International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Importance of Participatory Leadership in The Valorization of the Knowledge within An Algerian Society / Case of the Center for Technological Studies and Services of the Building Materials Industry, By Abbreviation CETIM, That the Various Cement Factories, Subsidiaries of the GICA Group

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Abstract:
This article deals with one of the managerial devices necessary for the valorization of the knowledge available to a company in order to create a strategic advantage. It complements the two (02) articles**, N IJFMR23069085 and N IJFMR250133362 published respectively in November 2023 and in January 2025 in International Journal for Multidisciplinary Research** and which deals with the role of two managerial systems involved in the valorization of knowledge.
Through a qualitative research by single case study, our primary objective was to verify the existence and functioning of the participatory leadership in the valorization of knowledge within the Center for Studies and Technology Services of the Building Materials Industry. (CETIM) Subsidiary of the Groupe Industriel des Ciments d'Algérie (GICA), then to demonstrate how it allows the transfer of knowledge from the CETIM to the subsidiaries of the same Group and consequently, obtaining a strategic advantage from knowledge transferred.
Through the analysis of data collected, since the period from 2020 to 2022, in the field from two (02) methods of investigation (observation and interviews), the results showed that in addition to the managerial devices included in the literature review and set out in the conceptual framework, Information and Communication Technologies (ICT), other operational mechanisms involved in the valorization of knowledge was identified in the field.

Keywords: Knowledge, Knowledge management, the participatory leadership , CETIM, GICA, the valorization of knowledge.

1. Introduction:

The Knowledge management also called dynamic theory of knowledge, is introduces a new vision of the firm based on the idea that it is defined by its capacity to integrate and coordinate knowledge and create new ones. because, knowledge, defined by the theory of resource dependence **(Pfeffer J and Salancik G, 1978)** and resource-based theory **(Barney, 1991)** as a of the organization's resources, has been raised, notably by the theory based on knowledge **(Conner K R, 1996; Barney J, 2001; Kogut B and Zander U, 1992; Grant, 1996; Drucker P, 1999)** ranks as the most important resource for an organization, because it is considered the main resource for competitiveness and innovation of firms.

Indeed, the advent of the era of the knowledge economy has accelerated the renewal of strategic management and has established knowledge as the most important strategic asset important to businesses **(Porter M E, 2008 ; Tannery F et al., 2014 ; Burger Helmchen T, et al., 2016 et, Hussler C et Burger-Helmchen T, 2019).**

it was only in 1970 that knowledge was studied as a factor with unique properties **(Hussler C and Burger-Helmchen T, 2019)**. The knowledge-based approach in turn underwent a real boom, because it offers a new vision of the existence of the firm and wishes to position itself as complementary to resource theory. It attaches to knowledge a scope strategic, in view of its role in generating value for the firm, thus creating all a theoretical movement in favor of the valorization of knowledge. According to this approach, the organization is considered the main vector of production, transfer and combination of knowledge, the firm ensures the collection of knowledge externally and the availability and valorization of internal knowledge. Furthermore, preservation and exploitation of skills-related knowledge organizational measures specific to the core business of a company must be its priority, with, the human being as the first place of interaction, of creation and knowledge valorization.

Aligning with the scientific discipline of knowledge management and engineering knowledge, this article deals with an managerial device (participatory leadership) for management knowledge that a company can use to enhance its intangible capital with a view to creating a strategic advantage, and complements Two (02) articles, N **IJFMR23069085 and IJFMR250133362** respectively **published in November 2023 and January 2025 in International Journal for Multidisciplinary Research.**

Moreover, while integrating several approaches and models, the ambition of this article proposes to treat the importance of participatory leadership which intervenes as a managerial device involved in the valorization of knowledge, and to answer the question :

What is the importance of participatory leadership involved in the valorization of knowledge within an Algerian economic enterprise?

To respond to this problem, we opted for a qualitative approach, oriented towards a single case study conducted within the Center for Studies and Services Technologies for the Construction Materials Industry, by abbreviation CETIM – Subsidiary of the industrial group cements from Algeria, by abbreviation GICA. Our choice for the Algerian technical center for the construction materials producing industry is supported by its contribution to technical progress, improved productivity and the development of the Algerian construction materials industry. It is being transformed into a technological center comparable to internationally renowned technological centers.

Our primary objective is highlight the importance of participatory leadership in decision-making in direct relation to information sharing.

The methodology adopted follows:

- A hypothetico-deductive logic, according to which the body of hypotheses developed before the empi-

rical study can lead to conclusions and draw a consequence from empirical research. These hypotheses will be invalidated or confirmed, based on a logic of demonstration or proof which must be proposed;
-- And a constructivist paradigm, according to which constructed knowledge does not reflect an objective ontological reality but concerns the shaping of a world constituted by our experience.
The remainder of the paper is organized as follows: Section 2 reviews the relevant literature, Section 3 presents the research methodology, Section 4 results, section 5 discussion, while Section 6 provides the conclusion and recommendations.

2. Literature Review

Since the end of the 1990s and based on empirical studies, models or theories of knowledge generation have widely developed **(Tsoukas H, 2009).** They emerge from more anciently structured fields such as the theory of the firm and its sub-dimensions (knowledge-based view, organizational learning and theories of innovation).
In 2001, in its knowledge management model called the daisy model, **Ermine** describes the process of knowledge creation as an endogenous and collective process, which is the basis of the evolution of knowledge, which amounts to thinking that the notion of knowledge creation involves sharing, social interaction and group work between different individuals within the organization. Indeed, knowledge management can analyze, on the one hand, the management of accumulated experience of routine activities and intelligence, and experimentation on the other hand (**March J G, 1991; Koenig G, 2006**).
Furthermore, and in the absence of previous work highlighting the role of participative leadership on the valorization of knowledge, our research was based on the study carried out by **Charfi A et al, (2017)** which, in turn, was based on the arguments of transformational leadership, with a view to justifying the exercise of "technological marketing" as a practice of valorization of knowledge. They thus suggest that the dimension of intellectual stimulation which characterizes transformational leadership encourages employees to consider different dimensions of the problems faced and to participate in decision-making within their organization.
In addition to all of the above, our analysis of participative leadership is supported by the SECI model of **Nonaka et Takeuchi, (1997)**, which specifies that organizational knowledge constitutes the result of four (04) interaction mechanisms between tacit knowledge and explicit knowledge. Among these mechanisms, the externalization and combination of knowledge are based on meetings, dialogue, the exchange of ideas and interaction between individuals. Beyond the creation of knowledge, employee participation and engagement in the decision-making process helps increase organizational performance.

2.1. Knowledge dynamics (Knowledge conversion):

The dynamics of knowledge is fundamental in the management, capitalization and valorization of knowledge **(Lamara Mahamed A, 2023).** It is materialized by a spiral in **Nonaka and Takeuchi** and two arcs of circles oriented in opposite directions in **Baumard**. --- this is illustrated by **Figure 01** and **table N°01**.

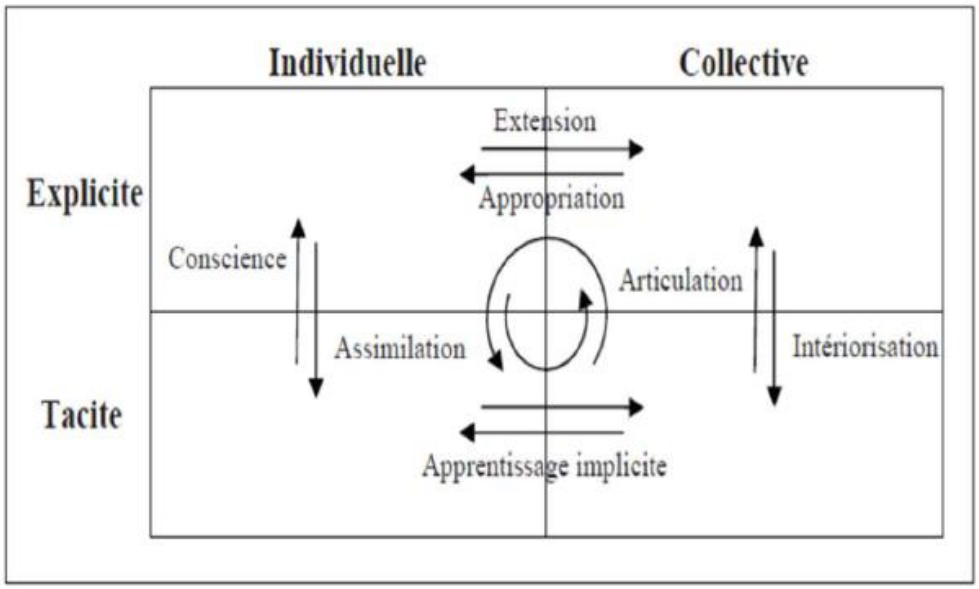

Figure 01: Mechanisms of transformations between tacit and explicit knowledge according to Nonaka (Nonaka and Takeuchi, 1995) and Mechanism of transformations between individual and collective knowledge (Baumard, 1996).

Table 01: Summary of the mechanisms of Nonaka and Takeuchi (Nonaka and Takeuchi, 1995) and Baumard (Baumard, 1996).

Mechanisms of Nonaka and Takeuchi	**Mechanisms of Baumard**	**examples**
Socialization	Implicit learning of the knowledge of a group by an individual	Observe a work team
	Implicit learning of the knowledge of an individual by a group	Imitate an individual
Outsourcing	Articulation	Write a presentation of your work
	Awareness	Express consensus on the choice of a solution to a problem
Combination	Extension	Broadcast a pivot table
	Appropriation	Write the minutes of a meeting
Internalization	Assimilation	Read documents
	Interiorization	Attend a weekly team meeting

Knowledge created by interaction within a group of people is transformed into collective knowledge and organizational knowledge to the extent that the company has the capacity to create new knowledge, disseminate it and incorporate it into its products, services and systems **(Nonaka I and Takeuchi H, 1995).** Indeed, the share of individual knowledge used and implemented on a daily basis, combined with company knowledge, characterizes the skills which allow a group of people to carry out complex tasks specific to the organization. It is in this implementation that shared systems of interpretation are formed which induce explicit collective knowledge, represented by knowledge projected in documents, or any other media and tacit collective knowledge represented by routines.

In another way, the organizational routines which relate to the different functions of the company, are knowledge shared by individuals, and which the company creates and possesses as an organization, but also as a "community of practice or constellation of communities of practice" **(Antoine A, 2006).** It is the product of interactions between individual knowledge, but also as a "community of practice or constellation of communities of practice" **(Antoine A, 2006)**. It is the product of interactions between individual knowledge.

According to **Grant (1996),** the organization exists to integrate the specialized knowledge of several individuals. As for **Kogut and Zander (1992)** stipulate that the organization ensures the sharing and transfer of knowledge of the individuals and groups who work there.

To emphasize the importance of knowledge for the organization, **Hamel and Prahalad (1993)** specify that organizational knowledge is crucial for the survival and development of organizations, because it helps them stand out from competitors in the long term.

For organizational knowledge to be created, essential for decision-making and action, it is necessary that the interpretation schemes of each member of the organization have a minimum of common representation that **Shigehisa Tsuchiya (1993)** calls "commensurability". We paraphrase his thinking here: "The original source of organizational knowledge is the individual tacit knowledge of the members of the organization." However, organizational knowledge is not just the collection of this individual knowledge. Knowledge of people must be articulated, shared and legitimized before becoming organizational knowledge.

Individual knowledge is shared through dialogue. Since knowledge is mostly tacit, it must first be articulated and expressed in language in the general sense. Then, articulated individual knowledge, which is information for other people, needs to be communicated among members of the organization.

It is important to clearly distinguish between information sharing and knowledge sharing. Information only becomes knowledge when it is understood by the interpretation scheme of the recipient who gives it meaning (sense-read). Any information inconsistent with this interpretation scheme is not perceived in most cases. Thus, the "commensurability" of the patterns of interpretation of the members of the organization is essential for individual knowledge to be shared."

When the commensurability of interpretation schemes is important, the knowledge projected in documents or any other media is objectified, that is to say independent of people. This is particularly the case for industrial knowledge, the capitalization of which for heritage purposes targets a population of specialists with specific fields of knowledge. Thus, their management and valorization can be done through solutions such as electronic data management, company memories and/or project memories. However, the reductive projections of this coded, formalized knowledge are only information that only takes on meaning for people with shared interpretation schemes. Thus, with the evolution of the populations of actors, the interpretation schemes evolve, this can lead to difficulties of access, interpretation and risks of erroneous use of this information.

Furthermore, the vast majority of decision-making processes place information at the heart of companies' concerns and all the operations necessary for the transition from information to knowledge involve communication and an increased exchange of information between people.

This article deals with participatory leadership and the role of ICT in facilitating knowledge transfer (knowledge flow), both considered to be managerial devices involved in the valorization of knowledge. The literature review drawn up in this part corresponds to a basis which helped us to establish the operational variables necessary for our field investigation **(sections 3 and 4)** but also, it armed us with arguments during the discussion of the data **(section 5)**.

3. Research methodology / Paradigme :

Our epistemological and methodological choice which is based on:

- The recommendations of a hypothetico-deductive logic by **David A, (1999),** according to which a body of hypotheses developed before the empirical study can lead to conclusions and draw a consequence from a general rule and empirical observation. These hypotheses will be invalidated or confirmed, based on a logic of demonstration or proof which must be proposed (see §3.1.).
- A constructivist posture **(Le Moigne J L, 2002),** in fact, the valorization of knowledge transferred from CETIM to the subsidiaries of the GICA Group is essentially based on interaction between individuals via group work, discussion and sharing, integration via operational processes, transfer via service provision which may include training and learning (tutoring) and then capitalization via codification, standardization and backup processes. It should be noted that the desire to grasp social reality based on the representation of actors does not constitute the aim of our research. Above all, it is a matter of producing the representation of a process by accessing the underlying logic of the individuals participating in its creation, without relying exclusively on their representations of the process in question.
- A qualitative approach, which is based on a single case study and which is centered on the contribution of CETIM in terms of valorization of knowledge transferred to the subsidiaries of the same industrial group (GICA Group), to analyze in a second step, the way in which do these subsidiaries exploit and capitalize on the knowledge transferred? This choice was motivated by the nature of our research question (how type) and by the comprehensive aim of our project (understanding). In addition, among the different research strategies offered which opt for a qualitative methodology, we have retained the case study, as a strategy for accessing reality.

3.1. Conceptual frame:

The strategic value of knowledge depends on its utility value, particularly economic, also, it is essentially linked to a unique knowledge which is said to be “rare”. constituting an asset for the company strategy, a key success factor that **Bück (2000)** assimilates to the concept of “key competence.

However, referring to the fundamental characteristics of a resource, illustrated by **Barney (1991-2002)** these reflect the strategic scope of knowledge, and alone, tacit forms appear to meet the conditions for claiming to be a source of value strategic for the company. We add the protected (explicit) forms of knowledge, whose strategic scope for the company, can be understood through the economic utility value that it conveys **(Bück JY, 2000 and Charfi A and Fernez Walch S, 2011)**.

According to the literature, to take advantage of its strategic scope, the valuation of a company's knowledge requires the implementation of a set of systems structural, managerial and strategic. We are interested, in our research, to managerial knowledge management systems likely to offer the company significant opportunities for leveraging the knowledge of its staff.

In the absence of previous work highlighting the importance of participatory leadership in valorization of knowledge, our research was based on the study carried out by **Charfi A et al, (2017)** which, in turn, was based on the arguments of transformational leadership, with a view to justifying the exercise of “technological marketing” as a practice of valorizing knowledge. They thus suggest that the dimension of intellectual stimulation which characterizes transformational leadership encourages employees to consider different dimensions of the problems faced and to participate in decision-making within their organization. Our analysis of participative leadership is supported by the SECI model of **Nonaka (1994).**

Which specifies that organizational knowledge constitutes the result of four (04) interaction mechanisms between tacit knowledge and explicit knowledge. Among these mechanisms, the externalization and combination of knowledge are based on meetings, dialogue, the exchange of ideas and interaction between individuals. Beyond the creation of knowledge, employee participation and engagement in the decision-making process helps increase organizational performance.

The elements of these systems dealing with the valorization of knowledge were studied based on the concepts and models studied in the literature review. These elements include :

- Role of externalization and the combination of knowledge via meetings, dialogue, exchange ideas and interaction between individuals **(Nonaka and Takeuchi, 1997);**
- Employee participation and engagement in the decision-making process.
- Existence of databases: width, access, sharing, number of users, feeding frequency,
- etc. **(Porter et al., 2007);**
- Existence of technological tools facilitating human exchanges: groupware, Internet, intranet, etc. **(Porter et al., 2007);**
- Quality of the technological infrastructure serving knowledge management (modern, obsolete, absent) **(Porter et al., 2007);**
- Number of Internet and laptop users **(Porter et al., 2007);**
- Technology absorption potential: ICT spending (hardware and software) **(Porter et al., 2007).**

Use of Information and Communication Technologies Communication (ICT) was integrated into this case study, as the fourth managerial device, involved in the valorization of knowledge, this is considered essential for the sharing of knowledge between collaborators.

All research must be based on a certain number of propositions or hypotheses, they represent answers to questions previously formulated using existing literature and the research context. The formulation of a research hypothesis represents the culmination of conceptual reflection. They will be confirmed or denied. As will be seen later, this step also constitutes the first step towards the empirical part of the research. This is therefore a pivotal point. Therefore, and to answer our main question, the following hypothesis is put forward:

1/Each person, according to their level of skills, participates in solving problems and consequently to operational, managerial or even strategic decision-making;

2/ ICTs have a role in the transmission and conservation of knowledge flows.

Correlatively, the translation of operational devices into operational variables that can be observed in the field, confronts the hypothesis developed above with the reality of the Center for Studies and Services Technologies of the Construction Materials Industry, CETIM (by abbreviation).

3.2. Data :

A/ Case selection :

Our research object has the advantage of having a well-defined field of investigation, essentially, centered on the valorization of technical knowledge transferred to clients, with the highlighting of the different operational devices that an organization can establish to create a competitive or even strategic advantage. Indeed, the Center for Studies and Services in Materials Industry Technologies of construction, by abbreviation CETIM – Subsidiary of the cement industrial group of Algeria, by abbreviation GICA has the essential mission of contributing to technical progress, improving productivity and the development of the construction materials industry, in particular, subsidiaries of the same group (GICA Group). Also,

it acts as an interface between the company and the University for Research, training and economic intelligence activities. It is the Algerian technical center for the industry producing construction materials such as cement, concrete, lime and plaster, bricks, tiles and ceramics, etc.

The Algerian cement industrial group, by abbreviation GICA, of which CETIM is a subsidiary, is an economic and strategic player in the country, and is configured into: Fourteen (14) cement companies, Three (03) aggregates and BPE, One (01) construction materials distribution company, two (02) maintenance and industrial assembly companies, one (01) training and development company, one (01) security company and a training center technical assistance (CETIM).

CETIM has existed since 1965 under other forms and names. It inherited from its predecessor companies experience and know-how gained during more than fifty-seven (57) years of activity in the cement industry. Indeed, CETIM is the result of successive restructurings undergone, starting in the Eighties (1980), by public companies responsible for the development, production and marketing of construction materials. Currently, in addition to these non-subsidiary customers, CETIM is the study and engineering center serving the Fourteen (14) cement plants and the Three (03) aggregates and BPE companies (all subsidiaries of the GICA group).

As a corollary, **Barcelo (1992)** believes that the industrial sector, in relation to economic intelligence, values knowledge and considers it to be one of the key sectors of the new economy focused on human wealth.

Indeed, with more than 79% qualification of its workforce (statistics for the year 2021), broken down into: 55% engineers, masters, magisters and doctors, and 24% senior technicians, technicians and of DEUA, and an average experience per agent of Thirteen (13) years. CETIM has a skills and knowledge management policy centered on three (03) dimensions: cognitive (knowledge), technical (IT) and managerial (direction, motivation, etc.). He seeks to develop his knowledge at three (03) levels :

- The knowledge learned during the realization of its various services and strategic projects;
- The tacit and explicit knowledge acquired in the various meetings, it concerns the overall functioning of the company (means and priorities), the strategy and policy of the company, the management control procedures and monitoring Standards;
- Knowledge acquired through adaptive type learning (individual) or that which comes from generative type learning (collective or even organizational).

Our empirical work takes into account the study of the organizational and inter-organizational level with issues on the external environment. Our selection of cases focused on CETIM, because the creation, acquisition, and transfer of knowledge is at the heart of its service provision (activities), the most important are :

- Testing and analyzing the characteristics of raw materials and products in the construction materials industry;
- Support in terms of development and production support for industrial projects ;
- Carrying out audits (quality and technical), expertise and inspections;
- Monitoring and support for certification (product, system), example of the API certification and approval project for petroleum cement at the Ain El Kebira Ciment Factory (SCAEK);
- Metrology services (calibration and verification of measuring instruments), topography, environmental studies;
- Applied research on construction and innovative materials.

However, the quality of the services cited above is recognized essentially by :

- The French Accreditation Committee (COFRAC) with from 2000 to 2016, accreditation No. 1-1110 to the ISO/IEC 17025 standard for testing
- The Algerian Accreditation Body (ALGERAC) with :
  1. From 2017 to date, accreditation No. 1-2-024 to the ISO/IEC 17025 standard, for Thirty-two (32) tests and ;
  2. From 2015 to 2018, accreditation No. 1-1-007 to the ISO/IEC 17025 standard for the temperature quantity;
  3. From 2019 to date, accreditation No. 1-1-020 to the ISO/IEC 17025 standard, for the Temperature quantity (from -40 °C to 140 °C) and the Mass quantity (from 1 mg to 10 Kg on class F1).
- The mandate of the CACQE, Ministry of Commerce, for quality control of materials;
- The Algerian Institute of Standardization (IANOR), for product certification management projects and standards monitoring;
- The Ministry of Industry and Mines, to obtain approval for studies to upgrade and implement quality assurance systems;
- The Ministry of the Environment and Renewable Energy, for obtaining approval for environmental studies;
- The partnership between the National Environment and Sustainable Development Organization (ONEDD) and CETIM for monitoring liquid effluents and atmospheric discharges from classified installations subject to environmental regulations.

To be able to claim to have covered the arguments linked to our selection of cases, the technological development of organizations motivated by the preponderance of innovation in certain economic sectors remains one of the arguments directly attached to the operational mechanisms of valorization of knowledge.

B/ Data collection:

Our research aims to analyze our object of study at the time of observation and through space, the information collected is concentrated in the present and in the near past. In other words, our work focuses on the valuation at a given moment, and not on the evolution of the object studied over time. Also, depending on the problem, the unit of analysis can concern the individual, the group, the organization as a whole, the inter-organizational, the interrelations between several levels. Determining the level of the unit of analysis sets the limits necessary for data collection, and thus influences the analysis and interpretation of the latter. Regarding our research, the level of analysis retained is the organization as a whole, but also the influence it has on the subsidiary organizations of the same group. Thus, the scopes of our study is intra and inter organizational, point A/ Case selection, presents the organization of the GICA Group and the relationship of CETIM with the subsidiaries of this group, mainly those concerned by this study.

The two (02) main data collection methods used in our research, namely: observations (participants and non-participants) and questions via questionnaires or interviews.

Dans notre étude de cas, nous avons eu l'opportunité d'avoir accès :

To the two (02) types of observations:

- **Participant observation:** As a CETIM employee, the interaction with the people interviewed during

the interviews was very useful to us in choosing the subject of our research, because we ourselves participated in transfer projects. knowledge of CETIM towards Four (04) cement plants (SCAEK, SCIZ, ECDE and SSC) of the GICA group and one (01) private cement plant SARL AMOUDA INGENEERING. This participant observation allowed us to participate in the drafting of second-order data, such as contracts and their amendments, monthly project progress reports, activity reports, etc ;

- **Non-participant/passive observation:** This method of data collection allowed us to have second-order information, mainly from the Technical-Commercial Management of types: customer satisfaction survey reports, service contracts carried out or in progress, missions with knowledge transfer, etc.

To the Three (03) types of questions:

- **The speech interview,** was used in the maturation phase of the research subject, with two (02) people: on April 16, 2020 with the former Head of the Industrial Division who is the current President and CEO of CETIM, then on February 25, 2021 with the former President and CEO of CETIM and when choosing the people to be interviewed, with the current CEO on February 8, 2022;
- **The semi-structured interview,** three (03) additional interview guides were carried out: the first for the CETIM supervisory staff, the second for the directors of the GICA group and the third for senior managers of the GICA Group subsidiaries. They were developed based on the conceptual framework and the identification process of the case study. They were enriched and clarified as the empirical study progressed. The interviews carried out with the directors of the Group and the subsidiaries were intended to refute or confirm the responses collected from CETIM supervisory staff.

The interviews lasting an average of an hour and a half, carried out with CETIM supervisory staff as well as the group's directors, were conducted at the workplace and during working hours. Regarding the interviews carried out with the managers of the GICA group subsidiaries, they were carried out remotely via telephone calls. These interviews took place:

1. For CETIM supervisory staff, during the period from February 28 to March 10, 2022;
2. For directors of the GICA group, March 13 and 14, 2022;
3. For managers of GICA Group subsidiaries concerned by this research, during the period from March 18 to 24, 2022.

- **The directive interview,** a questionnaire was developed as simply and clearly as possible, with brief and targeted questions in order to maximize response rates. Its writing made it possible to verify the existence of a transfer of knowledge from CETIM to the subsidiaries of the same group (GICA), focused on the one hand on the development of these subsidiaries and on the other hand, on obtaining a strategic advantage for CETIM. It was designed on Google Forms, sent by email to more than Sixty (60) people, with a return of Thirty-one (31) responses. One in two people who received the questionnaire therefore responded. The respondents are directors, department heads and service heads of fourteen (14) GICA Group subsidiaries.

In total, Fifty-three (53) interviews were carried out and are distributed as follows:

- Three (03) non-directive interviews with the CEOs (former and current) and the head of the Industrial Division of CETIM;
- Nineteen (19) semi-structured interviews divided into: Ten (10) with CETIM supervisory staff and Five (05) with directors of the GICA group and Four (04) with directors of subsidiaries of the GICA group;

- Thirty-one (31) responses to the directive questionnaire sent to senior managers (director, department head and service head) of the GICA group subsidiaries.

4. Result :

4.1. Data analysis :

Qualitative data analysis has been the subject of numerous publications; it involves examining and interpreting data in order to develop answers to questions.

The main steps in the analysis process are to identify the topics of analysis, determine the availability of appropriate data, decide which methods to use to answer the questions of interest apply the methods and to evaluate, summarize and communicate the results.

However, the textual data analysis method is the most popular method for studying data collected through questions and observations, and therefore, the most appropriate for our case study. Today it brings together many methods and tools, which aim to discover the essential information contained in a text.

Taking into consideration that discourses (field investigations) constitute a privileged entry into the object of study of management researchers and among the Four (04) major families of textual data analysis, namely: lexical, linguistic, cognitive and thematic, thematic analysis is the chosen method because it relates the content of the data collected to pre-established themes. In other words, it follows deductive reasoning, and therefore makes it possible to verify or validate predefined hypotheses, and consequently, is part of the epistemological posture chosen at the start.

Behind the generic term content analysis, numerous manual tools were first proposed (concept grid, counting of propositions, expressions, etc.).

Currently, IT offers facilities that make it possible to provide new assistance to analysts. Indeed, software can provide significant assistance in the organization and processing of data, even if the desired results are qualitative.

Furthermore, thematic content analysis includes most of the steps to follow for the analysis of the data collected during the semi-structured interviews.

These steps are :

a/ Pre-analysis of data :

This is the preliminary stage of intuition and organization to operationalize and systematize the initial ideas in order to arrive at a diagram or an analysis plan, it includes :

- **the choice of documents to submit for analysis**, in our case, we transcribed the interviews by hand, in a logbook then reproduced on digital media, with everything the interviewees were able to say, without changing the text, without the slightest interpretation or judgment. With more than Twenty-four (24) hours of recordings, or Seventy (70) hours of transcription, each interview is transcribed into a separate file, in total more than One Hundred (100) pages of verbatim, entered on a computer in Word format. However, for better control of the information collected, no voice recognition software was used, because certain words can be distorted, particularly technical words.
- **The formulation of the initial hypothesis and the objectives**, which will be compared with the results obtained and therefore, this will be confirmed or refuted.
- **The development of indicators on which the interpretation of the results will be based,** the way of choosing the field of study and that of analyzing the data collected are the two aspects of the qualitative research approach which must be more particularly examined, in fact, the CETIM is the Algerian technical center of the industry producing construction materials, such as cement and

concrete, and has the main mission of contributing to technical progress, improving productivity and developing the construction materials industry. It is currently being developed into a technology center, comparable to internationally renowned technology centers. Therefore, future research could focus on the transferability of our results to other areas of investigation.

b/ Data coding:

Coding is a meticulous, manual process for which there is no described automatic system. It classifies and transforms qualitative data, which should be transcribed, before proceeding with their coding. It was carried out for the data collected during semi-directive interviews only, the second-order data, for their part, will fuel our reflection in the discussion section of the results. Therefore, the coding grid is carried out on the transcribed interviews which are represented by paragraphs of meaning composed of groups of sentences which refer to ideas.

The choice of code assignment can be established after data collection or determined in advance based on the study objectives. In our research, this choice was determined in advance and based on the research hypotheses. It corresponds to the attachment of the chosen unit of analysis to functions called “Nodes” in the terminology of the textual analysis assistance software (Nvivo). These nodes are mainly used to classify the data content into codes/themes, each theme covered in the different interviews is possible to be selected and can be coded into an appropriate node, with the result of finding all the extracts dealing with this theme in a single place, a single node.

The coding grid used is of the closed type, because it is composed of operational variables established a priori according to a deductive approach. These variables allowed us to develop the questions contained in the interview guides. Indeed, once we were able to illustrate our conceptual framework, its operationalization helped us to highlight the theoretical concepts as well as the operational variables.

c/ Data processing assisted by Nvivo software:

The software chosen to assist us in our data analysis is the Nvivo version 12 Pro software, because in addition to its main objective which is to help manage, format and give meaning to qualitative data, it is designed according to a manual approach, that of paper-and-pencil analysis (**Descheneaux et Bourdon, 2005**).

The principle of software analysis is based on an approach of decontextualization-recontextualization of the corpus **(Descheneaux, 2007).** This decontextualization consists of taking an extract of the text out of the real context in order to make it semantically independent with the aim of creating categories, also called themes. In addition, the use of Nvivo aims to “store information, classify it, organize it and then […] carry out search operations” **(Descheneaux and Bourdon, 2005).** According to a logic of automatic classification or framework fixed in advance, it facilitates the manipulation of data and helps to extract meaning from paragraphs.

Codification operations are decided by the researcher and him alone, the objective being to produce an analysis and not a catalog of ideas or quotes. Indeed, After importing the data from the interviews, we proceeded to introduce the different themes included in the interview guides in the “Knots” category. Subsequently, the overall corpus of analysis is cut into units of meaning (process of decontextualization-recontextualization of the corpus), each time one of the themes is identified, the analysis places all of the extracts attached to this theme in one place.

Once the data is coded, advanced data exploration is done using multiple wizards to perform queries on the software in question, so the presentation of the analysis results can be done.

4.2. Result of data analysis :

The intellectual character that characterizes participatory leadership, as a practice managerial, encourages employees to consider different dimensions of problems confronted and participate in decision-making within their organization.

Indeed, unanimously, all those interviewed confirmed that leadership participatory encourages and distributes responsibilities to those responsible, each in their area for decision making. They added that the role of exchanges for decision-making operational (meetings, briefings, dialogue, exchange of ideas, interaction between colleagues and above all collaboration) is essential, they give a certain relevance and complementarity in information. An example of the role of outsourcing was given: "Our engineers have ideas that are translated into projects, the information can come of the customer, without him realizing during meetings, he expresses his problems.

One interviewee said: *"Through the meetings and the issues raised, we seize opportunities, we manage to have workload plans to innovate and to diversify our services. The reports are also there to help with decision-making, because, each relationship in its specialty is exploited for part of the process, the whole forms*

additional information". Another added: "*knowledge corresponds to data analysis, each specialty fuels the decision, fuels our thinking and allows the analysis of another specialty, since they are linked, in addition to that, it feeds the operational decision, because this information pushes us to undertake actions, each information, or analysis induces actions, for decision-making, for very specific problems".*

In addition to the new management system, oriented towards the process approach, each pilot process is involved in decision-making, the first person responsible for CETIM to establish monthly coordination meetings, which make it possible to rectify overflows or errors, it gives a vision of the state of the company: (What to do?, what do?, how to do?), decisions are made in real time with the people concerned

From the above as answers and with confirmation from all people interviewed, in fact, participatory leadership gives priority to collective learning. Note that CETIM's internal policy encourages staff training, consultation of the training plan for the year 2022, leads us to declare that several people are enrolled in technical and management training.

The last question asked in this theme put all the people interviewed of the same opinion

and which is, that in fact, CETIM employees participate and engage in processes decision-making (problem solving/operational, managerial decision making and strategic), and gave the following arguments:

1. "Depending on the degree of responsibility of each person, from problem resolution to the strategic decision to top management through the operational decision";
2. "Each employee is required to solve problems on a daily basis, gives
3. solutions through the development of reports, which are transmitted to clients and discussed during a possible meeting, for decision-making based on the transcribed information in these reports. It is a form of operational decision that becomes managerial and which can become strategic";
4. "Each engineer transmits his knowledge to us, all of which forms a base of information,
5. through meetings, the most frequent problems are dealt with to reach a conclusion
6. to solutions to be undertaken and even those that are difficult to achieve".

One person even talked about treating recurring problems: *"We use a lot of statistics, when problems become recurring, decision-making imposes itself";*

Furthermore, Information and Communication Technologies have an important role in the transmission and conservation of knowledge flows. In fact, all people interviewed confirmed the presence of databases facilitating sharing/exchange between individuals, these are essentially platforms for exchanging documents, and where the documents are stored there while waiting to be transferred to external hard drives.

Also, there is the existence of electronic document management (EDM), it is shared between the different users, they can consult it remotely, but according to different types

access, there are people who have access for consultation and others for consultation and implementation up to date. The example of remote access to the database to obtain information necessary for the smooth running of a mission on the client's site, was given, also that, the subscription to engineering techniques, which is shared with all staff technical. In addition, the GICA group is about to acquire an ERP-resource company planning (databases), which will be shared with all of the group's subsidiaries.

to claim to have covered the subject, we were able to take ground from other operational mechanisms, such as: adaptation or capitalization of knowledge, prerequisites for the knowledge management process (motivation, control and consensus), the company's relationship with its external environment (networking) as well as the role of the use of ICT for the transmission of knowledge.

5. Discussion:

The discussion of the results from our field investigation allowed us to compare the results to the literature review and to evaluate the concordance of the conceptual model thus developed with the elements noted on the ground.

Indeed, the investigation carried out in the field helped us to verify the importance of this managerial system (participative leadership) in the literature and to identify its role in the valorization of knowledge in business.

However, and in order to claim to have done quality work, the discussion of the results obtained is conditioned by the analysis of hypotheses put forward in the Conceptual Framework and research methodology of this article.

The results obtained allowed us not only to confirm the adoption by management general CETIM of a participatory leadership style that encourages and leaves the responsibilities for decision-making, but also, to note the role it confers exchanges between colleagues, and their involvement in decision-making. Indeed, employee participation in decision-making processes is done in a democratic manner and collegial, this encourages them to express their ideas, often innovative, and to bring to their superiors with proposed solutions to the problems posed.

This managerial practice gives, according to **Hamel (1994)**, priority to collective learning based on social interaction and group work which, according to **Hemlin (1999)**, promotes knowledge transfer. Likewise, participation in the decision-making process goes through the meetings, conversations and dialogue that **Nonaka and Takeuchi (1995)** consider favorable to the creation and sharing of knowledge, without forgetting the advantages in terms of outsourcing (from tacit to explicit) and combination (from explicit to explicit) knowledge.

Beyond the creation and sharing of knowledge, participation of employees and their engagement in the decision-making process (since the resolution problem, operational, managerial and then strategic decision-making), allow to increase the performance of CETIM activities.

Furthermore, during our investigation in the field, we were able to identify other elements in relation to the knowledge management process, emerging from the field and which play a role in the valorization of knowledge.

Indeed, CETIM has a management system oriented towards the process approach, which allows him to organize his activities and have a simplified vision of the objectives to be achieved. But, also, a mapping of processes classified into three (03) categories: processes management, production and support, with interactions between the different processes of different categories, which will generate a large number of reflections, exchanges and collaborations between colleagues, and beneficial for the company. From the questions asked with more operational concerns with problem resolution to strategic questions with strategic decisions, as a result, the whole process drivers are involved in decision-making.

The concepts of systemic analysis allow CETIM employees to benefit collective learning, necessary for the development of their skills and know-how, and consequently, to the continuous improvement of the company's performance.

Furthermore, placing an organization by process in a hierarchical grid is not an option. easy, in fact, of resistance linked to the sharing of information in relation to power hierarchical and informational power have been observed, they can hinder, thus, the knowledge management process.

The outcome of the discussion of this management system, promoting knowledge within an organization, helped us verify the hypothesis put forward, and which concerns: **each person, according to their level of skills, participates in the resolution problems and consequently, to operational, managerial, and even decision-making strategic**, this hypothesis is confirmed for our case study.

6. Conclusion, limits and perspectives :

The main part of our work consisted of subjecting the conceptual model established, a priori, to field testing. For this, we first translated the characteristics of the managerial mechanisms linked to the valorization of the knowledge developed in the model into operational variables. Through qualitative research using a single case study, the characteristics of the model were compared to those identified at the Center for Studies and Services Technologies for the Construction Materials Industry, by abbreviation CETIM – Subsidiary of the industrial group of Algerian cements, by abbreviation GICA.

Through the analysis of data collected in the field using two (02) investigation methods (observation and questioning), the results showed that almost all of the operational systems involved in the managerial aspect are likely to help CETIM promote its knowledge. Indeed, and in accordance with the results obtained, we found that:

In addition to using ICT to modernize some processes, they play a role engine in the transmission and conservation of knowledge flows, which allows among other things to compress time and alleviate the constraints due to the distance from subsidiaries of the same group (GICA), the General Management of CETIM adopts a participatory leadership style which encourages and distributes responsibilities for decision-making, but also, notes the role it gives to exchanges between colleagues, and their involvement in decision making. Furthermore, CETIM has a management system oriented towards the process approach which allows it to guide its activities and have an simplified vision of its objectives.

Beyond this contribution, this thesis presents limits which we summarize in **articles N IJFMR23069085 and IJFMR250133362 respectively in November 2023 and in January 2025 in International Journal for Multidisciplinary Research,** and which concerns:

- This research does not address the company as a whole, only the dimension relating to managerial aspects were analyzed, in fact, organizational reality does not include all the variables necessary to understand it;
- The investigations were carried out with the supervisory managers of the CETIM, consequently, the role of all employees in terms of knowledge valorization could not be studied. This limitation is inherent to interview case studies. In fact, the people interviewed were the only ones to have provided us with the data collected;
- The descriptive nature of this research does not allow us to explain the role that knowledge development plays in company performance.

Taking into consideration all the limitations cited above, we can raise research perspectives to follow for future research which concerns:

- Operational devices not covered in this article;
- The strategic mechanisms linked to the valorization of knowledge, which a company implements: an institutional framework, a culture, a budget, processes and common tools to support the valorization of knowledge which it considers as a strategic objective;
- Structural mechanisms facilitating the valorization of knowledge;
- A more precise quantitative study which will give more validity to the results obtained in this research;
- Establishing a link between the valorization of knowledge and the achievement of a company's performance with a view to obtaining a strategic advantage.

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