THE CAMARONICOLA COMPETITIVENESS FROM THE CAPACITY OF ABSORPTION PERFORMED AND NETWORKS OF KNOWLEDGE

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Summary

The objective of is to show that factors linked to the absorption capacity -acquisition, assimilation, transformation, and exploitation- as a dynamic capacity, intervene in obtaining competitive conditions from organizations with low intensity in research and development (R & D) of the primary sector; Together with the relevance of the network and information flows, organizations must go to external sources that generate scientific and technological knowledge to improve their internal resources. This, from the study of the shrimp activity represented by those units producing white-headed shrimp located in the municipality of Ahome in the state of Sinaloa; northwest of Mexico. The results obtained by means of the descriptive statistical analysis of the collected data report a positive statistical correlation, between the factors of transformation and exploitation of knowledge, components that stand out in the organization and competitiveness. Likewise, it is reported the importance that the business network plays through flows and ties of the knowledge network held by the companies studied.

Keywords: Absorption Capacity, Knowledge Network, Camaroniculture, Sinaloa.

Classification: JEL: M10, M19, 031

Resumen

Este estudio tiene como objetivo evidenciar que los factores relacionados con la capacidad de absorción -adquisición, asimilación, transformación y explotación- como capacidad dinámica, intervienen en la obtención de condiciones competitivas de organizaciones con baja intensidad en investigación y desarrollo (I + D) del sector primario. Junto con la relevancia de la red y los flujos de información, las organizaciones deben recurrir a fuentes externas que generen conocimiento científico y tecnológico para mejorar sus recursos internos. Esto, a partir del estudio de la actividad del camarón representada por aquellas unidades productoras de camarón de cabeza blanca ubicadas en el municipio de Ahome en el estado de Sinaloa; al noroeste de México. Los resultados obtenidos mediante el análisis estadístico

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descriptivo de los datos recolectados reportan una correlación estadística positiva, entre los factores de transformación y explotación del conocimiento, los componentes que se destacan en la organización y la competitividad. Asimismo, se reporta la importancia que juega la red de negocios a través de los flujos y vínculos de la red de conocimiento que poseen las empresas estudiadas.

Palabras clave: Capacidad de absorción, Red de conocimiento, Camaronicultura, Sinaloa.

Clasificación: JEL: M10, M19, 031

Introduction

In the context of the economy of knowledge, promoting competitiveness in productive organizations is imperative for the economic well-being of a nation or region (León, Beltrán, Núñez, and Preciado, 2012). The last decades are qualified as a key resource to contribute through a better competitive position in organizations, before an increasingly dynamic and turbulent market (Grant, 1996b; Salas, 1996; Teece, 2000; Preciado, 2001; Zollo and Winter, 2002) Organizations have a difficult task focused on replicating their knowledge assets and the way in which they are developed in order to generate value, that is, organizations must not only manage knowledge in an internal but also externally, which allows the incubation of new knowledge and improvement of those productive processes propitiating new business paradigms of difficult Easy replica for the competition. Therefore, the capacities to acquire, recognize, transfer and apply new knowledge acquire an elementary strategic importance in the success of the necessary organizational adaptation of knowledge, through the reconfiguration of its base of key resources and as facilitator of organizational restructuring (Bergh and Lim, 2008; Van den Bosch et al., 1999; Hoang and Rothaermel, 2010; Gonzales et al., 2011).

On the other hand, the insufficiency of the resources of conformation between tacit to explicit and inversely is a constant for any organization by an aggressive international competition; made by which it is relevant to know those processes of absorption of external resources that allow enriching own organizational knowledge.

In accordance, there is a need to establish the objective proposed in this research explaining the importance of the factors linked to the absorption capacity of external knowledge and their contribution of a competitive performance for the company that evidencing how important is the network of knowledge exposing the associations (contacts, agents, entities) external to the organizations that generate scientific and technological knowledge. The specific objectives consist of: a) identifying which factors linked to the potential absorption capacity of knowledge (acquisition-assimilation) and the capacity of real or realized absorption (transformation-exploitation) intervene in obtaining competitive conditions in favor of the company; b) identify the confirmation of the network and flows of information transfer that is established between aquaculture organizations and their main sources of scientific and technological knowledge (government agencies, universities, research centers, suppliers, competitors) for the case of the municipality of Ahome, Sinaloa. For this, it is taken as an object of study those representative units producing "white-headed" shrimp cultivated on land (ponds), likewise, to the subjects interviewed as aquaculturists, legal representatives, biologists, managers of aquaculture farms in the northern area from Sinaloa, Mexico.

The present investigation is as follows: First, the basic concepts of the knowledge absorption capacity are disclosed, second, the contribution of the absorption capacity on the competitive performance for the company. Third, the relevance of the knowledge network is reported as an external factor for

companies. In the fourth part, the methodological structure is disclosed, as fifth, the results obtained, and the last ones are presented, the discussion and conclusions.

1. THEORETICAL FOUNDATIONS

1.1. The absorption capacity of external knowledge

The literature mentions that the concept of absorption capacity (CapAb) as a dynamic capacity, which has its origins in the seminal studies of Cohen and Levinthal (1990: pp. 128-152), related to organizational learning presented in the decade of the 80's in the early 90's, with respect to the role played by research and development (R & D), depending on the company and organizational learning. However, authors Kedia and Bhagat (1988) had already used this term in the context of technology transfers between nations (Vega and Gutiérrez, 2005). Moreover, Cohen and Levinthal extol the importance through their proposed model in three dimensions (Acquisition, Assimilation, and Exploitation) understood as the ability to assess the new information external to the company, channel it and allocate the new knowledge generated for commercial purposes.

The literature acknowledges that the reconceptualization to the more complete CapAb construct is presented by Zahra and George, (2002), by expanding the analysis in this field and proposes a reformulation of the thesis proposed by Cohen and Levinthal (1990) that it expanded, incorporating two dimensions in the process: potential CapAb (Acquisition and Assimilation) and the realized CapAb (Transformation and Exploitation). According to Zahra and George, the CapAb of knowledge can be expressed as a meta-capacity, since they define it as a "link of routines and organizational methods through which companies acquire, assimilate, transform and exploit knowledge with the intention of produce dynamic organizational capabilities".

Based on that, each of the dimensions exerts a different role, although in synergy when explaining the CapAb influences the organizational results. In this line, Koka and Pathak (2006), consider that the CapAb is that skill of an organization to take advantage of the new external knowledge in a sequential way, identifying it and assimilating it as a potentially valuable tool through better practices in organizational learning, waiting for results that favor the commercial sense through learning. Todorova and Durisin (2007), are supported by the studies made by Cohen and Levinthal (1990), but are alienated from the work proposed by Zahra and George (2002), in defining CapAb as that dynamic capacity that companies have for "become "of a new intangible resource, assimilate it, transform it and exploit external knowledge.

Lane and Lubatking (1998) argue that through potential capacity an organization must possess internal skills to develop those skills to acquire and know how to buy external knowledge; however, these two sub-dimensions do not support the exploitation of tacit resources (knowledge). Lane and Lubatking point out that the capacity carried out is a task of the transformation and exploitation capacities so that a company fructifies in a competitive way the knowledge that it has purchased strategically. Forés & Camisón (2008), point out that the binomial capacity of potential and realized absorption favored strategically towards the competitive situation, giving way to the increment of generating new abilities together with the existing ones and with this establishing new results for the organization, in comparison with its competitors.

On the other hand, Garzón-Castrillón, M. (2016) empirically demonstrate the importance represented by the ability to absorb the knowledge generated externally to the organization, establishing that the potential absorption capacity is reflected in the human capital's ability to recognize, value and buy the critical resource for the operation of the organization, that is; They maintain a proactive behavior

benefiting from the opportunities present in the environment. While the second dimension -real- indicates that the capacity of absorption has been unleashing a capitalization of knowledge to develop new products and/or services at the time of combining the stock of existing knowledge, with the newly acquired with the purpose of expanding new processes or the same improvement of products.

The capacity of absorption is a fundamental factor for organizations if it is in synergy with the sub-dimensions mentioned above. That is why it is taken as sub-dimensions transformation and exploitation of the knowledge adopted in environments external to the organization is a complex process García Sánchez, E., & Martín Rojas, R., & Fernández Pérez, V. (2016). By pointing out that the first element accesses in the reinterpretation of knowledge, speeding up the detection of opportunities, as well as modifying organizational performance. As for the second element, this refinement of routines, the recombination of acquired and assimilated knowledge, the "what to do" with the information, will allow this technological leverage combined with modernization in the inventive processes that the company sustains, in this way, the advantages will be deployed with greater profitable benefits.

1.2. The CapAb contributes to the competitiveness of the organization

The binomial productivity and competitiveness are results obtained through the internal processes of a company and its past performance, where factors such as growth in exports, profitability, market share, profits, are considered key elements that sustain the continuous improvement of all economic units (Porter, 1982, León and Carbajal, 2006, Benzaquen et al., 2010 and Olivares et al., 2014). To achieve competitiveness and not only competitive advantages through inventiveness, but companies must also adapt the invention process to their own possibilities of development and integration of knowledge, that is, to their own dynamic capacities. Barney (1991), mentions the role played by the theory of resources - resources we understand as intangible "human and technical" and tangible "physical-financial" - and dynamic capabilities such as intangible resources -strategies, technologies, human capital , the organization - in the achievement and maintenance of the competitive business advantage, maintaining that the competitive performance can be measured, indirectly, by assessing the perceived importance of the objectives of the innovative activity. According to Camisón et al., (2002), a company has a competitive situation when it is applied under a creative value strategy that is not being implemented in parallel by any current or future competitor.

In contrast, a sustainable competitive advantage is based on intelligent value-creating strategies that are not being introduced simultaneously by any other current or potential competitor and, when other companies are "unable" to duplicate the benefits of this strategy. So, there is the imperative need to support companies not looking at the productive sector to which it belongs, size or productive turn. Canto et al., (2011); Flatten et al., (2012) agree that despite the relevance of absorption capacity and having been studied in relation to different organizational mechanisms such as structure, skill and policies and in various inter-organizational areas, business units, organizations, productive sectors, and cooperation agreements; there is still a limited bibliographic base on case studies using this construct (CapAb) on small and medium enterprises (SMEs), inserted in the primary sector. Specifically, companies with low innovation intensity lack solid internal structures that allow generating their own spaces dedicated to the generation of results of products or goods with a scientific and technological base. Thus, they must bet on creating ties (knowledge networks) through information flows from sources outside the company, allowing an amalgam between the existing base and the new tacit resource acquired.

1.3. CapAb affects the position of the organization in the knowledge network

The dynamic capacities in an organization play a crucial role intervening directly and indirectly in innovation processes, together with the deployment of technologies and a knowledge-based economy. Acosta, J. C.; Longo-Somoza, M. and Fischer, A. L. (2013) point out that dynamic capacities and knowledge management play a strategic role in the reproduction of value for the benefit of the organization, allowing the achievement of certain competitive advantages. However, these resources are not limited to synergistically organizing a set of capabilities, "but", they concentrate interactions between individuals and resources or external and internal factors that make up a company. From this perspective, the absorption capacity as a multidimensional construct allows us to demonstrate that it has a greater result in those companies located in the same district, geographical region, "space", cluster, or simply, their production processes are based on homogeneous production.

For Forés and Camisón, (2008) the position in the knowledge network is determined as an external factor that affects the absorption capacity. That is, extra-mural factors that contribute to the generation of information and knowledge determined as external entities that allow to minimize or potentiate the volume of relationships with multiple partners belonging to a knowledge network, as well as to strengthen collaborative links that allow their impulse and developing.

1.4. The relevance of the network (ARS) of knowledge in the organization

It is important to note that the analysis of social networks (ARS) has the objective of measuring the relationships between the actors, with the purpose of organizing matrices and composition of graphic networks, which represent those, relationships, that is, analyze the diverse particularities positioning those dynamic processes of adaptation, flows and information transactions. More generally, the ARS, intends to analyze the regularity in which the different actors are connected or linked, with the purpose of determining a general structure of the network, groups and strategic place of the individuals or organizations within the social structure that they underlie knowledge or information flows (Canto et al., 2011).

The current international economic contexts require companies to be creative in terms of business strategies, allowing them to implement superior advantages and, therefore, positioning in niche markets. Consequently the current trend, according to Sanz (2003) is to form long-term alliances so that, together, these can develop activities required by the company. The trend in terms of the importance of belonging to a social network is that companies act in coordination with the objective of meeting the needs of a specific market.

Capó-Vicedo et al., (2007) argue that the geographic proximity between the actors represents in terms of intensity and frequency a sustainable competitive advantage among the participants. The composition of social or inter-organizational networks in the case of small and medium-sized companies, promote an important relationship between these and those external agents and internal to the territory (node) in which they are to acquire competitive advantages.

Matta (2012), competitive performance is influenced by social networks by encouraging cooperation between companies and human capital. In this way, social structures (groups of networks, clusters, among others) promote collective ties that allow flexibility and intelligent collaboration between companies. Gutiérrez-Enríquez et al., (2010) argue that networks serve as a study tool to know the existing force between the subjects, department of the organization, productive chains, and so on. So, the ARS can be applied to the development of the mapping of the relationships between the different actors. In this sense, the knowledge networks and the exchange of information allow a synergy in the

context of the relationships that sustain the companies with their direct competitors within a geographical space (territory), especially the small and medium-sized enterprises, whose peculiarities they make them look more fragile to the current competitive environment. As a result, information exchange networks are a key tool in achieving better economic conditions, negotiation management and increasing the level of learning as innovation, among other aspects.

The importance of structural analysis allows the link with the objective of determining the general structure of the network, its groups, the position of the company (Sanz, 2003), this interaction supported by the ARS reflects these social structures that underlie the flows of knowledge or information to the exchanges emanating from social ties. For small and medium enterprises, these links influence competitive business aspects, interconnectivity allows suppliers, competitors, universities, government agencies, research centers, fundamental aspects in the generation and transfer of technological knowledge; demonstrating the importance of business networks in relation to the ability of the company to execute innovation activities that allow new business opportunities and new ways of competing (Becerra et al., 2013).

For what nowadays, the absorption capacity represents a strategic intangible resource that allows the organization to appropriate externally generated resources that come from knowledge networks within the environments in which these companies operate. Therefore, dynamic flows in the transfer of technological knowledge increase competitive performance for the benefit of the company (León-Balderrama, 2012).

2. METHODOLOGICAL PROCEDURES

The study was developed through the application of a quantitative approach. However, it is evident that it is impossible to have statistical data that allow the measurement or quantitative evaluation of CapAb. Therefore, the survey was designed to obtain first-hand data, adjusted to the needs for this study. For the development of the research, the population consisting of shrimp farms, was taken as analysis units.

Taking into account the exposed elements, we proceeded to obtain a reliable list of aquaculture farms that served as a reference for the total number of units of analysis and for obtaining the sample. The list of companies that were taken as a reference finally came from the consultation of fishing yearbooks and official institutions that provide statistical information on the country's fishing production.

2.1. The instrument: questionnaire

The survey was designed to provide information on the company's profile, on the existence and measurement of the acquisition, assimilation, transformation and exploitation capabilities of each company's knowledge and the evaluation of their level of competitiveness. Likewise, the part about the Analysis of Social Networks capable of deciphering the links that an organization or company sustains to provide itself with information, which once decoded represents a sustainable competitive advantage over time. The procedure is to build a binary matrix according to the relationships between the "farm" companies, diverse sources and actors that provide information and knowledge. This matrix must be observed with values of 1 when there is some relationship between the actors and 0, when no relationship is presented. Next, the matrix throws a configuration of the network in a graphic way, obtaining indicators such as the centrality of Degree, Bonacich, Between, Force, Diversity.

Based on the values of population size and positive variability, the sample sizes corresponding to different levels of confidence and margin of error were calculated using the following formula:

$$x = Z\left(c/_{100}\right)^2 r(100 - r)$$
$$n = {}^{Nx}/_{(N-1)E^2 + x}$$
$$E = Sqrt\left[{}^{(N-n)x}/_{n(N-1)}\right]$$

Where n is the sample size, E is the margin of error, N is the size of the population, r is the positive variability in which one is interested, and Z (c / 100) is the critical value for the level C. The calculation is based on the Normal distribution.

2.2. Verification and validation model

The technique used to obtain data corresponds to the application of a semi-structured interview, which was considered with the support of professionals in the field. Considering also in the validation of the instrument the inspection of the personnel of the Aquaculture Health Committee of Sinaloa and of the Ahome Association of Aquaculturists. This with the purpose of polishing and compacting improvements to the instrument applied in the face-to-face interview with the aquaculturists.

Regarding the scale used (Absorbance Capacity) in the instrument, it was based on what was proposed by Szulanski (1996); Jansen et al. (2005); Flatten et al., (2011); Tepic et al. (2012); Nieto and Quevedo (2005); Camisón y Forés (2010); and for the Competitiveness scale in the study by Jansen et al. (2005); Tepic et al. (2012).

The tool (questionnaire) that allowed us to obtain data on shrimp farms is organized by 24 items in total. Of which, 18 were oriented to assess the 4 dimensions of the CapAb and 6 of these reagents were focused on validating as a dependent variable to the Competitiveness. The questions were displayed using a Likert scale of 5 points, ranging from 1 "Strongly disagree to 5" Strongly agree ", in the case of the CapAb scale. In the case of the Competitiveness scale, it was presented in this way: 1 "Much smaller" to 5 "Much greater".

Note: To validate this instrument, Cronbach's α (Alpha) coefficient was used as a statistical tool, allowing a "psychometric stability" of questionnaire, Quero Virla M. (2010).

3. RESULTS

The results chapter is divided into the following sections. The first one can observe the correlations between the factors generated from the scale used -CapAb-, in the following section we report the network and transfers in the knowledge flow generated by the main actors and agents that provide knowledge; finally, the discussion and conclusions.

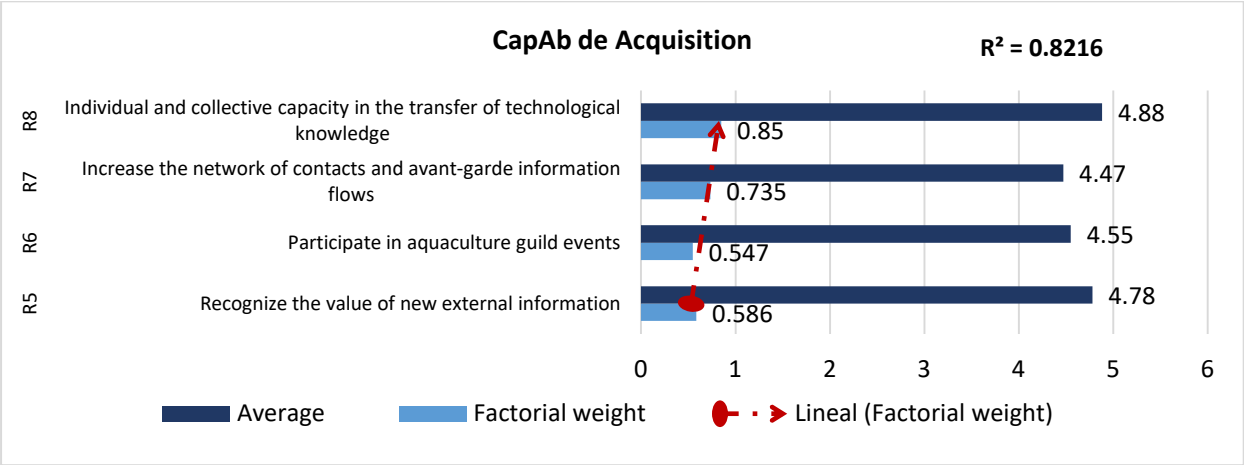
The total variance explained with components greater than one, propose five factors, from a factorial analysis generated by the statistical package SPSS version 23; of the factors provided by the factorial analysis, we find the following variables that measure the Capacity of Knowledge Absorption scale: Acquisition capacity, b) Assimilation capacity, c) Transformation capacity, d) Exploitation capacity and, e) Competitiveness. Where, the sum of the five factors used to interpret the data obtained by factor analysis, reach 67 percent of the total variance explained.

a) Importance of potential absorption capacity: (Acquisition & Assimilation)

From the factorial analysis and as already mentioned, the first factor -acquisition- reached a reliability index of, 846 percent, these values are directly related to the explanation of the variance, which has allowed establishing the relationship between reagents and factors. Graph 1 highlights the importance for this type of organizations of increasing the network of contacts and avant-garde information flows

(R7) and the individual and collective capacity in the transfer of technological knowledge with members of the aquaculture guild of the region. (R8); considering the socialization factor as a key factor to relate and appropriate information and knowledge about the productive sector and institutions attached to the aquaculture activity. The reagents belonging to the acquisition of knowledge show reliability using a Cronbach's Alpha of, 846; as well as a total explained variance of 35.658 percent of the variance.

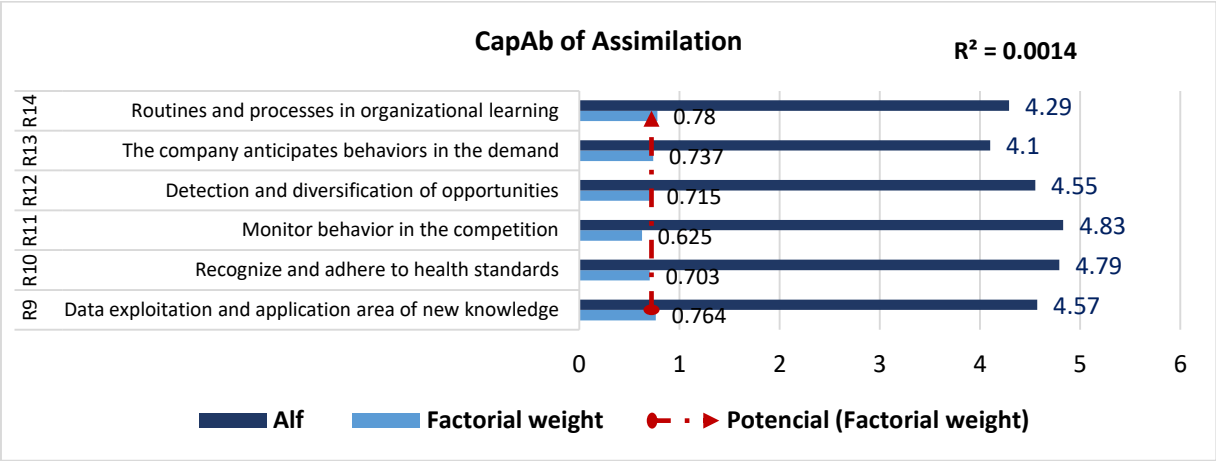
Graph 1. Values of mean and standard deviation: Acquisition factor



Source: prepared by SPSS, Version 23

For the second factor -Assimilation-, a Cronbach's Alpha of .781 percent was obtained, which explains 11.24 percent of the total variance. The media represented scored with values close to five (Strongly agree) and four (agreed), which leads us to think that assimilation is important or very important for entrepreneurs to establish a high level of competitiveness compared to their main competitors. Graph 2 demonstrates the ability to exploit data and the area of application of new knowledge (R9) and plays important routines and processes in organizational learning (R14). Allowing in this dynamic dimension a Cronbach's Alpha referring to the reliability in the proposed reagents of, 781 percent. Evidencing as a key success factor against competitive performance, the skills played by human capital and those organizational routines in deciphering the information transforming it into favorable knowledge for the company.

Graph 2. Values of mean and standard deviation, factor Assimilation

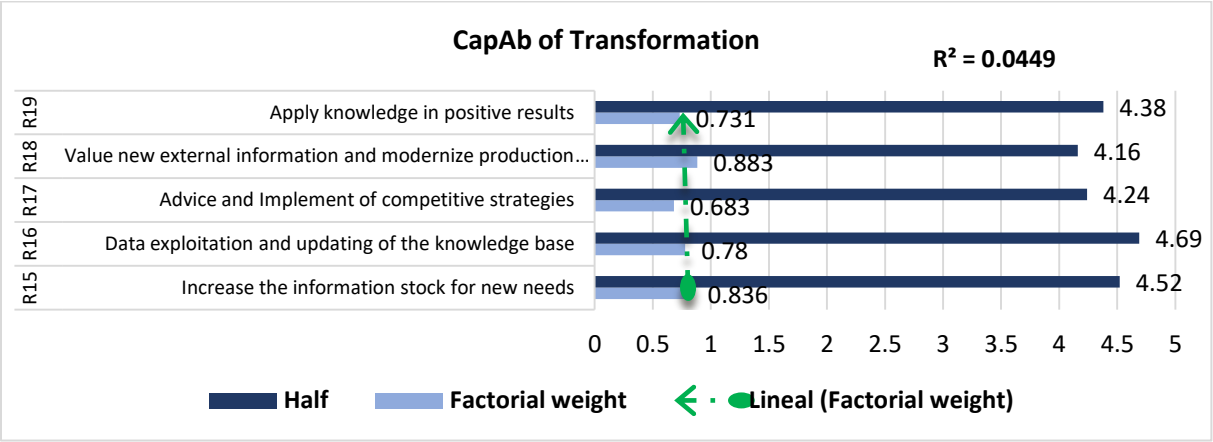


Source: prepared by SPSS, Version 23

b) Importance of the absorption capacity carried out: (Transformation & Exploitation)

When following the frequency of the factor analysis explanation for each factor, the dimension explains the integration of the Transformation factor, which contains five reagents, in the same way as the previous factors, the reagents that were used in the scale, all have values ranging from 1) Strongly disagree to 5) Strongly agree. The average of the factors explains the direct relationship with the importance of the questions and the dimension correlated with the capacity of absorption of knowledge and competitiveness. In this case, Graph 3 shows that the organization has the ability to increase the information stock to generate new needs by converting this resource to detect job opportunities (R15), as well as assessing the new external information and modernizing production processes derived from a technological knowledge (R18); On the other hand, the company considers having human resources with skills to take advantage of and channel knowledge in positive results. Therefore, the transformation capacities through the proposed reagents show reliability in the scale, obtaining an Alpha of Cronbach's of, 754 percent.

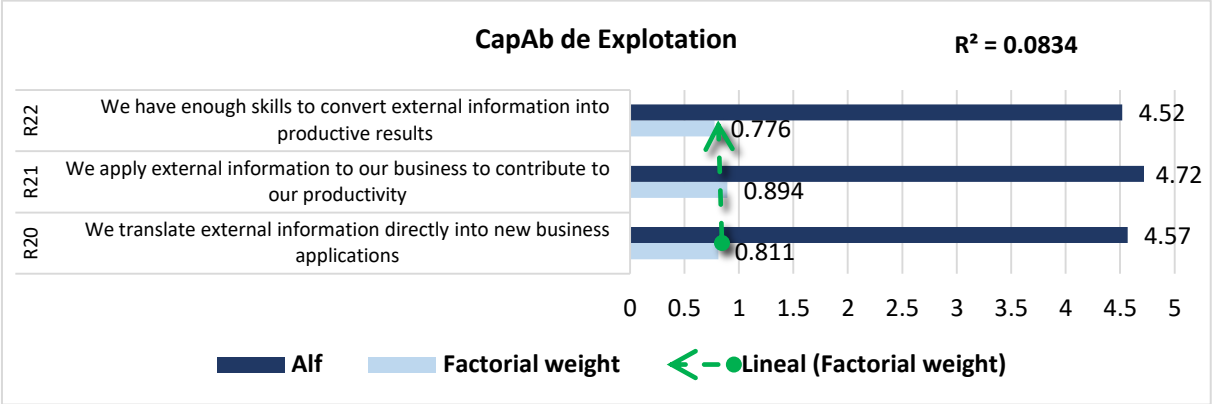
Graph 3. Values of mean and standard deviation, Transformation factor



Source: prepared by SPSS, Version 23

Exploitation capacity, finally, reflects similar values in the factorial weights, with this and all the factors we can establish reliability in the applied scale and observe that what is being measured is really being measured. According to this factor, the organization can translate the external information directly into new business applications, that is, the ability of human capital allows the decoding of external knowledge (R20), at the same time, external information is applied internally to the business. to contribute to productivity, which is reflected in creating future profitable business lines (R21-22), as can be seen in Graph 4. The exploitation capacity through the proposed reagents shows reliability in the scale, obtaining an Alpha of Cronbach's of, 754 percent and, a total explained variance of 6,987.

Graph 4. Values of mean and standard deviation, factor Exploitation



Source: prepared by SPSS, Version 23

According to the previous factorial analyzes (graphs 1, 2, 3, and 4), the percentage of variance explained for each dimension of the CapAb can be observed, where it is shown that the cumulative explained variance is approximately 70 percent, which it makes it an acceptable value. Where the Cronbach's Alpha of the items measured has a greater impact on the factors related to the absorption capacity performed: Transformation, 754 and, Exploitation, 744 percent.

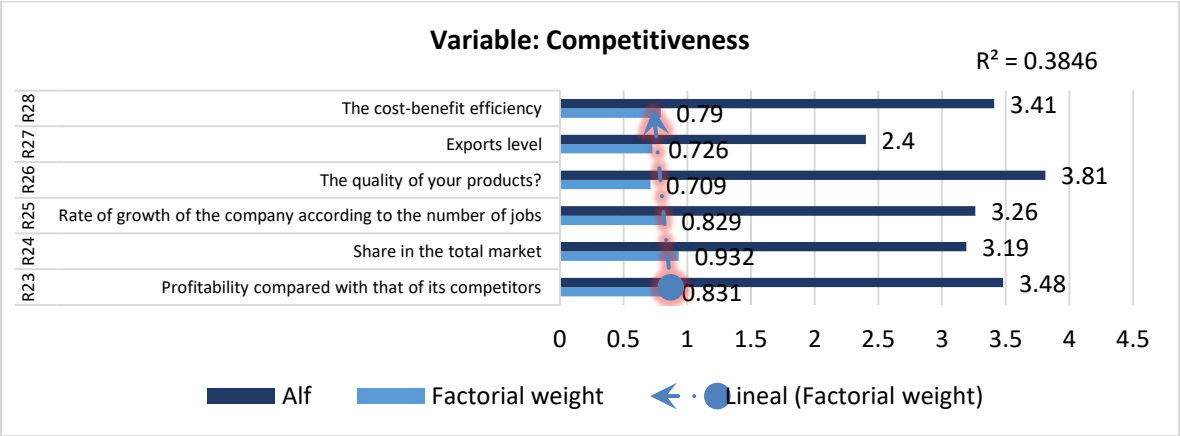
For this case, the high correlations between the assimilation, transformation, and exploitation of knowledge (, 638 y, 674 percent) indicate that in both cases the correlation is significant at 0.01 and bilaterally. The foregoing indicates that the factorial scores report that the capacity carried out by the organizations studied indicates a greater relevance to factors that have to do with the transformation and exploitation; that to factors related to the acquisition and assimilation (potential capacity) of technological knowledge. What it shows for the aquaculturists that the company can detect new job opportunities, as well as the valuation of the technological knowledge implemented and internalized in a forceful way by directly contributing to the innovation effort and the operations of organizations. Together with the skill that the company must exploit knowledge by human capital, facilitating the decoding of the acquired knowledge and, at the same time, developing the ability to create future business lines.

c) Variable: Competitiveness

The dependent variable as the last factor is directly related to the competitiveness of the company, the competitiveness factor is composed of six items. The factorial factors of the competitiveness factor give us to understand a high-reliability index. The values obtained in this component are less than four, where 4 = Agree; they found values express that representatives of the farms refer that the reagents tend to be 3) neither in agreement nor in disagreement, but they also disagree (2), the competitiveness is not so valued, it is not known if it is for the competitiveness obtained in terms of quantity and not in relation to the reagents that could measure this ratio. A high-reliability index is observed for all the factors. Reagent 24 has the highest consistency with a reliability of 932 percent. For the competitiveness factor and as a dependent variable, it reports that the reagents with the most representativeness have, according to the respondent's perception, to agree that their company has a greater profitability compared to its main local competitors (R23), on the other hand, reports that around the market share is much better compared to other producers (R24).Total variance explained = 6.0%; and Alpha de Cronbach's =, 835.

Finally, the competitive performance of the company allows it to have reflected profitability in supplying a market; therefore, it has a greater capacity in production, which requires generating a greater number of jobs favoring the rural population (R25), as well as a positive impact on regional development, see Graph 5.

Graph 5. Values of mean and standard deviation, Competitiveness factor



Source: prepared by SPSS, Version 23

d) Correlation: impact of competitiveness on the factors of knowledge absorption capacity

The correlation of the factors -acquisition, assimilation, transformation, exploitation, and competitiveness- show the direct relationship between each element in relation to competitiveness, achieving very positive values in relation to the capacity of assimilation and transformation in a "moderate-positive" way and, a value with greater interrelatedness with respect to the capacity of transformation and exploitation; where, the lowest score was obtained by the correlation between acquisition and competitiveness, this low correlation could be determined by variables that were not considered, a very general assumption would be that the reactants were not understood. On the other hand, the capacity for assimilation and competitiveness, together show a correlation with a significant score of, 429 percent with a level of correlation with a degree of significance of 0.01 "bilateral"; This allows us to show that the company has the capacity to decode the information acquired in knowledge and then internalize it in those strategic areas that require organizational strengthening. In relation to the transformation and competitiveness factors, the Pearson coefficient shows a score of, 480 percent. Where the correlation is significant at the 0.01 level bilaterally. This allows us point out that the organization has those dynamic capacities that convert knowledge into new and innovative goods produced by the organization. Finally, the factors of exploitation and competitiveness allow observing positive interrelated values, showing a relationship between the level of significance of, 481 percent, reporting a level of significance 0.01 bilaterally. In a more general explanation, the competitiveness of the companies studied is high and has an average index "moderate positive". Therefore, the absorption capacity of scientific and technological knowledge contributes to the competitiveness of organization.

e) Analysis of reliability and factor analysis

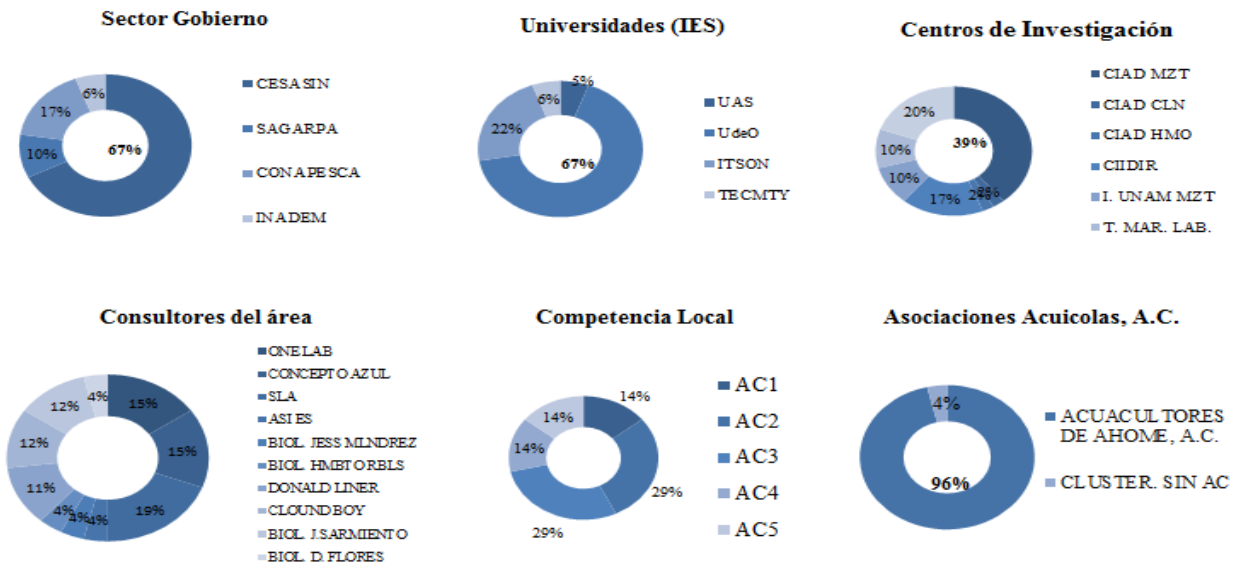
Based on factor analysis, the acquisition reached a reliability index of .846 percent, for the assimilation, a Cronbach's Alpha of .781 percent was obtained, which explains 11.24 percent of the total variance. For the Transformation, a Cronbach's Alpha of .754 percent was obtained, which explains 9.917 percent of the total variance. Finally, the Exploitation, a Cronbach's Alpha of 744 was obtained, which explains 6.987 percent of the total variance. In addition, according to the analysis of Kaiser-Meyer-Olkin (KMO)

and sphericity of Bartlett showed a sample adequacy level KMO is off, 808 percent and Bartlett's sphericity test rejected the null hypothesis of diagonality of the variables. The empirical evidence shows that when performing the exercise, an individual analysis by construct is made, observing that everyone exceeded the minimum level of Cronbach's Alpha required.

f) Analysis of social networks: Actors and networks of knowledge and interaction in the northern region of Sinaloa

This section shows the framework "structure" represented by those units producing white shrimp in the municipality of Ahome. This network of "local" knowledge is made up of shrimp farms, research centers, national and international suppliers, civil association with private participation, higher education institutions (private and autonomous), government sector, local competitors, larvae laboratories, biologists "high potential coaching", sectorial dissemination magazines, among other nodes (Graph 6).

Graph 6. Actors that provide information in the aquaculture knowledge network



Source: self-made

g) Networks and flows in knowledge transfer in aquaculture in northwestern Mexico

The knowledge network identified for the aquaculture sector of the state of Sinaloa, specifically the Ahome region, was built based on 58 farms producing shrimp. The data collected through the field work, allowed to identify various organizations linked to these companies, to provide and exchange information and useful knowledge in their production processes. Among the nodes or external agents providing information include government agencies, higher education institutions, research centers, suppliers of supplies, companies that offer diagnostic or consulting services, as well as civil society organizations. The external agents directly related to the aquaculture companies are usually organisms located in the region where the companies are located. However, some of these, mainly research centers and educational institutions, as well as suppliers, have subsidiaries in other states. The network identified shows that it is an open network, with a total of 493 direct relationships. The density of the network is 0.038, which means that there is low participation regarding the relevance of the loops that can be created if all the nodes are interconnected. And on average each node has 4.2 direct links.

h) Diversity of relationships

The information and knowledge network of the aquaculture industry of Ahome shows that there are aquaculture companies and external agents that provide information and that are more interconnected than others, for example, the aquaculture with the highest degree of connection has 14 contacts, while the most interconnected external agency has 48 direct links. While the minimum number of contacts that some aquaculture companies have, such as some external organisms, is 1. However, most aquaculture companies have 2 direct contacts and external agencies only 1.

As mentioned above, the network is made up of organizations with different remittances. In general, 8 types of organisms were detected that provide information to aquaculture companies, according to the information obtained. Among the various agencies, government agencies, civil associations, competition companies, suppliers of inputs, educational and scientific institutions, as well as consulting firms and clients stand out.

Most of the aquaculture companies (82.8%), showed a relationship with government entities. In this case, the body indicated by the majority of the aquaculturists corresponds to the state aquaculture health committee of the State of Sinaloa (CESASIN)[4]. In addition, the relationship with this organization was evaluated with a very high level of importance by the aquaculture companies. On the other hand, the turns that have the least relationship with the aquaculture companies for the exchange of information and knowledge are competing companies (6.9%) and clients (1.7%), together with the fact that they are considered as organizations that provide low information. importance to relatively important, for innovation and competitiveness of the same sector.

Universities and research centers are related to aquaculture companies by 31% and 34.5%, respectively. While 44.8% are related to civil society organizations, such as the Ahome Aquaculture Association; 60.3% is related to suppliers; and 20% with consulting companies (Table 1).

Table 1

Companies related to the organisms that make up the knowledge network of the aquaculture sector in Ahome, Sinaloa (%)	
A spin of external organisms	The proportion of aquaculture companies related to each turn **(%)**
government	82.8
Suppliers	60.3
Civil associations	44.8
Research centers	34.5
Institutions of higher education	31
Consultants	20
Competitors	6.9
customers	1.7

Source: self-made

On the other hand, regarding the diversity of organisms related specifically to each of the aquaculture companies, it is important to highlight that none of them is related to all the sectors or turns that appear

[4] CESASIN, A.C. It is an auxiliary body of the Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), with the aim of providing support in the prevention, reduction, and elimination of the dangers and diseases that affect the aquaculture crops of the companies of the state of Sinaloa.

in the network. The largest number of drafts, linked to some of the companies, is 6. In this case, there is only 5.1% of companies linked in this way (AH3, AH4, and AH41). While the companies with less diversity in their relationships are those related only to some type of organization, representing this figure with 15.5% of the total number of aquaculture companies analyzed. In general terms, the theme of the diversity of relationships in this study indicates that just over 54% of companies have a relationship with 2 or 3 organizations of different types. And this segment of companies is related, mostly, to government agencies, suppliers and civil associations, with the aim of obtaining information and knowledge that improves their competitiveness.

Since it has been identified which type of organisms have more relation with the aquaculture companies, it is necessary to mention what is the intensity or strength of these relationships. According to the information provided by the companies, the fact that they are, for the most part, related to organizations of a certain type, does not mean precisely that the information they provide is so influential and of interest to fish farmers. Given this, it is important to mention that the intensity or strength of the relationships that aquaculturists maintain with the various organisms has been evaluated through their perception of the impact of the information and knowledge they receive to improve their competitiveness.

The following table shows how companies are related to different turns for the reception of information or knowledge, and it is shown in detail that in addition to the diversity of relationships there are some that tilt or intensify their relations with certain sectors. Such is the case of companies AH1, AH2, AH3, AH4, which have contact with 5 research centers; as well as, with 3 different government entities, not only with the CESASIN health committee, which was previously shown to be the most directly linked external agency with companies in the aquaculture sector. A relevant case is that of aquaculture AH43, which is closely linked to suppliers, which it points to as sources of information and knowledge.

Likewise, it is important to highlight that, in general, aquaculture linked to institutions of higher education only relate to an institution of this type. Except for aquaculture AH2, which is related to 2 (the University of Sinaloa and the University of the West). (Table 2)

Table 2

External organizations by turn linked to aquaculture companies of Ahome, Sinaloa

	Competitors	Government entities	Higher education institutions Suppliers	Suppliers	Research centers	Consult ants	custo mers	Civil society
AH1		3	1	1	5	3		
AH2		3	1	1	5	2		
AH3		3	1	1	5	3		1
AH4		3	1	1	5	3		1
AH5		1		2	1			1
AH6								1

Source: self-made

i) Strength of relations with external agents: main suppliers of aquaculture knowledge of Ahome

Once the sectors linked to the aquaculture sector have been identified, it is important to point out the level of importance that the shrimp producers in Sonora give to their contacts. In general, 86% of the production units consider the organisms for the transfer of information and knowledge, as important to very important sources, with respect to the information and knowledge they transmit.

In the instrument, the informants were asked to identify the level of importance based on a 5-point Likert scale. Subsequently, the averages of the valuation given by each aquaculture company to each of

its sources of information and knowledge were calculated. The result is governmental entities and civil association's organizations that offer information and knowledge of greater importance according to the aquaculture companies related to organisms of this type. While only one company reported having contact with clients, and this type of agency received a very low evaluation regarding the importance of the information it provides to the aquaculture sector. Part of the government agencies that most influence aquaculture companies are CESASIN and SAGARPA, the sociograms shown indicate through the lines the intensity of the links with the aquaculture production units, the intensity of the color indicates greater strength in the relationships.

These organizations provide support and provide technical assistance to the aquaculture sector in matters of prevention, control and/or eradication of pathogens, as well as the promotion of control of health and safety risks. While the aquaculture association of Ahome, is considered in the northwest of Mexico; a key bastion committed to promoting the development and innovation of aquaculture organizations through the specialization of management techniques and the strengthening of human capacities to achieve more efficient and successful production processes (Figure 1).

Figure 1. Strength of links related to CESASIN

Source: own elaboration through UCINET 6 and NetDraw 1

As part of the most influential external agencies, there is also the Ahome Aquaculture Association, which is an organization that provides support in the administrative and technological management of aquaculture production units. Likewise, the strength of the links between aquaculture and government entities and the aquaculture association can be corroborated by the intermediation index obtained for these organisms, when related to other nodes within the network (Figure 2).

Figure 2. Strength of the links related to the Ahome Aquaculture Association

Source: own elaboration through UCINET 6 and NetDraw 1

In the case of CESASIN, the highest index of interconnection in the network (intermediation index) was obtained, with a value of 3.756; while the lowest value obtained in the network is from 0 to 0.25. This value indicates that CESASIN is a key node in the structure of the Ahome aquaculture network, since,

being so interconnected to others; it is a key element in the flow of information to others. In addition, it has a Bonacich index equal to 6.707; likewise, the highest value in the network. This index indicates that the nodes connected to the CESASIN also have high levels of interconnection, further reinforcing the levels of flow and transfer of information to other nodes in the network. While the association of aquaculturists of Ahome, it is the second organism with the levels of interconnection and index of Bonacich, when presenting values of 1177 and 3804, respectively.

Among the external organisms that provide information and knowledge, the analysis of the data shows that the suppliers of food, probiotics, and larvae; as well as higher education institutions, research centers, and consulting firms are considered important in the issue of the impact of the information they provide, estimated through the variable FORCE.

j) Descriptive analysis of networks

The strength of relations with CESASIN and the Ahome Aquaculture Association may be due to the proximity, in terms of geographical location. As well as, for more active participation by the aquaculturists in assemblies and meetings organized by the representatives of these external organisms. It is convenient to deepen and make analyzes that correlate the characteristics of the external organisms with the force of the relationships perceived by the farmers, to identify which factors have more impact on these relationships (Table 3).

Table 3

Network analysis measures for external agents

CODE	GRADE	BONACICH	INTERMEDIATION	FORCE
AC1	1	85.417	0	3
AC2	2	257.891	0.25	5
AC3	2	165.84	0.25	4
AC4	2	165.84	0.25	3
AC5	1	1.238	0	5
CESASIN	48	6707.905	3756.49	4.7
SAGARPA	7	1302.844	25.622	5.0
CONAPESCA	12	2727.209	100.165	3.8
INADEM	4	1207.332	0.875	3.0
CIAD MZT	16	2965.367	587.812	4
CIAD CLN	1	168.604	0	5
CIAD GVE	1	53.182	0	4
CIIDIR	7	1532.412	90.699	3.3
I. UNAM MZT	4	1207.332	0.875	2.0
T. MAR. LAB.	4	1207.332	0.875	4.0
CIBNOR	8	1614.661	133.238	3.1
UAS	1	103.788	0	5.0
UDEO	12	1825.239	154.724	3.8
ITSON	4	1207.332	0.875	4.0
TECMTY	1	173.261	0	4.0
PROV1	4	1207.332	0.875	3.0
PROV2	7	1286.95	29.594	3.9
PROV3	4	339.197	221.34	3.5
PROV4	6	631.205	37.499	4.7
PROV5	1	130.906	0	4.0
PROV6	1	44.755	0	5.0
PROV7	1	76.141	0	4.0
PROV8	5	987.697	1.938	4.0
PROV9	2	205.868	1.513	4.5
PROV10	1	128.294	0	4.0
PROV11	1	168.604	0	5.0
PROV12	4	482.299	18.564	5.0
PROV13	5	398.215	117.173	4.4
PROV14	2	268.377	2.419	4.5
PROV15	1	121.837	0	5.0
PROV16	1	1.238	0	4.0
PROV17	1	96.255	0	3.0
PROV18	1	96.255	0	3.0

PROV19	1	124.226	0	4.0
PROV20	1	173.261	0	3.0
PROV21	1	130.906	0	5.0
PROV22	1	43.71	0	4.0
PROV23	2	84.085	4.9	2.5
CONSUL1	4	1207.332	0.875	4
CONSUL2	4	1207.332	0.875	4
CONSUL3	4	1207.332	0.875	3.8
CONSUL4	1	53.182	0	4
CONSUL5	1	85.417	0	5
CONSUL6	1	85.417	0	5
CONSUL7	3	529.186	0.429	2
CONSUL8	3	529.186	0.429	2
CONSUL9	3	529.186	0.429	3
CONSUL10	1	5.012	0	4
ACUAC AC	26	3804.077	1177.278	4.6
C.S.AC	1	173.261	0	1

Source: own elaboration through UCINET 6 and NetDraw 1

4. CONCLUSIONS

Shrimp production in Mexico is carried out through two sources, fishing in natural ecosystems and aquaculture farms. Shrimp farming represents a trigger in the economy and subsistence of regional-rural communities by offering ample business opportunities, but above all, food alternatives and the recovery of natural populations that have been decreasing in recent years. Regarding fishing, many of the fishing resources are already at the limit or sustainability levels. It should be noted that although it is clear that there is a large number of available resources; few are of real importance either because of their magnitude or value. In addition, there is a clear asymmetry in the distribution of important resources that are mainly located in the northwest of the country.

Shrimp farming in northwestern Mexico, and especially in the northern region of Sinaloa (municipality of Ahome), has reported in recent decades one of the most significant areas in the Pacific coast of Mexico concerning the cultivation of Pacific white shrimp. Therefore, the primary activity based on aquaculture represents an economic activity with a higher rate of growth compared to other agricultural activities, besides a relevant pillar that provide or generate in providing food of animal origin, generating jobs, foreign currency and encouraging regional development of the population where said aquaculture activity is performed.

The results verify what the theory affirms according to the literature (Zahra and George 2002; Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M., 2011; Carrazco Escalante, J., y León Balderrama, J., 2017). By showing that the ability to absorb knowledge generated outside the organization, are considered key resources to create innovative goods produced. In this case, the farms studied indicate a greater relevance to factors that have to do with the transformation and exploitation (capacity carried out); that to factors related to the acquisition and assimilation (potential capacity) of scientific-technological knowledge. What it means for aquaculturists the ability to detect new business opportunities, as well as the appreciation of technological knowledge implemented and internalized in a forceful way to contribute directly to competitiveness, innovation effort, and organizational operations.

In this case, the transformation dimension exerts a relevant function by increasing the volumes of knowledge and information generating innovations and business opportunities; likewise, it has nough skills to expand the resources obtained and renew its stock of knowledge, with the intention of modernizing its production processes in comparison with its competitors.

On the other hand, the importance in terms of the properties of the network and the position of the actors is composed by means of a construction -matrix- of the relations from the affiliation network;

which shows the participation among the actors that make up the knowledge network regarding the information flows that the representative units that produce shrimp receive. The diversity of the relationships is one of the characteristics of the network of each aquaculture company; however, the need arises to analyze in a statistical way the influence of each one of the turns related to the level of knowledge. However, it is necessary to continue advancing in the statistical correlation with the data obtained through the analysis of social networks with the categories referring to the type and frequency of farms dedicated to shrimp farming.

Based on the above, the article provides an empirical study demonstrating the ability to absorb knowledge technological cutting and competitiveness, in synergy whit the position of the organization in the framework of social interconnections through a knowledge network (business), contribute positively in obtaining sustainable competitive strategies, as evidenced by study based on those small and medium-sized shrimp farms in the region studied, which are considerate to be of low technological intensity compared to other economic sectors.

REFERENCE

Acosta, J. C.; Longo-Somoza, M. y Fischer, A. L. (2013). Capacidades dinámicas y gestión del conocimiento en nuevas empresas de base tecnológica. Cuadernos de Administración, 26 (47), 35-62

Berg, D. y Lim, E. (2008): “Learning how to restructure: Absorptive capacity and improvisational views of restructuring actions and performance”, *Strategic Management Journal*, vol. 29, nº 6, pp. 593-616.

Benzaquen, J., Alfonso del Carpio, J., Zegarra, J., y Valdivia, C., (2010). Un Índice Regional de Competitividad para un País. Revista CEPAL 102 • Diciembre.

Becerra F., Serna, H., y Naranjo, J., (2013). "Las redes empresariales y la dinámica de la empresa: aproximación teórica". Innovar, 18(32), 27-46.

Barney, J. (1991). Firms resources and sustained competitive advantage. Journal of Management, 17 (1) Pp.99-120.

Carrazco Escalante, J., y León Balderrama, J. (2017). Capacidad de absorción y competitividad en el cultivo de camarón del municipio de Ahome, Sinaloa. Estudios Sociales, 27 (50) http://dx.doi.org/http://dx.doi.org./10.24836/es.v27i50.475.

Camisón, C.; La piedra, R.; Segarra, M.; Boronat, M. (2002). Meta-análisis de la relación entre tamaño de empresa e innovación. Instituto Valenciano de Investigaciones Económicas, S.A.

Canto H., Vera E., De la Torre T. (2011): “Análisis de la relación entre el capital organizativo y la capacidad de absorción potencial del conocimiento externo en la industria farmacéutica mexicana.*Área de investigación: Entorno social de las organizaciones.* ANFECA-UNAM. México.

Capó-Vicedo, J., Expósito-Langa, M., Masiá-Buades, E., (2007). La importancia de los Clúster para la Competitividad de las PYME en una Economía Global. Revista Eure (Vol. XXXIII, Nº 98), pp. 119-133, Santiago de Chile, mes de mayo.

Cohen, W. y Levinthal, D. (1990): "Absorptive capacity: A new perspective on learning and innovation", administrative Science Quarterly, vol. 35, nº 1, pp. 128-152.

Camisón, C. y Forés, B. (2010): "Knowledge absorptive capacity: New insights for its conceptualization and measurement", Journal of Business Research, 63, pp. 707-715.

Forés, J. y Camisón, Z. (2008). La capacidad de absorción de conocimiento: factores determinantes internos y externos. Dirección y Organización, 36, 35–50.

Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. *European Management Journal*, *29*(2), 98-116. DOI: 10.1016/j.emj.2010.11.002

Garzón-Castrillón, M. (2016). Capacidad dinámica de absorción. Estudio de caso. Orinoquia, 20 (1), 97-118.

García, E., & Martín, R., & Fernández, V. (2016). ¿Los activos tecnológicos fomentan la capacidad de absorción? Contabilidad y Negocios, 11 (22), 69-83.

González S. y García E. (2011): conceptuación y medición del constructo capacidad de absorción: Hacia un marco de integración. *Revista de Dirección y Administración de Empresas*. Número 18, diciembre 2011 págs. 43-65.

Grant, R. (1996a): «Prospering in Dynamically-Competitive environments: organizational capability as knowledge integration», Organization Science, 7(4), págs.375-387. _ (1996b) «Toward a knowledge-based theory of the firm», Strategic Management Journal, 17, págs. 109-122.

Gutiérrez-Enríquez E., García-Magallanes R., Rentería-Fernández L. (2010). Estudio de caso: "Uso de las redes sociales como una herramienta de análisis de la estructura de grupo informal. Hitos de Ciencia Económico Administrativo 2010; 16 (44): 35-40.

Hoang, H. y Rothaermel, F. (2010): "Leveraging internal and external experience: Exploration, exploitation, and R&D project performance", Strategic Management Journal, vol. 31, nº 7, pp. 734-758.

Jansen, J.; Van Den Bosch, F. y Volberda, H. (2005): "Managing potential and realized absorptive capacity: How do organizational antecedents matter?" *Academy of Management Journal*, vol. 48, nº 6, pp. 999-1015.

Jansen, J. J. P., Van Den Bosch, F. A. J. y H. W. Volberda (2005) "Managing potential and realized absorptive capacity: How do organizational antecedents matter?" *Academy of Management Journal.* Vol. 48, núm. 6, pp. 999-1015.

Kane, A. (2010): "Unlocking knowledge transfer potential: Knowledge demonstrability and superordinate social identity", Organization Science, vol. 21, nº 3, pp. 643-660.

León S., Carbajal R., (2006). Competitividad: marco conceptual y análisis sectorial para la provincia de Buenos Aires. Ministerio de Economía de la Provincia de Buenos Aires.

León, J., Beltrán, A., Núñez, L. y Preciado, J. (2012). El ciad y el mejoramiento de la competitividad de las mipyme locales de la industria de alimentos: Evaluación de la efectividad del Programa de Servicios Estratégicos. Estudios Sociales, 2(2), 99–123.

Lane, P. Koka, B. y Pathak, S. (2006): "The reification of absorptive capacity: A critical review and rejuvenation of the construct", Academy of Management Review, vol. 31, nº 4, pp. 833-863.

Lane, P. Lubatkin, M. (1998) "Relative absorptive capacity and interorganizational learning." *Strategic Management Journal*. Vol. 19, pp 461-477.

Máynez-Guaderrama, A., & Cavazos-Arroyo, J., & Nuño-De la parra, J. (2012). La influencia de la cultura organizacional y la capacidad de absorción sobre la transferencia de conocimiento tácito intra-organizacional. Estudios Gerenciales, 28, 191-211.

Matta, A, (2012). Aportes del Análisis de Redes Sociales a la Gestión de Estrategias de Cooperación Empresarial.

Molina-Morales, F., Capó-Vicedo, J., Tomás-Miquel, J.; Expósito-Langa, M. (2012). Análisis de las redes de negocio y de conocimiento en un distrito industrial. Una aplicación al distrito industrial textil valenciano. Cuadernos de Economía y Dirección de la Empresa, Sin mes, 94-102.

Nieto, M., & Quevedo, P. (2005). Absorptive capacity, technological opportunity, knowledge spillovers, and innovative effort. *Technovation*, 25(10), 1141-1157.

Olivares, A., Coronado, J., Pabla, M., Guereña de la Llata, J. (2014). Factores Explicativos de la Competitividad para las Pymes de Manufactura en el estado de Sonora. Núm. 19, Julio- diciembre.

Porter, E. (1982). Estrategia competitiva: técnicas para el análisis de los sectores industriales y de la competencia. Décimo séptima reimpresión, marzo.

Preciado, J. (2001). "Agrupamiento de patrones correlacionados y con incertidumbre: caso patrones climáticos en la producción de uva de mesa en un viñedo de Sonora: Maestría y Doctorado en Ciencias e Ingeniería Universidad Autónoma de Baja California.

Quero Virla, M. (2010). Confiabilidad y coeficiente Alpha de Cronbach. Telos, 12 (2), 248-252.

Sanz, L. (2003). Análisis de redes sociales: o cómo representar las estructuras sociales subyacentes. Apuntes de Ciencia y Tecnología.

Szulanski, G. (1996) "Exploring internal stickiness: Impediments to the transfer of best practice

Within the firm." Strategic Management Journal. Vol. 17, pp. 27-43.

Salas, V. (1996): «Economía y gestión de los activos intangibles», Economía Industrial, 307, págs. 17-24.

Teece, D. (2000) "Strategies for managing knowledge assets: The role of firm structure and industrial context." Long Range Planning. Vol. 33(1), pp. 35-54.

Todorova, G.; Durisin, B. (2007) "Absorptive capacity: Valuing a reconceptualization." *Academy of Management Review*. Vol. 32(3), pp. 774-786.

Tepic, M., Jacques, H., Trienekens, R., and S.W.F. Omta. (2012). The Influence of Networking and Absorptive Capacity on the Innovativeness of Farmers in the Dutch Pork Sector. International Food and Agribusiness Management Review Volume 15, Issue 3.

Van den Bosch, F.; Volberda, H. y Boer, M. (1999): "Coevolution of firm absorptive capacity and knowledge environment: organizational forms and combinative capabilities", *Organization Science*, vol. 10, nº 5, pp. 551-568.

Volberda, H. Foss, M. (2010). Absorbing the Concept of Absorptive Capacity: How to Realize Its Potential in the Organization Field. Organization Science 21 931-951.

Vega, J. y Gutiérrez, A., (2005). Los Determinantes de la Innovación Tecnológica en la Empresa: Una Aproximación A Través del Concepto de Capacidad de Absorción. XI Seminario Latino-Iberoamericano de Gestión Tecnológica. 25 a 28 de octubre. Sin mes.

Zahra, S. y George, G. (2002): "Absorptive capacity: A review, reconceptualization, and extension", Academy of Management Review, vol. 27, nº 2, pp. 185–203.

Zollo, M. y Winter, S. (2002): "Deliberate learning and the evolution of dynamic capabilities", Organization Science, vol. 13, nº 3, may-June, pp. 339-351.