

## **Decentralization of Knowledge and Decision-Making Power: The Complementarities of Approaches through Knowledge and Positive Agency Theory- Application to Companies in the Oil and Gas Sector.**

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**Abstract:** This article demonstrate that if the specific knowledge invested in an employee is the object of a property right where “the attributes of right” are respected, the efficiency of the first and the second level will be verified. Indeed, to satisfy one of the attributes of this property right, “the abusos”, both vertical and horizontal decentralization of the knowledge and the decision-making power are the solution. Such organizational arrangement could complete the formal authority by a real authority and leads to the efficiency. However, in some situations, this decentralization is not verified because such non-mechanical decentralization’s processes are influenced by various factors. A range of obstacles that can slow down this process have to be considered. In this context, it is difficult to separate the cognitive works at the individual level of those concerning the group. The symbolic and “connexionnistes” phenomenon dominating the cognitive sciences at the individual level are reproduced on organizational scale. The organization is considered as an area of production, storage and exchange of knowledge. This analyse is based on the theory of the firm and specially the resources and knowledge approaches. The theory of the property right applied to the knowledge and the positive agency theory support the answers given to the questions of the decentralization of the knowledge and the decision-making power. To verify these hypotheses, an application to the context of the petroleum and gas industries firms is released.

**Keywords:** Cognitive Approach of the Knowledge, Approach by Resources, Positive Agency Theory, knowledge Decentralization.

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### **INTRODUCTION**

#### **Organization: place of production storage and exchange of knowledge**

During the twentieth century, the work focused on information become the axis and the essential framework of rational choice models and organizational design [1]. The organization is increasingly seen as a set of subsystems producing and sharing information and knowledge. Different theoretical approaches indicate this new direction: Theories of organizational learning that are mainly interested in the mechanisms for acquiring and sharing knowledge [2], approaches by the knowledge that describe the organization as the primary vehicle able to produce, combine and transfer knowledge [3] are the foundation of our central hypothesis of decentralization of knowledge and decision-making power. However, although the problem of production and exchange of information and knowledge is becoming more and more in contemporary research, few studies explore, depending Schultz [4], the relationship between these two processes. Szulanski [5] agrees that the majorities of searches are limited to the production of knowledge and simply determine the limits of this phenomenon such as

"organizational myopia". According to this author the same author, researchers are trying above all to explore the conditions of exchange and identify key factors of inertia. For this reason, we will try in the following paragraphs, to reconcile these two approaches while wondering about the knowledge of the production process and its distribution. Knowledge is analyzed in logic of production but also of exchange. In other words, we try to define organizational knowledge and understanding to what extent it is the aggregate of individual knowledge and what is the mode of production of knowledge and how to apply the transition from individual knowledge to the knowledge of the organization? To do this, we first try to reverse the cognitive dimension of individual knowledge and demonstrate thereafter until the work on this dimension; have developed the strategic management discussions seeking to clarify the issue organizational knowledge.

#### **Cognitive dimension of Knowledge**

To understand the mental processes of the human brain, cognitive scientists have conceptualized the sequences of activities [6]. The first models describing how the individual processes information [7]

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point to the fact that the behavior of the individual results from his perception of the world, which is in fact a reflection of his experiences and his previous learning. In his worldview, the individual has recourse to symbolic architectures, in which he represents the world as diagrams or internal mental models, then applied their rules enabling it to make inferences from a wide variety of contexts. These representations of the world are stored in long term memory of the individual and in turn are related to organizational action [8]. As stated, Hedberg [9], if organizations do not have a brain like individuals, they are nevertheless devoid of cognitive systems and memories they retain through time certain behaviors, certain procedure norms and Values.

This work in cognitive science that sought to understand the content of knowledge and structures involved in the processing of information, supported the strategic management thinking which aims to answer questions such as: What organizational knowledge? How is produced and stored? Is the aggregate of individual knowledge? What is the process of transforming individual Knowledge to Collective Knowledge?

#### **From The cognitive dimension of knowledge to the emergence of strategic thinking in management**

The organization as a place of production, exchange and knowledge storage In the words of Fransman [10], "in view of the economic context in which they are placed, organizations must be either information processors that knowledge of processors," that is to say, a place of layout, construction, selection and maintenance of skills. «They must not only provide answers to issues related to information, but also be able to channel and manage stocks of knowledge, raw material of their core competencies and competitiveness [11]. Gradually, the size of the firm as "knowledge Processor" which presupposes production issues, capitalization, dissemination of knowledge and individual and organizational learning in a dynamic optical innovation [12] is becoming more and more dominant. Alongside these theoretical developments of the firm as a processor of information and knowledge, [3] develop a model to explain the firm's behavior as an interpretation of the information system. In this model, the organization operates in an environment where the consequences of its action leading to change its behavior. She repeats or eliminates certain actions and behavior is reinforced by their consequences. Recall that this theoretical model then assumes the existence of an "organizational cognition" similar to that of the individual. Organizational groups then become a place of organizational learning. At this level Gibson [14] states that once cognition and knowledge are shared by members of a group and uniformly interpreted signals,

the compatibility of the individual actions and decisions will be improved. Collective cognition is then defined as a group process involving the acquisition, storage, transmission, handling and use of information. Implicitly, it is clear from this definition that the foundation of collective cognition lies in the system of interpersonal relations and the importance of each: collective cognition lies not in individuals separately, although each individual contributes. It does not lie either on the outside, but in the inter unifying the activities of members of a group Gibson, [14]. Although the cognitive dimension of the organization, considering the organization as an information processing system, was born following the contributions of the symbolic approach to individual cognition, it is difficult to confirm that the collective knowledge is the aggregate of individual knowledge. There are several obstacles that inhibit the transformation of individual knowledge into collective knowledge. Some are related to the difficulty of exchanging tacit knowledge which, according to Nonaka [15] include both cognitive elements, schemes, beliefs, mental models, defining our vision and technical elements corresponding to know -make rooted in specific contexts of action. Foray and Lundvall [16] estimate that the exchange and learning of tacit knowledge presuppose mobility and voluntary demonstration of the people who hold them. Therefore, it is expensive, difficult to implement and largely conditioned by the "renewal" of the people who hold them. Other problems are related to the "bridges" that allow the transformation of individual knowledge in collective knowledge. According to Probst and Büchel [17], they are composed of communication, transparency and integration of knowledge, to which are added the interactions of several kinds, experience sharing and problem solving etc. However, at this level several internal and external elements inter-react.

So, by the organizational learning mechanism that individual knowledge is transformed into organizational knowledge. This takes into account the knowledge construction process and the desired results. It is often understood as a sequence detection and correction of errors. Of the City (1998) defined "as a collective process of acquisition and development of knowledge and practices involved in ongoing remodeling of the organization".

It also helps explain how an organization is able to capitalize on the experience on a skill or particular expertise. Through the changes made by the individuals who make up the organization sets up new routines, more suited to management constraints it is required or it is subjected. However, "defensive organizational routines" may in some cases be obstacles or barriers to learning. Chris Argyris and Donald A.

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Schon [18] define them as "acts and policies whose aim is to prevent people to experience situations of embarrassment or threat, while preventing or possibly preventing the organization while whole, identify causes embarrassment or threat, which would address the issues involved.

We are going to try to analyze this knowledge transfer process more closely and to understand the reasons for its failure.

### **The transfer process of organizational knowledge and the reasons for its failure**

If the issue of transfer of organizational knowledge seems to capital, it is because it is in our view the foundation of any process of decentralization of knowledge and decision-making process in any organization. Investing in general education or special training without organizational restructuring, is to engage in a deadlock. For this reason, it is necessary to couple this investment with a reorganization of the company through decentralization of knowledge and decision making. These organizational arrangements consisting to complete real authority by formal authority can only succeed if the transfer of Knowledge works.

We analyze the transfer from an economic perspective of the organization where the approach by the resources and its corollary, namely the approach knowledge, relevant way supports our problem. Indeed, in a dynamic competitive environment, the approach by the resources believes that in order to adapt, the firm engages in behavior which is explained by the search for competitive advantage. These resources must be unique, inimitable and creative values [20]. This design approach was born with the knowledge that as Spender [19] puts the process of transferring knowledge at the heart of its analysis. This process allows the replication and integration of knowledge. Indeed, the first is to replicate elsewhere in the organization, an identified knowledge and indexed create value for the firm. The second is putting together knowledge from different geographical and functional origin and in the environment of the firm. Such a process of transferring knowledge has several advantages such as the transmission of local knowledge, greater flexibility and coordination in response to changes in the environment or the exploitation of economies of scale [19].

However, the mere facts of communicating or disseminating raw knowledge (results, for example) do not achieve the desired objective. Consider the transfer as a very mechanical action, and then it is a complex process is one of the critical contact the transfer approach by resources. As specified Argote and Ingram [21], the approach by the transfer of resources tends to

view knowledge as a static object, a convenience store and the firm can mobilize when deemed necessary in the search for competitiveness. However, other phenomena influence this process. For example, it is difficult to separate the cognitive work at the individual level of those in the organization or group; the symbolic and connectionist phenomena dominant cognitive science at the individual level are found throughout the organization [22]. In a connectionist perspective, the transfer process is based on learning as well as the result of shared experiences that made pooled. A reflection occurs movement from the transmission of knowledge to the connection, allowing the creation of collective knowledge. Knowledge no longer resides in mental structures of individuals that could be transposed, but in all the inter-connections constituting the organization. Thus, knowledge is no longer an object that can be transmitted from the generator to the user, but a process used by a group of individuals who require ongoing interactions between partners [23]. Other authors have studied the process of transferring knowledge from the perspective of "situated cognition". In this approach the knowledge transfer process is realized through interactions between the system of actors and the environment in which they act. Knowledge is located in a cultural system, including artifacts and practices, a system that is itself the result of previous knowledge. Finally, knowledge can, in addition, also reside in physical objects that serve as benchmarks and indicators to members in the daily course of their work. By putting aside the manager, in our view, lead to efficiency requires not only an understanding of this process through an internal analysis (cognitive dimension). It must also be placed outside of the phenomenon to act. If the first approaches strive to answer the why of it, it is also necessary to answer the question of how? (achieving efficiency of first and second class). So study this problem in a different economic and legal angle helps answer the second question. The property rights theory and agency theory, through their contributions to this dimension may be helpful.

### **The theory of property right applied to knowledge**

Our central hypothesis outcome of this theory is that if specific knowledge invested in an employee is not the ownership of objects where the basket right is not attenuated, organizational efficiency is not optimal. Reading of the theory of property rights, there emerges a connection between the property rights system and efficiency. If ownership is exclusive and transferable significant efficiency happen. In other words, depending on how the rights basket attached to this property is used, organizational efficiency varies. In order to establish this hypothesis we try first of all to return to the contributions of the theory of property right.

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As stated, Arman Alchian [24] "economics is the study of property rights on scarce resources (...) the issue of the economy, ie the question of how prices are determined, returns determine how property rights are defined, traded and in what ways. » Furuboth and S Pejovich [25] argue that "property rights are not relations between men and things but relations between men and codified that relate to the use of things."

Demsetz [26], meanwhile, defines property rights "rights allow individuals to know a priori what they can reasonably expect in their dealings with other members of the community. These expectations are realized by laws, customs and mores of a society ...". These definitions agree in thinking property rights in terms of relationships between men and not the relations between men and things. This kind of "conventions" established between members of society on the use of things existing in order to internalize externalities, better organization of society and finally better incentive to create more value. The functions of property rights are the internalization of externalities, socialization and incitement. The right to property also includes through its contents. Furubotn and Pejovich [25] write that "the value of any property exchanged depends, ceteris paribus, the basket of ownership which is transmitted in the transaction." The three attributes that make up the basket (subjectivity, exclusivity and accessibility) are crucial. The right to property is defined for the practical effect it allows the objects to which it refers. Each individual with an ownership right on one thing at the same time enjoy a basket of basic rights to the valuation of this right: *usus*, *fructus*, and *abusus*. The first two allow the owner to use his property and to enjoy fruits that the property generates. The *abusus* however, grants the holder the ability to transmit or transfer its right to destroy it or sell it. Several combinations are possible and opt for one of them depends arbitration that the holder of that right makes from its private interest.

At the enterprise level, reading theory of property allows to identify a link between the property rights system and efficiency. Indeed, in an organization where the property rights of the attributes are mitigated efficiency would not be optimal. Especially in the context of a management company that is justified by the principle of productive efficiency involving the optimal use of resources, the agency conflict from a poor definition of property rights, in that they are mitigated, emerges. Moreover, in this business model, the owner of the means of production deliberates an attribute of his ownership to the manager and then sees the *usus* and *abusus* his property be restricted. As long as the use of his right to property is shared by the manager, he has more than a *abusus* shared in that it is

related to the organization of production. While remaining owner, retains the *fructus* of his property less the residual value attributed to the debt manager. In this case, the value of the remaining *fructus* depends on the decision of the agent, ie the execution so that remaining claim. It also depends on *abusus* which is the transfer of the right decision. The same is valid when the property is immaterial as knowledge. View that it is incorporated in the person, and *usus*, *abusus* longer depend on the will of the owner of the contract that defines the agency relationship. It is possible that in some cases the residual *fructus* claim (case of very specific knowledge) in the camp of the agent and the *fructus* depend value of its decision. At this level, the teachings of the positive theory of agency can better shed light on this issue. They allow us to specify the optimal combination of organizational architecture and efficiency. Inspired by the work of F. Von Hayek [27]. Jensen and Meckling [28] assume that "the key performance both from an economic system that a particular organization, lies in their respective capacities to acquire to produce and use knowledge relevant - which the value- for decisions. The organizational efficiency depends on the ability of its members to use the relevant knowledge. «The question to be determined then what are the efficiency of mechanisms for this theory?"

#### **The efficiency of mechanisms of the positive Agency Theory**

Charreaux [29] believes that co-localization of decision rights and specific knowledge can be a solution; either centrally, and this by transferring this knowledge - property rights - those who have decision-making authority or a decentralized manner by the transfer of decision rights to that knowledge. The choice of a particular solution depends on the respective transfer costs knowledge and decision law. It also depends on the ability of the organizational structure to manage this change. If the transfer of specific knowledge from one person to another is impossible because the information is incorporated into the person, centralization does not solve the problem. Decentralization, which results in a transfer of decision right of the principal to the agent, is relevant, but difficult to implement. The problems of coordination and control lead to conflicts and cost the additional agency which requires the establishment of mechanisms for appropriate controls and motivation. Recall that this approach optimizes the basket of ownership of knowledge if it is subject to a right of ownership. The *usus* is materialized by the ability to use this knowledge in a relevant way to generate positive externalities, *abusus* the other hand can be realized by the vertical and horizontal diffusion of knowledge and accompanied by a consolidated law-making and control over that property. Aghion and Tirole [30] were among the first

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to introduce this idea. In their article "Formal and Real Authority in Organization", they develop a theory of allocation of authority while separating the formal authority of the real authority. The first indicates the right decision and the second involves the coupling of this decision right through effective control rights. The real authority is determined by the structure of the information held by the agent and the degree of delegation of formal authority. This authority which implies a kind of decentralized decision-making, increases motivation and initiative of its possessors to acquire more information.

Moreover, beyond its steering function, this deliberation knowledge, decision and control, reduces information asymmetry and protects somehow the main opportunistic actions of the agent. Referring to Max Weber [31] distinguishes between "rational authority" and "lawful authority" Aghion and Tirole [30] suggest that the key to this decision depends on the information asymmetry between the two parties and Arbitration between the agency costs of this formal authority and lack of control that may arise in the future.

Jensen and Meckling [28] share this view and consider the level of delegation as a result of arbitration between, on the one hand the costs of transfer and processing of specific information which increase with centralization and the other, the costs of conflict (loss of control costs) that increase with decentralization. Liberti [32], also believes that a change in the hierarchy of large organizations through a delegation of authority can lead to costs but also to better motivation and initiatives. Hence the hypothesis exists a positive correlation between the delegation of authority, motivation and initiative.

Indeed, the idea of deliberation of knowledge, decision-making power is useful but difficult to implement. The risk of loss of control and coordination due to the increase of opportunism are obstacles to achieving the organizational goal. As a result, traditional control mechanisms based on quantitative indicators sometimes become insufficient and need to be supplemented by more qualitative indicators. Williamson [33] think in turn that in some cases the asset is very specific, control becomes a source of malfunction. Excessive control pollutes the organizational atmosphere and makes the opportunistic agent. In this case, asymmetric information it holds will be offset by a quality control.

Note that the principle of organizational efficiency is underpinned by that of remediability which refers to the idea of the existence of forms or alternative organizational structures [29]. If we support this

principle, the positive agency theory joins the theory of transaction costs that postulates the existence of organizational structures in competition. Their survival depends on their ability to adapt to internal and external environment by minimizing agency costs and transaction costs. According to these theories, there is no universal organizational structure that achieves "first-best", however existing forms are those that are among the possible choices efficient choice of "second-best" (this is an external efficiency criterion) Charreaux [35]. The same author adds that through this analytical perspective of organizational forms, positive agency theory fits into a framework of "static comparative analysis of the most efficient organizational forms in the second degree." He added that "in some way, this theory also takes into account the efficiency criterion" third degree "that guides the analysis on organizational balance from the outside to the inside. This is a criterion that completes the organization of the analysis of all these internal stakeholders." Therefore, in the case of a specific investment in knowledge, how to measure organizational efficiency?

For what level this investment decision is required in the business? Is it only by the line-meaning top or is it a reflection of the efforts of other levels?

The organizational efficiency is measured by the degree of decentralization of knowledge and decision-making. Generally it is the hierarchical or top management who decide to introduce this new knowledge to other levels. However, this unilateral decision is not without risk to the extent that the perception of lower levels which will be invested in knowledge is not taken into account. For this reason, Noda and Bower [35] conceive that the investment decision is defined through the role of the different hierarchical levels: the base, the middle and the direction (or the top). Hence the need for a transfer of the right decision at each level together with a right of control.

These same authors view that decision-making processes such as succession or sequence of four sub-processes which two are intertwined and down in the hierarchy (the "definition and impulse"), the other two being transverse to the organization and corresponding to the determination of the strategic context and structural context. The "definition" is a cognitive process by which the "operational base" through its closest position to the market or field has the specific and local knowledge, this project, pins or investment ideas. This practically knowledge which involves holding some information ignored by the rest of the hierarchy- can surely be detours to the entire structure if shared. These investment projects back in the hierarchy through

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intermediate levels that transmit to the summit (the pulse). Moreover, this second hierarchical level, these future investments are examined, modeled and supported to reach the top. This method implies a loss of time due to the collection, processing and transfer of investment projects to the rest of the hierarchy.

Finally, decentralization does not only depend endogenous organizational resources but also the characteristics of the quota environment. This brings us to consider that the more the environment is uncertain, the better the decentralization to the intermediate and towards the base.

## RESEARCH INSTRUMENTS

In the last section of this article we try to check our central assumptions in the oil and gas sector. To do this, we sent fifty questionnaires and conducted thirty interviews with HR managers and employees of several of these companies. The data were processed by Component Analysis Byte allowing summarize information and give us the factorial axes maximum information carriers.

## RESULTS, ANALYSIS AND DISCUSSION

### Place of Specific Knowledge in the companies of the oil sector

To find out if these companies can be considered among depositories of knowledge, we tried to first check what place specific knowledge occupies in these companies?

It appears from the data analysis that 80% of managers consider the place of specific knowledge as very important and 20% consider it as important. According to officials of the companies surveyed, this knowledge is required upstream and downstream of the production process and essential for all studies before the sanction of a project. Four types of specific knowledge required by these studies: Knowledge about the study of the prospect which aims to assess the commercial value of an operating target. Knowledge of the preliminary studies that seek to provide an economic assessment of a discovery and therefore decisive in making a decision to abandon, sell interest or exploitation of the deposit. Knowledge of the conceptual studies that aim to define the final design. This necessarily committed an exhaustive search of the database, a detailed comparison of the different possible alternatives and a reliable comparison of costs and implemented. Finally knowledge about the draft study whose objective is to enable investors to make a decision and push the definition of the final concept recommended by the conceptual design to a level of detail consistent with the complexity Topic. In these oil and gas companies, specific knowledge is not restricted to executives and managers. They are also held by

agents working level. For example, for drilling agents, knowledge of drilling tools, techniques for measuring pressure tests as well as control of security requirements are needed. Other specific additional knowledge is essential when drilling in an offshore zone. What about the decentralization of knowledge and decision-making power?

### The decentralization of Knowledge and decision making power

To the question "do you think that the specific knowledge is diffused" question which measures the degree of decentralization of knowledge, 100% of surveyed officials have responded positively. According to these officials, some knowledge is diffused in the direction from bottom to top hierarchical and vice versa. The dissemination of knowledge is also present horizontally between different units of the same hierarchical level. In this regard, a company manager tells us that in the management of deposits, geologists and geophysicists share and discuss the available information. This information is in addition to those of the reservoir engineer who will give an estimate of the recoverable reservoir of potential production levels, the number and type of wells. This information will then be complemented by well development plan which will be specified in cooperation with the petroleum architect.

Moreover, the results of question 22, which asked about the role of middle management in the transmission of the basic information at the top, confirm this information dissemination. In fact, 100% of company's state that to reach the top, some information goes through all levels concerned. Some officials added that in some cases the information comes directly to the top without going through the intermediate hierarchical levels.

In the same sense, the results of question 23, wondering if the number of tasks of an employee of the bottom of the hierarchy changes following a specific knowledge investment, argue that the acquisition of specific knowledge enables this employee to increase the number of tasks performed and consequently improve its basket of ownership (right of use). The same concerns employees who belong to middle management. 80% of managers consider that the specific knowledge gained enables executives and managers to expand their room for maneuver. This decentralization of knowledge and decision-making power allows under the terms of a responsible "to divide the administrative burden." He added, "especially when a company increases in size and complexity, it becomes difficult and eventually impossible to manage an entire efficiently from a distant headquarters. Thus, it is increasingly necessary to encourage the initiatives of executives and

implementers who are in logistics center near the site of action. «Another official added that "decentralization of knowledge and decision-making power means that we empower us to do and trust the actor who performs his duties." According to the positive agency theory, such an action is beneficial not only to employees but also to the entire structure. For the holder of the specific knowledge, better accountability rational allow him to represent his knowledge as a property right, which thus meets the definition of that term by Furuboth Pejovich and S [25]. Recall that these two authors state that "property rights are not relations between men and things, but relations between codified men, and which relate to the use of things." For the employee, if such ownership is guaranteed and specified, it would be better encouraged to use its potential to create more value. So says an official of one of these companies when he stresses that "decentralization of knowledge is likely to give the best overall results, if we really involves." To better understand the relationship between investment training and organizational investment, we apply a multiple component analysis associated with a set of variables related to these two

components of intangible investment. These variables and their respective Items are: the place of specific knowledge (Q18: PCS), human capital is a strategic resource (Q19: CH: Res imp), decentralization of decision-making in the bottom of the hierarchy (Q20: DPD\_BH ), the sequence of decision rights by right of control (Q20a: Enc\_DD DC), the intervention of one who has specific knowledge of the bottom of the hierarchy at other levels (Q21: Inter CS / AN), specific knowledge get to the top by the intermediate hierarchy (Q22a: CS\_sommet\_HI), knowledge comes directly to the top without going through the intermediate hierarchy (Q22B: CS\_sommet\_nonHI), increasing the number of tasks of an employee of the hierarchical basis following an investment Training (Q23a: IF\_Nbr T\_salarié down :), increasing the number of tasks of an employee of the intermediate hierarchy following a training investment (Q23B: IF\_Nbr T\_salarié\_HI) and finally the dissemination of knowledge Q36: DIIF/ con). In a first step, we present the correlation matrix (see Table 1) that will allow us later to determine the eigen values and deliver us factorial axes carry a maximum of information (see Table-2).

**Table-1: Correlation matrix**

	Q18	Q19	Q20	Q20a	Q21	Q22a	22b	Q23a	Q23b	Q36
Q18	1.00									
Q19	0.79	1.00								
Q20	0.17	0.17	1.00							
Q20a	0.03	-0.14	0.21	1.00						
Q21	-0.08	-0.08	-0.08	0.09	1.00					
Q22a	0.54	0.29	0.29	0.30	0.25	1.00				
Q22b	0.17	-0.17	-0.38	-0.21	0.08	-0.54	1.00			
Q23a	0.30	-0.30	-0.30	-0.01	0.38	-0.24	0.30	1.00		
Q23b	0.00	0.00	0.22	0.34	-0.25	-0.18	-0.22	-0.07	1.00	
Q36	0.09	0.09	0.09	0.14	-0.10	-0.07	0.09	0.31	0.08	100
	Q18	Q19	Q20	Q20a	Q21	Q22a	Q22b	Q23a	Q23b	Q36

Through this matrix, we find a positive correlation (0.79) between the site-specific knowledge (Q18) and human capital as an important resource (Q19). The correlation is positive (0.17) between the place of specific knowledge and decentralization of decision-making power in the bottom of the hierarchy (Q20). It is also positive (0.03) between the place of specific knowledge and the sequence of decision right by a control law (Q20a). We also note a positive correlation (0.54) between the place of specific knowledge (Q18), and the role of middle management in the transmission of information to the hierarchical

top. This matrix also shows the existence of a positive correlation (0.21) between the decentralization of decision making in the bottom of the hierarchy (Q20) and sequencing of this decision right by a control law (Q20a).

In a second step, we present the final statistics including the number of components extracted (see Table 2). From these factor axes, we can deduce the relationship between these variables and how are conducted decentralization of knowledge and the decision-making power.

**Table-2: Factorial axes carry a maximum of information**

Numéro	Valeur Propre	% Variance Expliquée	% Cumulé
1	2.7868	27.87	27.87
2	1.6492	16.49	44.36
3	1.5189	15.19	59.55
4	1.1256	11.26	70.81
5	0.9015	9.02	79.82
6	0.6875	6.87	86.70
7	0.6362	6.36	93.06
8	0.3478	3.48	96.54
9	0.2500	2.50	99.04
10	0.0964	0.96	100.00

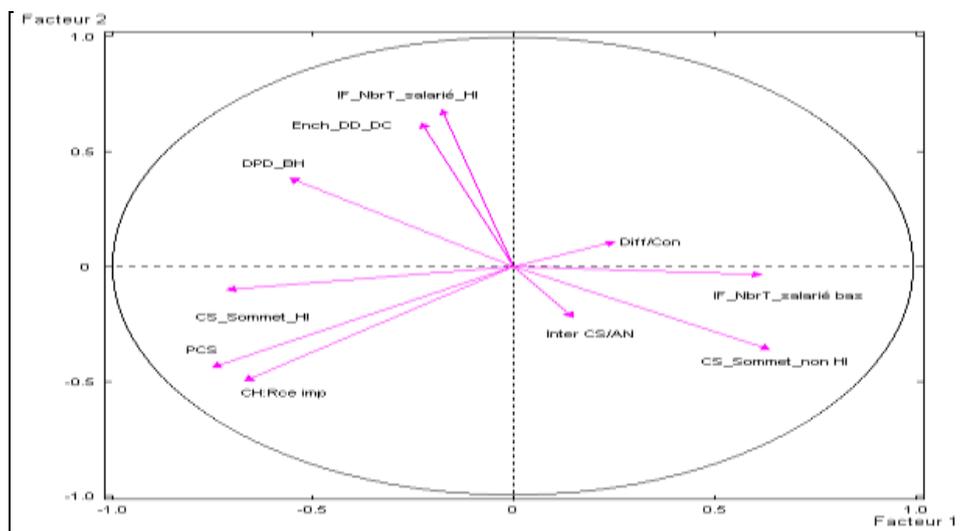
The application of a multiple component analysis followed by optimum rotation according VARIMAX algorithm, we can extract four factors representative of approximately 70.81% of the total information. The representation of these factors in the correlation circles allows us to produce the following results (see Fig-1) .In the first correlation circle, our analysis is conducted around the first and second factorial axis. Indeed, we note that the first component explains 27, 87% of information is defined by eight variables, namely the dissemination of knowledge (Q36), the increase in the number of tasks in the basic hierarchy (Q23a ), knowledge gets to the top without passing through the hierarchy (Q22B) and the intervention of the one who has the knowledge to other levels (Q21) on one side; and the place of specific knowledge (Q18), human capital as a strategic resource (Q19) specific knowledge gets to the top by the intermediate hierarchy (Q22a) and decentralization of decision-making power in the bottom of the hierarchy (Q20) of 'other side. This shows that in companies where specific knowledge are an important and where human capital is of great importance, the reorganization of the company goes through a decentralization of knowledge followed by decentralization of decision-making power in the lower the hierarchy. Both organizational restructuring materialize in the reality of these businesses by disseminating knowledge sometimes through middle management or directly to the top, improving the flexibility of employees from the bottom of the hierarchy, and finally by a decentralized decision-making power (bottom of the hierarchy). On this same correlation circle, we note that the second component, which represents 17.58% of the information is defined through two variables; the sequence of decision rights by right of control (Q20a) and increasing the number of tasks of an employee belonging to the middle management (Q22B). Therefore we deduce that in companies where the place of specific knowledge is important, there is firstly a decentralization of decision making in the bottom of the hierarchy and also a series of decision right by a control law in companies where the investment training helped increase the flexibility of the intermediate hierarchy. In other words, we note that

the decentralization of decision-making power is present in the lower echelons of the chain but the right decision by a right of control is verified only in the intermediate levels. We can then think that in these structures, the allocation of authority theory proposed by Aghion and Tirole [30] between formal authority and the real authority finds its place. We also think that the teachings of Fama and Jensen [36] that distinguish the two decision-making functions and rights that they cover in complex structures into place.

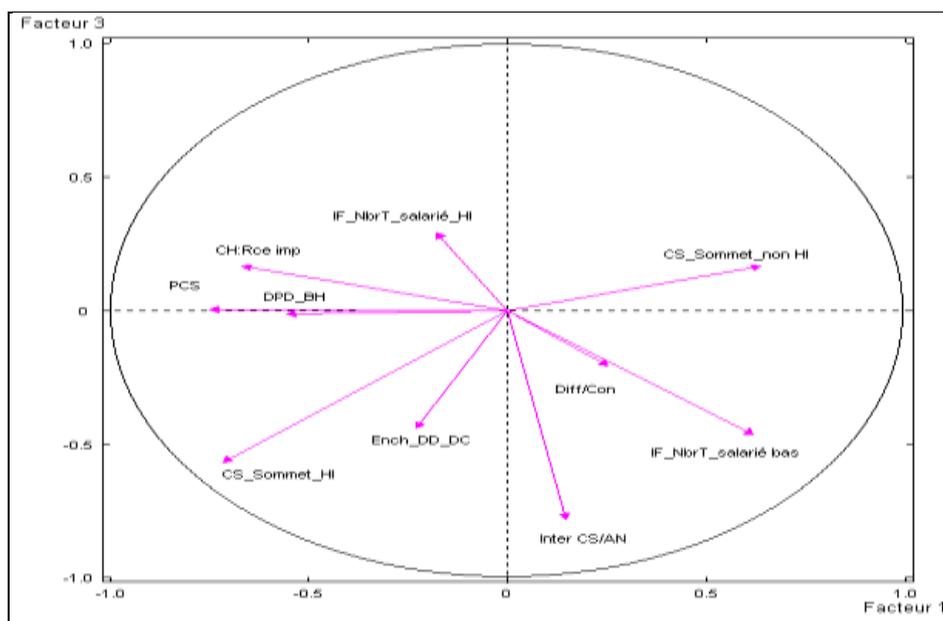
Indeed, as we have shown above, the first is a decision management function (management decision right) which is associated rights of initiative and the rights of the implementation of decisions taken. The second is the decision control function (control right decision) gathering the right final decision and the right of control. In the oil companies, it turns out that the primary function for the basic level and the second relates to intermediate levels. This idea is confirmed through the second correlation circle associated with the first and third principal components: on the first factorial axis, we see that the oil companies in the place where specific knowledge is important and where human capital is a strategic resource there is a reorganization of the company through a decentralized decision-making in the bottom of the hierarchy. We also observe that the role of middle management in the dissemination of knowledge is verified. The third factor axis which represents 15.25% of the information is linked to two positively correlated variables: the sequence of decision right by one hand control law and the intervention of one who has specific knowledge in secondly other levels. Referring to the theories of organizational learning, we can infer the possibility that in the base hierarchy, one of the reasons for not linking the decision-making right by a right of control is that the body of knowledge that form the basis hierarchical or tacit. Their distribution is tricky because of the many interpretations of this kind of knowledge, generating in many cases, coordination problems, costs and additional conflicts. Through our interviews with managers of these companies, we realized that in the intermediate hierarchy, instead of

tacit knowledge is reduced gradually give way to explicit knowledge readily releasable. This new information held by middle management are more codified by the members of this organizational level and easily stored in organizational memory associated with that level. This fact enables faster development of the phenomenon of organizational learning which promotes the chain of decision-making by a right of control. Furthermore, another reason for the sequence of decision right by a right of control is related to the "bridges" that allow the transformation of individual knowledge into collective knowledge. In the intermediate levels, they are more robust and less complex than those existing in the baseline levels. The phenomenon of diffusion of tacit knowledge is increasingly capitalized on this level. The 'shadows' on

the tacit knowledge are then reduced and structure transforms his own nature to become more formal and pragmatic. She tries to meet quantitative targets mainly dominated by the hypothesis of pure rationality. In our view, this intermediate level of knowledge gradually cognitive approach gives way to a more economic approach directly related to the efficiency of the company. Note that such reasoning is not without risk. As we have said, it is important to think that in this intermediate hierarchical level, organizational learning phenomenon that promotes the establishment of a monitoring system is not a mechanical phenomenon that escapes the interactions between contained the different actors. We must think also as a dynamic phenomenon.



**Fig-1: Correlation circle associated with the first and the second factor**



**Fig-2: Correlation circle associated with the first and the third factor**

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## CONCLUSION

Our study confirms that the Oil companies in which the place of the specific knowledge is important, a reorganization of the company is through a decentralization of knowledge and decision-making power. This decentralization is followed by a decentralized decision-making in the bottom of the hierarchy, which improves the basket of property rights at this level and to hold formal authority. In the intermediate levels, decentralization of knowledge and decision-making power is complemented by a right of control. Therefore, at these levels, formal authority was perfected by a real authority. This shows that in these complex structures a separation between the management decision making functions and control functions.

## REFERENCES

1. Arrow K; *The Limits of Organization*, W. W. Norton, New York, 1974.
2. Huber GP; *Organizational learning: the contributing processes and the literatures*. *Organization Science*, 1991; 2(1): 88-115.
3. Kogut B, Zander U; *Knowledge of the firm, combinative capabilities, and the replication of technology*. *Organization science*, 1992; 3(3): 383-397.
4. Schulz M; «*The uncertainty relevance of newness: organizational learning and knowledge flows*», *Academy of Management Journal*, 2001; 4( 44): 661-681.
5. Szulanski G; *Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm*. *Strategic Management Journal*, 1996; 17: 27-43.
6. Welford AT; *Skilled performance: Perceptual and motor skills*», Glenview, IL: Scott, Foresman, 1976.
7. Wickens CD; *Engineering Psychology and Human Performance*, Columbus, OH: Merrill, 1984.
8. Reger RK, Palmer TB; *Managerial categorization of competitors: Using old maps to navigate new environments*. *Organization Science*, 1996; 7(1): 22-39.
9. Hedberg BLT; *How Organizations Learn and Unlearn*», P. C. Nystrom and W. H. Starbuck (eds.). *Handbook of Organizational Design*, Vol. 1, *Adapting Organizations to Their Environments*, Oxford University Press, Oxford, 1981; 3-27.
10. Fransmann M; «*Information, Knowledge, Vision and Theories of the Firm*», *Industrial and Corporate Change*, 1994; 3(3): 713-757.
11. Hamel G, Prahalad CK; «*The Core Competence of the Corporation* », *Harvard Business review*, 1990;68(3): 79-91.
12. Divry C, Dubuisson S, Torre A ; *Compétences et formes d'apprentissage: pour une approche dynamique de l'innovation*. *Revue française de gestion*, 1998 ; 115-127.
13. Daft DL, Weick KE; *Towards a model of organizations as interpretative systems*», *Academy of Management Review*, 1984; 2(9): 284-295.
14. Gibson CB; *From knowledge accumulation to accommodation: cycles of collective cognition in work groups*», *Journal of Organizational Behavior*, 2001; 22: 121-134.
15. Nonaka I; *A Dynamic Theory of Organizational Knowledge Creation*», *Organisation Science*, 1994;5(1): 4-37.
16. Foray D, Lundvall BA ; *Une introduction à l'économie fondée sur la connaissance »*, in Guilhon B., Huard P., Orillard M. et Zimmermann J.B., *Economie de la connaissance et organisations – entreprises, territoires, réseaux -*, Paris, L'Harmattan, 1997; 482.
17. Probst GJB, Büchel BST; *La Pratique de l'Entreprise Apprenante*, Les Editions d'Organisation, Paris, 1995.
18. Argyris C, Schon DA; *Apprentissage organisationnel: théorie, méthode, pratique*, DeBoeck Université, Paris, 2002 ;140.
19. Spender JC; *Limits to Learning from the West*», *International Executive*, 1992; 34: 389- 410.
20. Barney JB; *Strategic factors market: Expectation, Luck, and Business Strategy*», *Management Science*, 1986; 32: 1231-1241.
21. Argote L, Ingram P; *Knowledge transfer: a basis for competitive advantage in firms*», *Organizational Behavior and Human Processes*, 2000; 1: 150-169.
22. Fiol CM; *Intraorganizational Cognition and Interpretation*», In Baum J. A. C, *Companion to Organizations*, Blackwell Publishers Ltd, Oxford, 2002; 119-137.
23. Roy M, Guindon JC, Fortier L ; *Transfert de connaissance : revue de littérature et proposition d'un modèle*», *Institut de Recherche en Santé et de la Sécurité au Travail au Québec*, Rapport : R-099, 1995 ; 53.
24. Alchian A; *Pricing and Society*», *Occasional Paper n°17*, The Institute of Economic Affairs, Westminster, 1967; 2-3.
25. Fuburotn E, Pejovich S; *Property Right and Economics Theory: A Survey of Recent Litterature*. *Journal of Economic and Litterature*, 1972;10(4): 1137-1161.
26. Demsetz H; *Toward a Theory of Property Right*. *The American Economic Review*, 1967; 57(2): 347-359.
27. Hayek FA; *The Use of Knowledge in Society*.*American Economic Review*, 1945; 35(4): 519-530.
28. Jensen MC Meckling WH; *Specific and General Knowledge, and Organisational Structure*», In

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- Wein et Wigkander (eds), *Contracts Economics*, Basic Blackwel, 1992; 251-274.
29. Charreaux G ; «La théorie positive de l'agence : lecture et relectures. In Koenig G., *De nouvelles théories pour gérer l'entreprise du XXIè siècle*, Economica, Mars, 1999 ; 61-141.
  30. Aghion P, Tirole J; *Formal and Real Authority in Organisation*. *Journal of Political Economy*, 1997; 1-29.
  31. Weber M, Aghion P, Tirole J; *Formal and Real Authority in Organisation*, *Journal of Political Economy*, 1997; 105: 1-29
  32. Liberti JM; «Initiative, Incentive and Soft Information: How Does Delegation Impact the Role of Bank Relationship Manager? », London Business School, 2003.
  33. Williamson OE; «Strategizing, Economizing and Economic Organisation. *Strategic Management Journal*, 1991; 12: 75-94.
  34. Charreaux G; *La théorie positive de l'agence : positionnement et apport*. *Revue d'Economie Industrielle*, 2000 ; 92 : 193- 214.
  35. Noda T, Bower JL; *Strategy-Making as Iterated Process of Resource Allocation*. *Strategic Management Journal*, 1996; 17; 159-192.
  36. Fama EF, Jensen MC; *Separation of Ownership and Control*. *Journal of Law and Economics*, 1983; 26: 301-325.