Knowledge management in agricultural production associations

Dirección del conocimiento en asociaciones de producción agrícola

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1. Introduction

The current business environment, characterized by accelerated changes, is being developed in the context of a new economic paradigm recognized as the knowledge economy or knowledge society (Drucker 1992; Castells, 1999; Castello, 2002), where the speed of
information’s flows and capacity of response is crucial to staying in the markets. In order to generate competitiveness, companies rely on the use of differentiated resources (Rumelt, 1991; Hall, 1992), with a strong strategic nature (Amit and Schoemaker, 1993). Thus, the resource-based view firm (Wernerfelt, 1984; Barney, 1986; Mintzberg, 1990) and the dynamic capabilities approach (Teece, Pisano and Shuen 1997; Teece 2014; Winter, 2003; Zahra, Sapienza and Davidsson, 2006) reinforce the need to identify and manage a combination of internal and external factors that allow firms to generate and maintain competitive advantages in changing markets.

The knowledge-Based view of the firm (Nonaka, 1994; Nonaka and Takeuchi 1995; Grant, 1996) highlights the strategic nature of knowledge, identified as an intangible resource linked to individual, group and organizational learning capacity. Knowledge has been considered as a factor of production (Drucker, 1992; Nonaka, 1994), recognized as a key element to generate value and sustainable competitive advantages, regardless of the industry and the size of the company.

In this paper, we are concerned with describing the reality of cocoa manufacturing firms from the perspective of knowledge management and its dimensions, through the perception of the managers and those responsible for the transformation process. The associations of small cocoa producers in Ecuador are dedicated to growing and marketing their product through intermediaries or directly to exporters. Processing has not been part of their business. However, some associations stand out because they are able to obtain some cocoa derivatives through artisanal production. This activity is carried out mainly by women, maintaining presence in the local markets mainly through fairs.

In this way, the present work aims to identify the practices of knowledge management implemented by the associations that process artisanal products of cocoa in the province of El Oro (Ecuador), considering the dimensions of generation, transfer and application of knowledge. We try to get an approaching of the reality of the country based on the Theory of Organizational Knowledge (Bueno, 2004; Nagles, 2013; Nonaka and Takeuchi, 1995) and on the exploration of organizational routines related to the dimensions of knowledge management (Bernal, Frost and Sierra 2014; Gonzalez and Garcia, 2011).

To achieve this objective, a qualitative methodology was applied through interviews with chief executives officers and production managers of seven artisanal cocoa processors in the province of El Oro.

Starting from an approach to the reality of associative companies, the results will allow identifying those factors that could be strengthened by the managers, in order to develop key distinctive competences. Due to the sector’s implications for the rural population, from job opportunities and productive reactivation, we consider that this study, in the absence of previous works, can contribute to the institutions that have competence in the design and execution of policy local development. Thus, a background of current practices around knowledge management could contribute to address organizational learning processes that strengthen the level of competitiveness of cocoa producers’ associations, immersed in market dynamics that make visible their ability to compete.
Following Polanyi (1962) and Nonaka and Takeuchi (1995), from an epistemological dimension, tacit and explicit knowledge are identified. Tacit knowledge is intuitive and informal in nature. It is accumulated in human beings, in relation to a particular context from which individual experience is derived and difficult to codify, so their communication takes place through socialization, being transmitted directly (Louffat, 2013). Explicit knowledge has as main characteristics the materialization through documents, procedures that involve the systematization and codification of knowledge. It is located at an operational level and it is possible to transmit it in a verbal way (Nonaka and Takeuchi, 1995; Smith, 2001; Nagles, 2013).

From an ontological dimension (Ordóñez, and Parreño, 2005; Caraballo, 2006), knowledge can be individual or collective. In this process takes place the transference from the interaction between individuals, supported by procedures, rules, routines and tools. In practice, knowledge is generated from two perspectives (Nonaka and Takeuchi, 1995), internally, through the interaction of individuals in groups, and from the perspective of the exchange that takes place with external actors. This external knowledge will require several processes to be captured, shared and exploited (González and García, 2011).

Knowledge and the learning ability (Nevis, DiBella and Gould, 1995) associated with its achievement foster the adaptive capacity of organizations to situations derived from the environment (Cohen and Levinthal, 1990). In this sense, activities related to knowledge management, make easy the internal creation of value, making differences among competitors (Lapièdra and Alegre, 2005; Camisón, Boronat, Villar and Puig, 2009). Table 1 compiles the contributions of several authors that identify the main dimensions related to knowledge management.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davenport, De Long and Beers</td>
<td>Exploration, creation, transfer and use.</td>
</tr>
<tr>
<td>(1998, p. 43)</td>
<td></td>
</tr>
<tr>
<td>McAdam and Reid (2001, p. 233)</td>
<td>Sharing, creation, incorporation, diffusion, uses and benefits.</td>
</tr>
<tr>
<td>González and García (2011, p. 88)</td>
<td>Identification, transmission, media and technology, decision making, organizational culture and competition.</td>
</tr>
<tr>
<td>Torres, González and Arango (2014, p. 68)</td>
<td>Identification, retention, socialization, protection, use and creation.</td>
</tr>
</tbody>
</table>

Source: Self elaborated from the authors of the table.

From these perspectives, we define knowledge management as the set of activities that characterize internal practices to create, develop and transfer knowledge. This knowledge management is a "systematic process of value creation" (Briceño and Bernal, 2010, P.179), which strengthens the human talent development capacity to identify, solve problems and propose improvements in relation to the internal organizational situation and the market.
Knowledge management’s practices are different according to the sector and size of the firms subject to the analysis. Table 2 shows a review of the studies carried out in firms from different countries (mainly Latin America).

**Table 2**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zapata and Pineda, 2006.</td>
<td>4 small firms. Information technology sector. Barcelona, Spain.</td>
<td>Conceptual model to guide the generation of knowledge through external knowledge acquisition and internal creation. Knowledge transfer through formal and informal ways. However, direct communication is preferred.</td>
</tr>
<tr>
<td>Manzano, González and Peñaranda, 2015</td>
<td>134 firms of Ocaña, Colombia.</td>
<td>Knowledge requires technological and communication tools that strengthen the corporate culture, highlighting the importance of active participation of human factor in the process of knowledge transfer.</td>
</tr>
<tr>
<td>Arias, 2012.</td>
<td>7 leader innovation firms through the exploitation of knowledge, Colombia.</td>
<td>Organizational innovation reaches maturity when firms create spaces between knowledge acquisition, exchange and implementation.</td>
</tr>
<tr>
<td>Maldonado, Martínez and García, 2012</td>
<td>125 small and medium sized enterprises (SMEs) from Aguascalientes, Mexico.</td>
<td>Knowledge management contributes to the growth of SMEs. Competitiveness involves strategic activities of knowledge transfer by sharing of skills and experiences.</td>
</tr>
<tr>
<td>Liborona and Ruiz, 2013.</td>
<td>100 firms with e-learning platforms. Several sectors. Chile.</td>
<td>Development of knowledge transfer tools, although of limited use. Weakness stands out of the lack of knowledge management and methodologies. Few collaboration programs to share knowledge.</td>
</tr>
<tr>
<td>Maldonado, Hernández and Domínguez, 2013</td>
<td>30 artisanal producers. Oaxaca, Mexico.</td>
<td>Proposal of a model to measure knowledge variables through 8 indicators.</td>
</tr>
<tr>
<td>Valencia, 2013.</td>
<td>SMEs from Cali, Colombia</td>
<td>Model of generation and transfer knowledge focused on organizational culture, training and competitiveness.</td>
</tr>
<tr>
<td>Marylanda, 2015.</td>
<td>22 coffee firms. Colombia</td>
<td>Weak employment of knowledge management practices, specifically in the sharing of information. This reveals the need to reinforce organizational culture.</td>
</tr>
</tbody>
</table>
As can be seen from Table 2, the studies identify common aspects such as the need to establish methodologies for the measurement of knowledge and to define mechanisms for its transfer. All this under a key organizational culture that considers the implicit processes to the generation and transfer of knowledge in organizations.

Considering the literature review and the objective proposed, this investigation tries to answer the following research question: what activities related to knowledge management are carried out in the artisanal cocoa processing firms? Considering that in Ecuador there are no studies focused on the knowledge management applied to this sector, we justify that the application of this research can begin to generate referents, from the academic discussion that explores the organizational reality of a sector, to the business circles that adopt best practices based on the knowledge to improve their competitive position.

2. Methodology

To reach the objective proposed, a qualitative methodology was used. Based on the Grounded Theory, a set of strategies such as the simultaneous collection and analysis of data, and the interaction between induction and deduction (Glaser and Strauss, 1967, 1992; Strauss and Corbin, 1990; Locke, 1996) were applied.

The Grounded Theory is widely recognized in the social sciences as a methodological alternative with scientific rigor, used for the collection and analysis of data. Part of capturing the interpretations that emerge from the actors involved regarding the object of study. Multiple case studies made by Brown and Eisenhardt (1997) and Eisenhardt and Graebner (2007), studies on knowledge management and transfer carried out by Hunter, Hari, Egbu and Kelly (2005) and Hajro, Gibson and Pudelko (2017), and works focusing on the dynamic capacities made by Eisenhardt and Graebner (2007) and Donada, Nogatchewsky and Pezet (2016) highlight the implementation of this theory.

The information contained in the official databases of the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP, in Spanish acronym) and the Superintendency of Popular and Solidarity Economy (SEPS, in Spanish acronym) was used to identify the population under study. In addition, interviews were made to those responsible for the programs applied to the cocoa producing sector in the province, such as the Autonomous Provincial Government of El Oro (GPAEO, in Spanish acronym) 16 associations and 2 independent producers registered as cocoa producers and processors were identified. Finally, 7 associations from the Province of El Oro became the sample of the study.

These companies are dedicated to the production of cocoa derivatives with characteristics of artisanal production. The associations are made up of an average of 50 producers, ranging from
45 to 70 years old. They are usually made up of farmers and their wives, belonging to rural areas with little development. There is a good level of relations with representatives of national government and local governments, which plan and carry out training and technical assistance activities, as part of programs within the framework of public and sectoral policies.

In order to justify the application of the study to the resulting sample, we rely on works applied in artisanal companies of several sectors (Vargas, 2014; Alvarez-Gayou, 2003).

For the collection of information, a semi-structured questionnaire was designed and adapted to the contributions made by Lapiedra and Alegre (2005) and Camisón, et al., (2009). It consisted of thirty questions that referred to the dimensions of knowledge management (acquisition, transfer and application) and the strategic dimension (institutional structure, organizational culture and technological resources).

The questionnaire was applied by means of a personalized interview to the chief executives officers and/or production managers of each one of the associations in scheduled visits to their headquarters.

The T-Lab software version 8.1, automated quantitative content analysis software (Stefanello, De Francisco and Carranza, 2010) was applied for the treatment of the data. The methodological tasks of this tool included: the collection of information through interviews, the transcription of the interviews into a single document, the import of the document from the software, the use of lexical instruments, the selection of keywords, the application of analysis of co-occurrence of keywords and the thematic analysis of context units.

### 3. Results

The textual corpus consists of 7 stories that are equivalent to the interviews, structured in 78 paragraphs. The automated analysis identifies 5 thematic clusters, each one of them conformed by elementary contexts (paragraphs) that represent the affinity of the words. That is, word patterns considered lemmas. Clusters are given a name based on the measure of repetition of lexical units and the articulation of them in the context of the interviewees' discourse. The respective denomination of clusters is exposed in Table 3.

<table>
<thead>
<tr>
<th>Number of cluster</th>
<th>Name</th>
<th>Number of paragraphs</th>
<th>Representation of paragraphs in the corpus</th>
<th>Lemma</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster 1</td>
<td>Alliance</td>
<td>18</td>
<td>23.08%</td>
<td>MAGAP</td>
<td>20.506</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Training</td>
<td>15.92</td>
</tr>
<tr>
<td>Cluster 2</td>
<td>Strategic dimension</td>
<td>18</td>
<td>23.08%</td>
<td>Plan</td>
<td>22.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mission</td>
<td>21.044</td>
</tr>
<tr>
<td>Cluster 3</td>
<td>Health registry</td>
<td>9</td>
<td>11.54%</td>
<td>Register</td>
<td>29.026</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trademark</td>
<td>27.327</td>
</tr>
</tbody>
</table>

Table 3

Thematic clusters
The criteria of automatic grouping of data analysis software corresponds to the order and concurrence in the semantics, classifying the corpus into 5 clusters (relative representation 100%), named according to the contextualization of the lemmas. In Table 3 the two words of greatest participation and the value of the Chi-square statistic are presented for each cluster. From these characteristics, the analysis of the results of each cluster is performed.

Cluster 1 presents 14 words with greater participation. Taking into account the total of words that conform it and the value of its Chi-square, we define it as "alliance". The alliance is the strategy that the members of the associations prioritize taking advantage of the nexos to acquire the technical knowledge from the training promoted by governmental institutions like MAGAP.

Cluster 2, consisting of 17 keywords, where plan and mission correspond to the most significant values of Chi-square, is identified as "strategic dimension". In this cluster highlights the positive perception regarding planning to strengthen the achievement of results that remain as stated expectations in the vision. However, it is verified that independent associations and artisans have a weak domain in the application of tools for the planning and control of the fulfillment of objectives.

Clusters 3 and 5 are composed of the most representative slogans "health registry" and "paste" respectively. These are clusters with a very close thematic. The slogans are directly related to the activities carried out for the learning of the associated and independent artisans, who assume the need to improve the processes for obtaining the star product, the cocoa paste. Although there is an interest in these processes, in practice only one association has managed to obtain the health registration for commercialization, another has ongoing procedures and the others, do not document their production processes, making it difficult to transfer knowledge and formalize the health registry.

Cluster 4, composed of 12 words with greater participation, has been defined the information and communication technologies, "ICTs". In the textual analysis, there is a weakness in the use of technology for obtaining, processing information and communication between partners and institutions allied to the productive sector of the province of El Oro. The communication is mostly by telephone. Through this way call meetings and receive invitations to participate in local fairs.

4. Conclusions

The objective of this work was to identify the practices of knowledge management implemented by associations that process artisanal products of cocoa in the province of El Oro (Ecuador), considering the dimensions of generation, transfer and application of knowledge. The results obtained allow us to conclude the following, within each of the dimensions considered.

4.1. Knowledge generation

In the firms analysed the generation of knowledge is reflected in the search and use of opportunities derived from good relations with the external environment. Alliances generated with public institutions are used to join training programs and acquire knowledge related to
administrative and planning tools, updating of health issues, use of information and communication technologies. Permanent contact with local government agencies is a priority source for controlling and planning participation in local and national fairs.

4.2. Knowledge transfer
The explicit knowledge coming from the training workshops by the technicians of the governmental support programs is shared through socialization, focusing on tacit knowledge, acquired in the dialogue with the support institutions and the experience derived from the participation in fairs that brings them closer to market knowledge.

4.3. Knowledge application
The application of knowledge is revealed in the improvement of the presentation of products, new packaging, labels and new derivatives. Although the products are obtained in the framework of artisanal processes - the majority of associations do not have health registration - this characteristic has been used to sell a differentiated product of the industrial processes that incorporate chemical additives. The experience derived from the participation in fairs, over several years, has led them to improve and adapt to the changes observed in the market, both in competition and in the preferences of consumers. According to these ideas, they have adapted the way of selling their image at fairs, associated with organic production, highlighting the local origin, and in the preparation for the public to communicate and promote the benefits of their artisanal products. In this sense, the knowledge generated through a combination of external learning, strengthened in alliances with other actors, and the internal exploration, fundamentally of the know-how of the members with more experience and tacit knowledge, reveal an application of knowledge in aspects related to the market. Thus, the way to take advantage of the differentiation marked by artisanal production is reflected as a strategy to remain competitive in a segment of the market.

The need to generate competitive advantages is independent of the size of the firms and, the artisanal cocoa processors face great challenges to remain in a market characterized by the supply of industrialized products that gain adherents with the marketing formulas carried out.

The results obtained have allowed an approach to the reality of the knowledge management in artisanal cocoa associations. However, this paper presents some limitations, such as the small number of companies analyzed and the impossibility of generalizing the results to the population as a whole, due to the qualitative nature of the research. Therefore, in order to identify the variables associated with knowledge management that influence the performance of cocoa processors, it is proposed as a future line of research to extend this exploratory analysis and complement it with a confirmatory analysis.

Bibliographic references


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