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Synergy and Partnership in Algerian Agricultural Sector: Knowledge Management and Capitalization

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Abstract: The objective of this study is to measure knowledge management of actors of agricultural sectors in Algeria through two major surveys. One for professionals to analyze their information practices and the other for researchers to understand their culture of knowledge sharing in order to offer a collaborative platform, tool of development for the actors of the agricultural sector. Indeed, the actors of agricultural sector demand this collaborative tool in order to manage, to transfer and to share knowledge. They want to create this community of sharing and collaboration between research and economic sector.
The construction of an information system is a tool for development and transfer of research results to the destination sector of agricultural production. Because it is better for us to propose a model of information system capable of managing intellectual capital in the Algerian agricultural sector and generate value from intellectual assets.
Then, the creation of a shared space should be considered in order to provide an accurate visibility of information and knowledge, to strengthen the institutions, setting up networks of actors. The point is to establish a synergy and a partnership between (scientists, professionals, political leaders…).

Keywords: Collaborative platform, Collaborative work, Information System, Knowledge Management, Agricultural sector, Algeria.

1. Introduction

In a knowledge society, the accumulation and transmission of knowledge are becoming faster and a very value added. This knowledge must be properly exploited, so that they can have an impact on the economic, technological and social development of a country. According to F. Woody Horton (Woody, 2007), information has become a new paradigm in the field of information and communication. For the Alexandria Proclamation, adopted in November 2005 by the High Level Symposium on information literacy and learning throughout life, defines information literacy as a means " to permit to people, in all fields of

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life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals" [*« permettre aux gens, sur tous les chemins de la vie, de chercher, d'évaluer, d'utiliser et de créer l'information pour des objectifs personnels, sociaux professionnels et éducationnels »]* (Maîtrise de l'information, 2013). This information has a decisive impact on the decision support process, planning, management and scientific research.

So, innovation and generation have become the outcomes of the success and sustainability of the evaluation of the company or institution for economic development. The author G. Balmisse reveals that the production capacity of modern society don't based on their factories or their equipment, but increasingly on their intellectual capital. But only, scientific research is not enough to ensure sustainable development. There needs to be an information system able to manage knowledge and knowledge acquired. To enroll in a logic of recovery, so that they become "shared social property", the researchers need to acquire visibility and analysis tools of their activities. The valuation concerns the whole process to implement that research has an economic and social impact and opens to new innovations that will in turn be exploited by scientists, policy makers, businesses, ... (Balmisse, 2002).

Therefore, knowledge management is needed as a basic need to ensure the sustainability and innovation organizations. "We are entering in the era of information and knowledge" [*« Nous entrons dans l'ère de l'information et du savoir »]* (Pansard, 2000). So, we ask about the possible link between knowledge management and innovation process. One answer comes from A. and P. Browaeys Harkema (Harkema, Browaeys, 2003), "knowledge management aims to combine the knowledge held by individuals to create and apply new knowledge with the aim of improve the innovation process. " [*« la gestion des connaissances vise à combiner les connaissances détenues par les individus afin de créer et d'appliquer de nouvelles connaissances avec pour objectif d'améliorer le processus d'innovation »]*.

Furthermore, the added value of production is directly linked to the value of knowledge. This approach is at the point of our concerns in the context of this research project that is to put our intellectual capital in the service of development support innovation. In the area of agriculture, information is regarded as the set of knowledge and know-how to improve agricultural production. These include scientific, technical, economic,... that lead to development of a country. In Algeria, the share of agriculture accounts for about 12% of total GDP and the country is still far from self-sufficient in food production, since imports can meet 75% of all food needs of the country.

Therefore in terms of higher education and scientific research, we find that there is significant intellectual capital, the Algerian university has a network of 77 higher education institutions. The sector comprises, in addition, 19 research institutes and 640 research laboratories in universities. Moreover, Algeria also aims to mobilize some 28,000 faculty and 4,500 permanent researchers. Based on this observation, we deduce that the Algeria certainly has strong intellectual

capital, but we ask about if this intellectual capital goes to the economy; then to the companies concerned.

However, scientists and policy makers are concerned to put in place adequate means of development promotes interactions between scientific research and development. The establishment of a national information system on agricultural research becomes an important issue. To answer for this kind of problem, it must to see the potential beneficiaries to find out if they use information as a tool for development aid. The first work to be done therefore is to compile an inventory of standard practice. This is actually diagnosed the strengths and weaknesses of the Algerian food company in order to see if there is a knowledge mapping, knowledge meets the economic needs. In this context, we are particularly interested in our study in knowledge management as a source of innovation. How information and knowledge are managed by Algerian researchers ? And how food companies capture information from this scientific research?

So, we try to measure the knowledge management of the actors of the agricultural sector (professionals, researchers) in Algerian agri-business and agricultural research institutions through two major surveys. One for professionals and other for researchers in order to understand how intellectual capital is managed by researchers and professionals. This will lead us to propose a model of information system capable of managing the intellectual capital of the Algerian agricultural sector and then create value from intellectual assets.

Before given the results of our study, it's important to understand, first the concept of an Integrated Information System (IIS).

Delmond M-H. et al (Delmond et al, 2007) provides the functionality of relational database management systems, revealing that "the *SGBDR* used to store and organize information. They also have powerful extraction and data query tools. "[*« les SGBDR permettent de stocker et de structurer l'information. Ils sont également dotés d'outils puissants d'extraction et d'interrogation des données »]*.

The need to design, information in order to organize, to structure it and to share it among actors has become necessary for the conduct of an organization's activities. Given the important role of the information system, it allows to relate the needs, knowledge and skills of these actors (policy makers, farmers, producers, extension workers and researchers) for sustainable economic development.

This topic discusses the subject of many research studies that resulted in several publications reporting on discussions between researchers and professionals of communication sciences. We arrived according to Gallezot G. et al (2008) to "the digital revolution" as an external factor impacting from the academic world as it is one of the leading, if not the main actor of the origin of this revolution and suggest that research practices evolve endogenously by the integration of "digital data" by the digital scientific journals, the development of open access, through the use of web 2.0 tools (blogs researchers, laboratories wiki ...) [*« la "révolution numérique" comme un facteur extérieur venant impacter le monde universitaire alors que celui-ci est un des principaux acteurs, voire le principal*

*acteur, à l'origine de cette révolution et de suggérer que les pratiques de recherche évoluent de manière endogène par l'intégration du "donnée numérique" : par le passage au numérique des revues scientifiques, par le développement de l'accès ouvert (*Open Access*), par l'utilisation des outils du web 2.0 (blogues de chercheurs, wiki de laboratoires…) »*"] (Gallezot, Roland and Araszkiewiez, 2007).

So, to have a collaborative space of communication through the development of collaborative platform gives certainly a new behaviors work and communication. Then, according to this, we have just analyzed on knowledge management actors of Algerian agricultural sector. We will evaluate in the following section the level of practice and sharing of knowledge scientific and agricultural research.

2. Method

To answer to these various questions concerning the measure of knowledge management in enterprises and evaluation of the needs of researchers, to develop a collaborative platform, we conducted two surveys with Algerian researchers and professionals (managers and supervisors). The first survey was conducted in 26 agricultural research institutions. It was conducted with researchers in agricultural sciences, veterinary and biological, to assess the information needs of scientists to propose an information system on agricultural research management and knowledge sharing. A total of 500 questionnaires were distributed, we had 345 usable returns, or a rate of 69% of responses.

The second investigation was limited at 20 Algerian food companies that we conducted among 305 professionals affiliated with the food to measure knowledge management and transfer level results research to food companies. A total of 500 questionnaires were distributed, we had 305 returns, or a rate of 61% of responses.

3. Results and discussion

3.1. Measuring knowledge management professionals and researchers in the Algerian agricultural sector

3.1.1. Measuring knowledge management among professionals: survey results

3.1.1.1. Identification of the target population: Professionals

To understand the professional business environment, we must explore the main characteristics of our target population. This population consists of managers, engineers and master agents whose information needs and knowledge sharing are fundamental. Regarding the distribution of respondents by age, the survey results reveal that a youth of the surveyed population is present in the different business structures. We note almost 64% of surveyed executives under 40 years old. This brings us to advance that there is a favorable factor for the success of innovative projects for economic development. The distribution of the population by education level is necessary given that it can tell us about the intellectual level of respondents. The results of our survey reveal that the majority of professionals have a level of academic study with a rate of 65%. We

notice that the importance of recruitment within a company is strictly that of holding an academic degree, if we reasonably apply the concept of knowledge management era in which our society is full integration .

3.1.1.2. Collaboration and sharing of professional knowledge

a- Collaboration in partnership

As part of the improvement of a product or to solve a production problem in the food business, the majority of professionals (78%) is based on the collaboration process with others organisms. Algerian food companies prove appropriate to engage in relationships of national and international collaborations. Following the era of information sharing society without borders that requires the exchange and transfer of knowledge becomes an added value for the industrial sector. Indeed, the responses to the question related to the type of cooperation that foster more professionals with partners reinforce a positive perception on cooperation in partnership, in terms of collaborative work. So, our study identified the proportion of national and international dominance of the most privileged collaborations. It turns out that professionals favor first collaborations with organizations in the country with a proportion of 55% for a near equal 45% in international collaboration.

b- Reason sharing knowledge of professional

The main reasons for knowledge sharing expressed by staff reflect an interest in encouraging awareness of saving and sharing knowledge. For this, we have an equal sharing of the various arguments we proposed. First, the trend is more related to the improvement of sharing or transfer of knowledge with strategic alliance partners or consortia. Second, is the ability captivated to the training of workers in order to achieve the strategic objectives of the company or organization. Finally, the orientation is more related to the facility of collaboration on projects and / or teams that are in different workplaces (Figure 1).

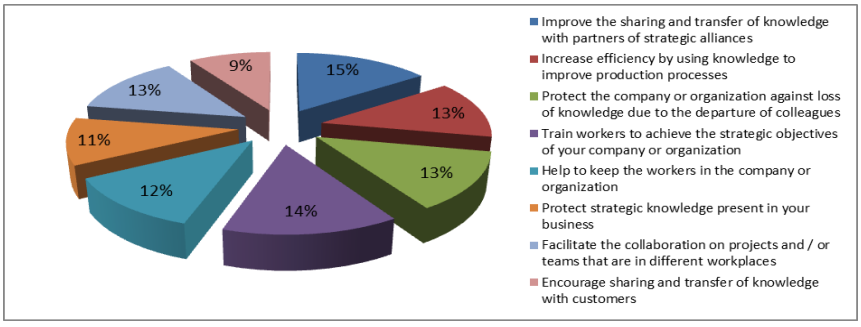

Figure 1. Reasons for knowledge sharing

These findings suggest that the Algerian food companies use the knowledge management practices to improve their competitive performance and increase productivity.

3.1.1.3. Knowledge Sharing Activities

In view of the results of the technical transfer of information and communication represent an active way of ensuring the sharing of knowledge and expertise. Respondents professionals use different information sharing and knowledge modes whose frequencies are varied. Internet access (21%), information or briefing meetings (19%) and the electronic sharing of information such as email, shared files, via internal network (18.5%) are proved crucial for knowledge sharing (Figure 2). It must be said that the use of electronic document has generally considerable advantages in the facility of consultation, sharing, and dissemination of information and knowledge.

However, the support extended to the evaluation of projects represents only (6%) interest as professional support to exchanges of knowledge within the company. We also, recall that although a higher rate of 21% of employees who prefer activities related to electronic information sharing and access via the Internet. The trend remains low for specialized discussion forums (5%) and news (6%), which represent only a minority of very considerable interest. Although the marketing or communication cells are able to retrieve useful information with the tool before to be informed regularly on personal interest profile and / or group of professionals. The use of this information monitoring systems allow to have, for example a press review by the interest profile.

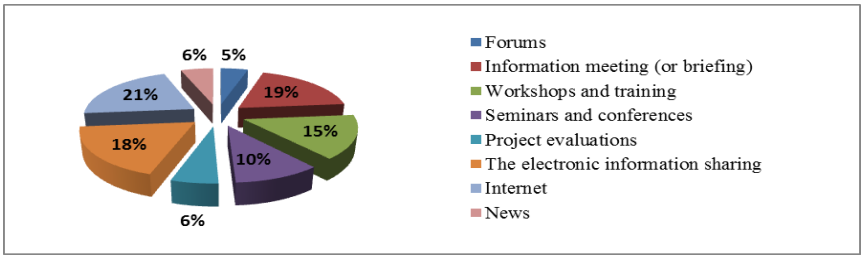

Figure 2. Types of knowledge sharing activities

3.1.1.4. Knowledge sharing products

For the question "what are the products that can develop and support the sharing of knowledge within the work team ? " Different channels are typically used by respondents to ensure the sharing of information and knowledge within any organization. Regarding the perception of respondents on professional knowledge sharing product support, we note that the activity reports, communications and working documents remain significantly traditional communication tools and the most stressed. In contrast, professionals use less the strategic reports (4%), decisions of the board of directors (3.5%) and patents (2%) (Figure 3). The interviewees told us that the patent is a very expensive way of competitiveness; or industrial process doesn't need a sophisticated process, as it is only interested in production.

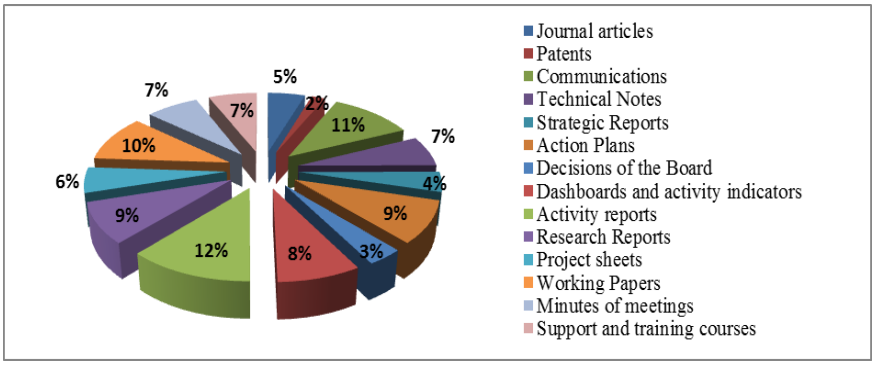

Figure 3. Types of knowledge sharing products

This partial analysis of the data obtained shows an indispensable need for establishment of a knowledge management system in the Algerian food companies. This tool aims capitalization of knowledge (experience feedback, skills management ... and the creation of spaces of exchange: knowledge bases, document management, collaborative portal ...). Algeria must move towards a knowledge economy that the value-added outcome of knowledge is increasing in this new era of information society. In order to the companies to rely on a knowledge economy, it is necessary that have some synergy with the world of research. Then, we present the results of the second survey on the needs of researchers in management and knowledge sharing.

3.1.2. Assessing the needs of researchers: survey results

3.1.2.1. Identification of the target population: Researchers

The target population is responsible for research activities centers and / or higher education establishments.

The data analysis of the survey revealed that 39% of researchers vary between 36 and 45 years. The survey population is largely young. We also reveal a very high percentage of 95% of research conducted for this age group.

So we can move forward, if we associate with youth researchers an appetence for innovative projects, that there is a favorable potential for innovation and performance. This presupposes the existence of a consistent scientific production. So we have a young population, with high level, involved in the production of knowledge and sharing their knowledge, and we can assume that it has developed skills in scientific areas that interest us.

3.1.2.2. Informational needs of researchers

Through this question, we wanted to assess the information needs of scientists in order to be satisfied, via the collaborative platform : future information system on agricultural research. In this way, we can identify their real needs in terms of access to information and identify their ignorance of some tools that are

commonly used for management and knowledge sharing for the purposes of innovation and performance by researchers in developed countries.

a- Access to national databases

The databases on programs and research laboratories are expected with a rate of 25%; 18% of researchers with an interest in databases of experts. The titles of projects represent 17% of researchers wishes and finally, 15% of research organizations (Figure 4).

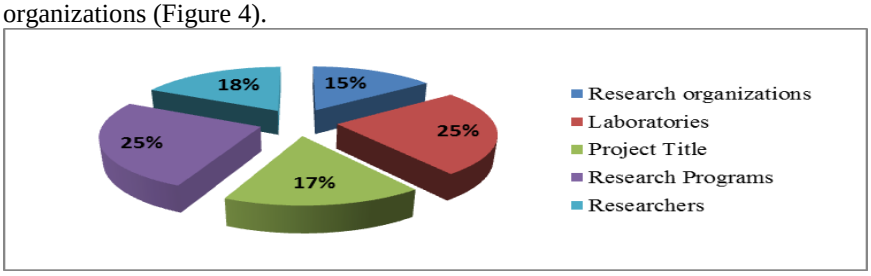

Figure 4. Expectations researchers: access to national databases

These responses indicate that researchers hope to have information on all the research system in its different components, via a portal repository: organizations, research laboratories, research programs, the titles of projects and researchers. The scientific community wants access to these federated databases.

b- Access to national publications

Expectations regarding national publications researchers provide guidance on sources of information to consider, through the future information system. They express a clear preference for the journal article (25%) that contains "certified knowledge" and carries current scientific information. Theses come in second place with 20%. They are followed by communications and books (18% for each of the two types); reports 12% (Figure 5).

However, a significant disaffection is paid to national invention patents for research, development, innovation and knowledge protection, with only 5%. Overall, these figures show that the Algerian researcher wants to use the results of research, while thinking of the value of its own results and make them available to all actors.

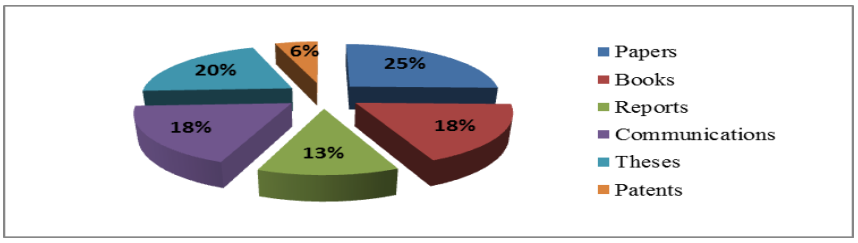

Figure 5. Expectations of researchers: access to national publications

c- Access to international information

For access to international information, the survey results revealed that 24% of researchers and teacher-researchers hope to access to international electronic journals, 21% want access to scientific events and 20% hope query databases international (Figure 6). In general, we can say that these types of access to international information are considered the first sources of information for innovation in scientific research, since researchers are specifically interested in items and communications references for their research.

A result that merits reflection is about open access which represents only 12% of requirements. This leads us to conclude that respondents are unaware that researchers open access websites guarantee the rights and intellectual property, facilitate access to publications, accelerate scientific exchange and improve the durability of data. This community initiative of the movement of "Open Access" highlights the interest of the cooperation process for the sharing of knowledge, production innovations and the creation of a knowledge society; and the strengthening of impact factors for evaluation.

Finally, scientific monitoring tools seem to be an ignorance by researchers. On these two aspects (News and Alerts), 8% of researchers say they are interested in news and alerts by 6% (DSI, RSS FEED). These results allow us to advance that researchers lack information on the information monitoring process but also they ignore that warning systems disseminated on a website and an email list or selective information dissemination depending on the user's interest profile, are considered one of the main currency of the information.

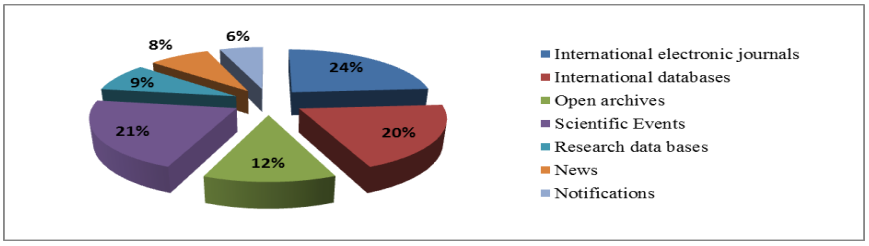

Figure 6. Expectations of researchers: access to international information

3.1.2.2.4. Access to collaborative Platform

Regarding the collaborative tools for scientific production and exchange, Algerian scientists rank in first place e-mail with 27%. This means of communication is used as a medium of exchange and collaboration between scientists. Therefore, it contributes to the structure of formal networks and / or informal by the constitution of a real virtual space of intellectual exchanges. Then come the specialized exchange forums with 20% of the expectations. They are also tools that promote membership of Virtual Research Communities and the realization of collective scientific productions. Then, if we compare our results with those of a study conducted by A. Boukara (Boukara, 2007) on knowledge sharing and community web portal on the use of technology in

Algerian research professors, we find that the Algerian researchers start to have an interesting about knowledge and knowledge sharing tools. The study cited above shows that the discussion forums are used by 30% of researchers in networks of people sharing the same knowledge and the same interests.
Among the remote collaboration tools that researchers want to find out the information system include e-learning with 17% of wishes and co-publication distance with 16% (Figure 7). Our study highlights the low interest shown by Algerian scientists such us, collaborative platform communication tool. They work closely instead of in a co-production.

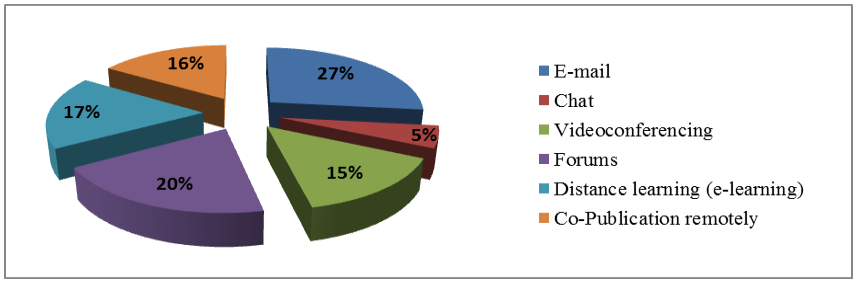

Figure 7. Expectations researchers: access to collaboration platforms

Finally, the chat (instant messaging) as asynchronous collaboration that permit to set individual chat rooms or by groups also has a very limited interest (5% of the wishes). Noting the new current information practices, it is important to note that this type of exchange is widely used in socio-scientific networks and can respond at first, the need to discover each other on the Internet individually. In terms of warning tools, in real time so that the researcher is informed of any new or current research project, consistent with its needs (standard or custom profiles) such as news and alerts (DSI (Distribution Selective Information), RSS (Really Simple Syndication)) appear to be ignorance. These tools can be one of the news topics identifying means and innovation to strengthen networks between researchers and have a consolidation of knowledge sharing.
Through our results, we therefore find that many researchers and academics are not very sensitive to issues of collaborative applications: co-publishing, video conferencing, e-learning, chat,... The data from our survey show that this remains a minority practice and intimidating for most Algerian scientists whether in their laboratories or the research environment.

3.1.3. Collaboration to supply the collaborative platform for Agricultural Research

The two actors (professionals and researchers) are ready to collaborate actively to supply the information system in order to transfer knowledge for the agricultural sector to ensure economic development. The wish expressed by the employees for the establishment of an information system is a very strong interest for this project. A real dominance is perceived by respondents with a

favorable percentage rate of 94%. The main reasons for setting up an agreement information system revolve around knowledge capitalization rates with percentages that prove equal in response reasoning. The establishment of a knowledge management system represents 33% of respondents. The creation of a database indicates 34% of one of the reasons for setting up an information system. Finally, capitalization of internal and external business information reveals 32% of the surveyed professional community (Figure 8).

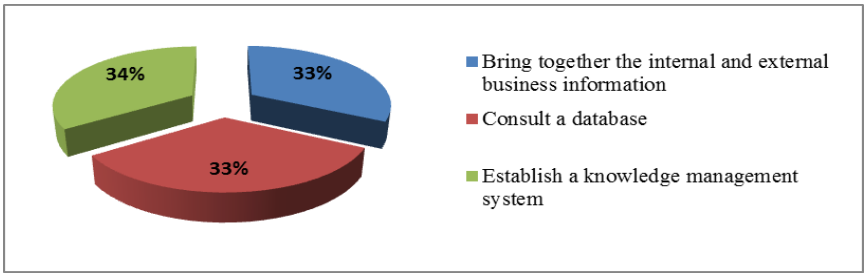

Figure 8. Reasons establishment of an information system for professionals

The agreement expressed by researchers and academics to participate in the information system of the future supply reflects a strong collective interest in such a project. The majority (97%) is ready to put online its research. Their motivations to file the research are mainly: the exchange of scientific and technical information (32%), use of results (31%) and recognition by the scientific community (20%) (Figure 9)

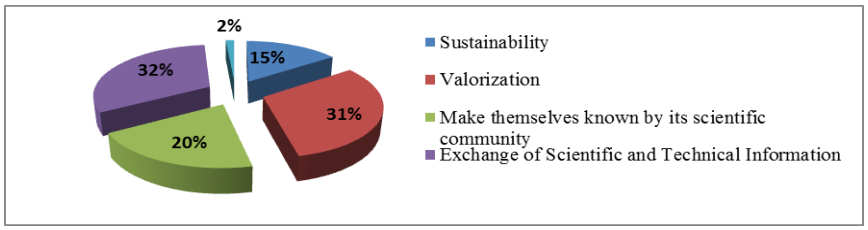

Figure 9. Distribution of researchers reasons to deposit their publications

4. Conclusion

This study shows that a strong awareness is raised from the professional and the research, in terms of importance and usefulness of scientific information and knowledge. The two surveys that we have conducted with 650 individuals (305 professionals and 345 researchers) reveal a fundamental need for creating an enabling environment for knowledge sharing for collective intelligence. This involves the creation of a high-value information system, which will be in the hands of decision-makers, professionals and scientists, a management tool and enhancement of visibility of knowledge and scientific research, through the

development of a collaborative platform (databases on institutions, research laboratories, projects, experts and their publications).
The interest generated by this approach implements a best efficiency of competitive clusters and centers of excellence. These devices are networking skills and knowledge, promoting innovation and the creation of added value in a knowledge economy. It is in this sense that the food companies, training institutions and the Algerian agricultural research institutions will strengthen their connections in collaborating with the initial goal is to create competitiveness and competitive advantages.

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