate that encourages and rewards the submission of new ideas is crucial for effective knowledge absorption and transformation (Daghfous, 2004; Jansen et al., 2005; Flatten et al., 2011). However, the existing culture and HR practices at STG hinder rather than facilitate this process.

In summary, our results suggest a significant gap between the theoretical ideal and the practical reality at SGT. The knowledge exploitation dimension of absorptive capacity shows, compared to the definition of Lane et al. (2006) a mixed picture. While SGT addresses some aspects of knowledge exploitation, it faces significant challenges in fully realizing this dimension. The company ability to identify and assimilate new knowledge is consistent with theory, but political influences and organizational culture hinder the translate on of this knowledge into concrete projects and commercial applications. Policy decisions often impact the implementation of acquired knowledge, creating a gap between the SGT absorptive capacity and its ability to exploit this knowledge fully.

In addition, organizational culture, characterized by resistance to change and limited motivational tools, dampens the process of knowledge transformation and application. These factors, along with a lack of incentives for knowledge sharing and innovation, result in SGT

exploitation practices falling short of the theoretical ideal, highlighting areas for improvement in the company absorptive capacity.

4.2 Recognition and Importance of the concept of « Knowledge Absorptive Capacity »:

Similarly, during the semi-structured interviews, we will identify the verbatim related to knowledge absorptive capacity. For this purpose, table 4 will be presented below, along with their analysis and interpretation.

Table 4. Themes retained for the concept of Knowledge absorptive capacity

Concept	Interpretation Themes
Knowledge Absorptive Capacity	- Ability to search for and use information. - Mastering knowledge management procedures. - Maintaining direct communication with the external environment. - Adjustment of organizational structure in alignment with company strategy. - Improvement of human resource competencies. - Accompaniment and encouragement of human resources in achieving company objectives. - Knowledge transfer. - Adaptation to new technologies.

Source: own elaboration (from Nvivo 14)

The concept of knowledge absorptive capacity, as understood by top managers at Sonelgaz Gaz Transport (SGT), reveals a complex and often divergent perception compared to established theoretical frameworks, particularly that of Lane et al. (2006). While the term is generally recognized, it is frequently interpreted in narrow, broad, or ambiguous ways. One top manager candidly admitted, *"It is a concept too abstract, with no real concrete actions, too theoretical yet."* Another described it as *"a very academic word."*

Many top managers associate absorptive capacity primarily with employee capabilities, competencies, and knowledge. One interviewee stated, *"The knowledge absorptive capacity relies mainly on the competencies and know-how developed within the company."* This understanding partially aligns with the exploratory aspect of Lane et al.'s (2006) framework but needs to encompass its transformative and exploitative dimensions fully.

Notably, there needs to be more understanding of the various stages of the absorptive capacity realization process, particularly the transformation dimension. Some managers reduce the concept to knowledge acquisition, as evidenced: *"For me, knowledge absorption is the acquisition of knowledge from external partners."* This gap in understanding contrasts with

Lane et al.'s (2006) emphasis on separating these processes to comprehend the distinct mechanisms behind each element.

Interviewees provided examples of knowledge absorptive capacity mainly related to the company structure and human resource aspects. As one top manager noted, *"The accomplishment of the absorptive capacity stages is strongly linked to the knowledge and experiences of employees."* Others recognized its connection to collective intelligence: *"Certain dimensions of the absorptive capacity process call upon collective intelligence."*

We can say that, the process of absorptive capacity at SGT is in its infancy. As one top manager candidly admitted, *"It is not formalized; it is just in my mind and not in my plan of activities."* This suggests that the concept must still be fully integrated into the company formal strategies and operations, diverging from Lane et al (2006) vision of a well-established, multidimensional capability.

Internal contextual factors significantly influence absorptive capacity of SGT. A top manager noted: *"Our hierarchical structure often slows down decision-making and the flow of knowledge."* This bureaucratic environment and resistance to change inhibit absorptive capacity more than external pressure. A technical top manager added: *"We are under pressure from the industry, but our internal processes are the real barrier to rapid adaptation."*

A comprehensive assessment of internal and external factors affecting knowledge processes is crucial to improving absorptive capacity. A department head emphasized: *"We need to address our internal communication problems before we can effectively utilize external knowledge."* This is consistent with Lane et al (2006) recognition of the importance of internal social integration mechanisms.

The context of SGT as a state-owned company in the power sector requires a tailored approach to improving absorptive capacity. A board member stressed: *"General solutions don't work for us. We need strategies that take our specific regulatory and operational environment into account."* This highlights the need for SGT to develop targeted strategies that address its specific contextual challenges to improve its absorptive capacity. This aspect goes beyond the general framework of Lane et al.(2006).

While the concept is recognized, the perception of absorptive capacity at SGT needs to be more structured and comprehensive than Lane et al.(2006) theoretical framework suggests. This indicates a need for further development and formalization of this concept within the company, considering the varying interpretations influenced by different factors.

5.CONCLUSION

The objective of this study was to examine the perceptions of Knowledge Absorptive Capacity (KAC) and its dimensions among Algerian companies to top managers of Sonelgaz gas transport company. The purpose was to apprehend how these top managers interpret and use the concept in their cultural and economic environment, in order to contribute to the understanding of KAC in a developing economic country.

The results expose a complex and commonly divergent understanding of KAC among top managers of this company compared to theoretical models as so as presented by Lane et al. (2006). Although the concept is widely accepted, it is often interpreted in narrow, broad, or ambiguous ways. Many top managers associate KAC primarily with employee skills and knowledge acquisition rather than viewing it as a comprehensive process that includes the transformation and exploitation of knowledge. This aligns with Cohen and Levinthal's (1990, p. 128) original claim that "the ability to use external knowledge is a crucial component of innovativeness."

These results directly address the research question by highlighting the unique challenges and adaptations of KAC dimensions within the Algerian business landscape, particularly in the context of Sonelgaz gas transportation operations. The study found that internal contextual factors, such as hierarchical structures and resistance to change, significantly influence KAC implementation. As Volberda et al. (2010, p. 943) note, "Absorptive capacity is a multilevel construct that is influenced by intraorganizational antecedents."

This research has two implications. First, it helps expand the literature on KAC by providing insights from a developing economic context, thereby enhancing the global applicability of KAC theory. Second, it offers practical implications for Algerian companies, especially those in the power sector like Sonelgaz, by identifying areas where Knowledge Absorptive Capacity understanding and implementation can be improved.

Based on these findings, we recommend that Algerian companies, develop comprehensive training programs to broaden managers understanding of KAC beyond knowledge acquisition. They should implement strategies to address hierarchical barriers and resistance to change that hinder effective KAC implementation. It is also crucial to foster a culture that values external knowledge and encourages organizational transformation and exploitation.

By examining top managers perspectives at Sonelgaz gas transport, the study reveals practical implications for enhancing knowledge absorption processes in Algerian firms, potentially informing strategies for improving organizational learning and innovation capabilities.

However, this study has limitations. The focus on a single company may limit the transferability of the findings to other industries or sector within Algeria. Additionally, the reliance on managerial perceptions may only partially capture the actual KAC practices within the organization. While the study's qualitative nature provides rich insights, it limits the generalizability of the findings.

Looking ahead, this study opens up several avenues for future research. Comparative studies between different sectors within Algeria could identify industry-specific KAC challenges and best practices. Longitudinal studies tracking the evolution of KAC perceptions and practices

over time, particularly as companies in the power sector face increasing global competition and technological changes, would be valuable.

future research could focus on developing more refined measurement approaches for KAC that take cultural and economic differences into account. Furthermore, examining the relationship between KAC and firm performance in the Algerian context through mixed-method studies could provide valuable insights for scholars and practitioners.

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6. Appendices :

Appendices 1: Interview guide

1. How old are you ?
2. How many years of professional experience do you have ?
3. How many years have you spent in a top manager position ?
4. What methods do you use to acquire and recognize the value of external knowledge ?
5. Do you have tools or means that allow you to develop a capacity for assimilating external knowledge ?
6. By what means do you proceed with structuring and managing new knowledge ?
7. What can you tell us about your ability to use new knowledge in achieving your objectives ?

8. Do you think the concept of knowledge absorptive capacity goes through stages and exist in your company?

Appendices 2: Data of the interviewees

Participant N°	Age	Years of experience
Top manager 1	61	32
Top manager 2	50	25
Top manager 3	48	23
Top manager 4	55	27
Top manager 5	52	22
Top manager 6	53	29
Top manager 7	40	15
Top manager 8	40	17
Top manager 9	48	21
Top manager 10	59	30
Top manager 11	60	32
Top manager 12	45	22
Top manager 13	58	29
Top manager 14	42	19
Top manager 15	52	18
Top manager 16	49	20
Top manager 17	55	25
Top manager 18	54	30
Top manager 19	52	17
Top manager 20	38	15
Top manager 21	50	23
Top manager 22	45	16

