Knowledge Management and Interorganizational Networks of the Wine Industry

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Abstract: Interorganizational networks have stood out in the agribusiness sector as arrangements in which people collaborate and cooperate to obtain external knowledge resources, and to drive innovation and sustainability. Therefore, knowledge management (KM), through its practices and processes, assists in the creation and sharing of knowledge collaboratively among network participants. The present study aims to analyze the knowledge processes adopted in interorganizational networks of the Portuguese wine supply chain. The research is applied in nature and adopts a qualitative approach through a descriptive exploratory study. The multiple case study method was used, carried out in three wine networks in the wine regions of Tagus and Alentejo in Portugal. Field data were collected using the interview technique, supported by a semi-structured script. The results indicate that the companies participating in the networks have common goals: to access external knowledge resources, reach international markets, develop product innovations, and create sustainable brands. However, the findings also allow us to consider that access to knowledge resources depends on the capacity of each company in the network. Thus, the mere formation of networks does not guarantee that the dissemination of knowledge will occur.

Keywords: Inter-organizational network, Knowledge management, Knowledge management processes, Wine, Portugal

1. Introduction

Environments characterized by complexity and dynamism stimulate organizations to establish collaborative interorganizational relationships, Ketonen-oski and Valkori (2019). Thus, the relationships formed in networks become strategic alternatives to promote organizational competitiveness, Balestrin and Verschoore (2016) and provide access to external resources of knowledge, Ceesay (2023) capable of generating innovations and competitiveness, Franco and Esteves (2018).

Recent studies of knowledge management (KM) in interorganizational contexts seek to explain how organizations use relationships in networks to access external knowledge and transform them into strategic resources, Ceesay (2023). It is observed that research that explains and expands the understanding of how this process occurs in traditional sectors, such as agribusiness, is relevant and timely, see for example (Wiśniewska and Paluszak 2019; Vesperi and Coppolino, 2023).

As Agostini et al (2020) observed, analyzing KM processes under the context of interorganizational networks is among the managerial challenges considered critical, since absorbing the knowledge that is dispersed in the networks, internalizing it, transferring it, and using it as a strategic resource demands effort so that the networks can really be effective for the organizations that participate in them, Del Giudice and Maggioni (2014).

Thus, it is considered that KM processes are essential elements for the development of the capabilities of a company that establishes strategic alliances, Flatten et al (2011). Therefore, it is important to expand the understanding of how to create, acquire, store, and share knowledge among the network, so that knowledge flows through the network structures, through its nodes (participating organizations), and lines (links between organizations), as observed by Marchiori and Franco (2020).

For these processes to be effective, some conditions are necessary, such as the cooperation and collaboration of the company with its stakeholders, Buenechea-Elberdin, Kianto and Sáenz (2018), the organizational culture compatibility of the network participants, Magnier-Watanable and Senoo (2008), strong relationships and cohesive groups—which create conditions for the formation of trust among network participants—and the participant’s commitment to establish a successful network, Yoo, Sawyerr and Tan (2016). Research of Saikouk et al (2021) highlights that trust is a fundamental construct that significantly reduces opportunism and asymmetries in interorganizational relationships.

However, even when considering the positive effect of network participation, it is assumed in the present research that it is KM processes that enhance the capacities to take advantage of external sources of knowledge, which can explain the competitiveness of small and medium-sized companies, as observed by De Paris Caldas,
In this sense, the present study aims to answer the following questions: How do the KM processes of knowledge acquisition, storage, distribution, and use occur in the interorganizational networks in the Portuguese wine chain? Do KM processes help interorganizational networks achieve their common goals? Thus, the objective of the present study is defined as analyzing the KM processes adopted by the interorganizational networks of the Portuguese wine chain.

The present study contributes to the advancement of studies on KM in the context of interorganizational agribusiness networks, through the understanding of the processes of acquisition, storage, distribution or sharing, and use or application of knowledge. These processes contribute to organizations being able to access the external knowledge, transforming it into strategic and competitive resources.

2. Theoretical Foundation

2.1 Interorganizational Networks and KM Processes

Interorganizational networks are defined as a group of three or more autonomous and geographically distributed organizations (Müller-Seitz, 2012), which establish relationships of mutual exchange, Wiśniewska and Paluszak (2019) also considered as a strategic alternative adopted by companies to facilitate joint actions and resource exchanges in order to achieve similar organizational objectives (Gibb, Sune and Albers, 2017).

According to the literature, KM in interorganizational environments has become a necessary management strategy despite being a complex challenge (Agostini et al, 2020), since, in networks, knowledge becomes an open and collaborative process and no longer an individual and endogenous process of mastery of a single organization (Franco and Esteves, 2020).

The central objective of KM processes is the dissemination of knowledge for its subsequent reuse by individuals and groups and the consequent transformation of its content, generating new knowledge, as observed by Gonzales and Martins (2017). Knowledge management also makes it possible to integrate the knowledge of different companies in the search for results-oriented, reciprocal, and cooperative actions, as they drive the flow of knowledge between organizations that are part of the network (Gonzales and Martins, 2017).

Thus, when KM processes are conducted in an integrated way, the development of initiatives and strategies to maximize organizational effectiveness and growth occurs (Wig, 1997; Sveiby, 1998), also driving innovation (Papa et al, 2021). Franco and Esteve (2020) mention that KM processes drive the flow of knowledge between organizations that establish networks. Thus, for knowledge to be created, acquired, and transferred collaboratively, the processes between the network participants must be interactive and organized (Ortiz, Donate and Guadamillas, 2017).

The present study adopts the theoretical proposal of Magnier-Watanable and Senoo (2008), which considers that KM processes are constituted by the acquisition, storage, dissemination, and application of knowledge. The option for this model is justified as they are in line with the KM models described by other authors, such as Sveiby (1998), Probst et al (2002) and Dalkir (2005) used in research such as Gonzales and Martins (2017), De Lucca, Hinnig and dos Santos (2020). Table 1 shows the description of the processes.

<table>
<thead>
<tr>
<th>Knowledge management processes</th>
<th>Description:</th>
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<tbody>
<tr>
<td>Acquisition of knowledge</td>
<td>It consists of the creation of knowledge within the organization through a learning process and in the acquisition of external knowledge, originating from associative action with other organizations, consultancy, and universities.</td>
</tr>
<tr>
<td>Storage of knowledge</td>
<td>It is the process of organizational memory formation. Knowledge is formally stored in physical memory systems and informally retained in the form of values, norms, and beliefs, which are associated with organizational culture and structure.</td>
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Knowledge management processes

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<th>Description:</th>
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<tr>
<td><strong>Distribution (sharing) of knowledge</strong></td>
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<tr>
<td>It is the process by which new information from different sources is shared and can promote the creation of new knowledge, understanding, and information.</td>
</tr>
<tr>
<td><strong>Use (application) of knowledge</strong></td>
</tr>
<tr>
<td>It is the process associated with the ability of individuals in an organization to locate, access, and utilize the information and knowledge stored in the organization’s formal and informal memory systems. Knowledge is used as a basis for the development of new knowledge and for decision-making.</td>
</tr>
</tbody>
</table>

Adapted from Magnier-Watanable and Senoo (2008)

For the field research analyses, the four KM processes were considered: acquisition, storage, distribution, and use of knowledge; supported by the understanding of the need for interaction between the different participants that make up an interorganizational network.

3. Methodology

The present study is empirical in nature, adopting a qualitative and exploratory approach, following the recommendations of Creswell (2007). The research used the method of multiple case studies, as recommended by Eisenhardt and Graebner (2007) as it is presented as a research strategy that involves the use and analysis of cases from more than one organization.

Portugal was chosen for research due to access to data collection from wine chain networks. For the sample, three interorganizational networks established in the context of wine in Portugal were selected. This delimitation is justified as the wine industry competitively represents the agribusiness segment of the country. This segment has advanced through internationalization and globalization, gaining international recognition, both in production and marketing in the world wine market, Almeita et al (2023). The networks surveyed were chosen due to their representativeness in the wine sector of the country—called networks A, B, and C in the present study—and their descriptions are presented in Table 1.

The data collection process was carried out in two stages. Firstly, collections were carried out through analysis of secondary databases for mapping the wine producing networks in Portugal. Afterwards, those responsible for the management and members of the surveyed networks were contacted and four interviews were conducted: two representatives of Network A—one of them a network manager and the other one a representative of an associated company—one representative of a company associated with Network B, and one manager from Network C. Respondents were selected by accessibility and availability criteria. As shown in table 2.

Table 2: Description of networks and survey respondents

<table>
<thead>
<tr>
<th>Network name</th>
<th>Characterization</th>
<th>Interviewees</th>
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<tbody>
<tr>
<td><strong>Network A</strong></td>
<td>Founded in 1996, it is an association composed of eight professional organizations, representing approximately 300 wineries throughout the country, with the mission of promoting the quality and excellence of Portuguese wines, being the managing entity of the Wines of Portugal brand.</td>
<td>One network manager; one company representative associated with the network.</td>
</tr>
<tr>
<td><strong>Network B</strong></td>
<td>Created in 2008, it is an association that represents the production and trade of the wine sector. Its responsibility is to monitor compliance with the rules and the certification of wines from the region entitled to denomination of origin and geographical indication. Its mission is to help producers increase their presence in strategic markets and it has more than 80 associates.</td>
<td>One company representative.</td>
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<th>Network name</th>
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<tr>
<td>Network C</td>
<td>Created in 2007, it develops actions and activities of common interest to all its associated municipalities—national and European—and has as its mission the affirmation of the historical-cultural, patrimonial, economic, and social identity of Portuguese municipalities linked to wine production. It currently represents 117 associated municipalities.</td>
<td>One network manager.</td>
</tr>
</tbody>
</table>

Source: prepared by the authors

To collect the data, a semi-structured interview script was used, based on the proposed theory, which follows guidelines that allow replicability with the use of the same results, Yin (2014). This semi-structured interview script was reviewed by three researchers before data collection. The script has four blocks of questions: (i) identifies the profile of the interviewee/organization; (ii) analyzes the network objective; (iii) analyzes the interorganizational relationships of networks; and (iv) analyzes the KM processes. All interviews were conducted online on the platform Zoom and recorded and later transcribed in full. The interviewees were named E1, E2, E3 and E4. After analyzing the data, thematic categories were organized according to the proposed theoretical framework.

To analyze the data, we opted for the discourse analysis technique, as recommended by Lefevre and Lefevre (2006). This technique considers the social representation of testimonies collected in empirical research and seeks to analyze how discourses produced by different social actors such as individuals, groups, and/or institutions translate representations of reality. In order to achieve scientific rigor, validation and reliability criteria were adopted, including data triangulation.

Each case was analyzed individually and then a cross-analysis was carried out between the cases, the content of each interview and the excerpts that dealt with the categories and subcategories of analysis, are represented in the data analysis session according to table 3.

4. Results and Discussion

4.1 Characterization of Networks

The networks that are part of the present study are characterized by networks of marketing companies and wine producers in Portugal, and have as their main objectives to promote wine-producing regions in the national and international context; to carry out joint marketing actions; to promote the quality of Portuguese wines and wine tourism; to promote certification of wines with the right to designation of origin and geographical indication; as well as to represent the municipalities in the territories linked to the production of wines.

The promotion of interorganizational relationships to achieve the objectives of the network can be perceived as reported by interviewee E2: [...] allows the construction of community and relationship with certainty, also allows strategic contacts, promotes sustainable development, and therefore ends up promoting all network’s objectives.

For the interviewees, good working relations, trust between the partners of the network, and communication between the partners enables the sharing of information and knowledge in order to achieve the objectives of the networks. In the view of the research participants, their companies are committed to networks, as leadership plays a key role in promoting the integration of network partners and in the arbitration role to mediate possible conflicts between network partners.

The report of interviewee E2 corroborates with this perspective: [...] I have always been a defender of networking, only in this way is it possible to evolve. I think that if companies are too closed around themselves they end up not evolving, because they are involved in their own reality, which is different from the reality that is out there, so there are companies more open than others.

It is also noticed that joint actions strengthen relationships in the network. According to interviewee E1: [...] when we go on a mission [...] we do a meeting the day before at the hotel as a briefing to prepare the event, to go over the rules and the procedures that we are going to apply, because these types of events create unity between the network participants, and it is different if each person comes on separate flights, arriving at different times, the idea is to always be together in order to be united.
4.2 KM Processes

As for the process of acquisition of knowledge in interorganizational environments, it is perceived that this is driven in the networks by different activities, since new information, ideas, and best practices are promoted and shared, seeking to maintain the competitive advantage in the dynamic market in which Portuguese wine companies are part of. Among the practices adopted for the acquisition of knowledge are the organization of courses and training, hiring advisory services and consultancy for the network, and setting up a training academy for network members.

The reports of the E1 interview address that [...] it is foreseen in our objectives to create a training program, which we will call an academy... for example: for this year, the training of technical English in order to be prepared for a trade fair. Interviewee E2 explains that they seek to raise funds for training through projects funded by the European community, so they can disseminate knowledge [...] we disclose what knowledge we managed to gather in that project and then share it with the group.

These findings corroborate the literature by observing that the process of knowledge acquisition is a social process that occurs between individuals (Nonaka and Takeuchi 1995), where the role of the organization is to provide the appropriate contexts or situations for the acquisition of knowledge to occur according to the corporate objective (Magnier-Watanable and Senoo 2008) the same situation applies in interorganizational networks, Martínez-Pérez, Elche and García-Villaverde (2019).

However, it is worth highlighting a relevant factor identified in the research, which is that not all companies in the same environment can access and internalize the knowledge resources available in the network. Interviewee E1 comments that [...] The greater the company’s capabilities, the more it appropriates the benefits that the network offers. We have various types of companies, small and large, but they all coexist in harmony.

These findings corroborate the research of Yoo, Sawyerr and Tan (2016) who observe that knowledge is not absorbed equally among the organizations participating in the network, since its internalization depends on the capabilities of each organization, i.e., merely networking and participating are no guarantees that the dissemination of knowledge will occur. This aspect is extremely relevant when addressing the practices that support KM processes in interorganizational networks.

As for the stage of storage of knowledge recognized as organizational memory formation, examples of storage practices adopted in the network were identified. Interviewee E1 explains: [...] we have everything recorded and stored, all our events have their own site on our internal network to store the information, with photos and surveys from the events. Everything that was done is recorded. Sales are recorded as well.

It is noticed that the networks adopt practices that store explicit knowledge in different ways, such as reports, compilation of the results of the questionnaires applied, the registration of indicators, and brand protection. However, the storage of tacit knowledge should also be foreseen as highlighted by the studies of Gonzalez and Martins (2017) on the importance of people as an instrument for retaining tacit knowledge.

Thus, the risk of loss of knowledge generated in the networks is identified, as reported by interviewee E3: [...] the people of this network have been around for many years and already know a lot, so they pass it on informally, but when that person is away, the information that is with them is missing, or if that person leaves the network they are also not taking the care to register and store the information; this is a risk.

It is noteworthy that the application of information technology (IT) is a key tool in the process of storing knowledge, allowing the coding and sharing of knowledge and the creation of knowledge directories (Alavi and Leidner, 2001). The use of information technology is identified in the report of interviewee E3: [...] in addition to email, they have a platform where we can consult all the information at the level of events, programs, and initiatives that will happen in the future and have happened in the past.

As for the process of distribution and/or sharing of knowledge the research findings make it possible to identify that the sharing of strategic knowledge in the network occurs in different situations, as reported by interviewee E4 [...] every month we hold a meeting with all the technicians connected to the network to evaluate what is happening, report on the initiatives they do, and exchange experiences among them.

In the networks surveyed, it was possible to observe that there are different KM practices that help knowledge sharing. Interviewee E1 points out that [...] once a year we make an annual report with all the actions we have done and it is available to all our associates and to anyone who is interested. The report has all the events done and all the sales in the different markets.
It is also noteworthy that sharing can occur through exchanges through social contact, as identified in the speech of some interviewees: E3 [...] the work of the commission (network) is very important.... when carrying out business events, the region’s producing companies are very close, being that people travel in groups and are invited to share information within the group. Therefore, far beyond what happens in the spaces of the event, the fact that we have approached each other leads us to maintain the relationships and channels that were opened, allowing exchange of information.

The network participants highlight that they carry out research projects with other partners, create research communities, and share specific knowledge beyond the network members. According to respondent E4, there is also the interaction of the network organizations with others: [...] therefore the sharing of knowledge goes beyond the partners of the network itself, we often use it in the training not only of our partners, but also the people who visit our partners.

These findings corroborate the research of Ortiz, Donate and Guadamillas (2017) who observe that the network promotes the sharing of external knowledge for member companies, and notes that knowledge is created and transferred collaboratively through interactive processes of the participants.

The process of using/applying knowledge deals with the organizational ability to use the knowledge gained for the purpose of gaining competitive advantage. The research data allow us to observe that networks develop practices that result in knowledge application processes. Practices related to the use of knowledge for the creation of new products and processes, and the creation of strategies to manage crises or unforeseen events (war and Covid pandemic) were identified; the networks also cite the proposition and creation of marketing plans to promote the brands in the national and international markets, how they generated learning for export, and use of knowledge for innovation.

The creation of strategies to manage crises or unforeseen events (war) is evidenced in the E3 interviewee report: [...] there is a lot of discussion and information, for example now with the war (Ukraine and Russia), they passed on a lot of information to us because we exported a lot to Russia, they gave a lot of feedback and passed it on informally, but it is still valuable.

The research of Kianto, Saenz and Aramburu (2018) reinforces the positive effect of external relations of companies and recommend that companies seek to strengthen the existing external relationships in different organizations, combining the external knowledge obtained with the existing knowledge in the organization, which enhances this relationship to develop innovation.

The innovation and importance of the network in promoting the use of knowledge can be verified in the E2 interviewee report: [...] The commission (network), by creating, for all these years, the development of marketing, has allowed the producers to reach many markets, which if it were not for this route, probably many of them would never be present in these markets. So, allowing this contact contributed to their learning on how to export, approach markets, and etc., allowing learning and innovation by providing opportunities of contact with the world market and trends for producers who do not have enough scale and would not do this work alone.

The present study made it possible to map and analyze the KM processes that allow networks to promote access to external knowledge, which is considered a strategic asset that can generate competitive advantage. In view of the results and to help understanding, table 03 presents a summary of KM processes identified in the field research, prepared according to the reports of the interviewees.

**Table 3: KM Processes in Interorganizational Networks**

<table>
<thead>
<tr>
<th>KM processes</th>
<th>Description of KM practices</th>
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</thead>
<tbody>
<tr>
<td>Knowledge acquisition</td>
<td>The network raises funds for investments in research projects and development (e.g. European community projects for marketing and product development), hiring new employees, or companies that represent new knowledge.</td>
</tr>
<tr>
<td></td>
<td>The network offers advice and consultancy, training, holds meetings (face-to-face and online) and workshops, and has created a training academy.</td>
</tr>
<tr>
<td></td>
<td>Carrying out national and international technical events to promote products, services, and other industry elements.</td>
</tr>
<tr>
<td></td>
<td>It adopts an internal and external communication process and performs benchmarking.</td>
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</tbody>
</table>
### KM processes

<table>
<thead>
<tr>
<th>KM processes</th>
<th>Description of KM practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT tools such as intranets, web pages or websites, and digital platforms.</td>
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</tbody>
</table>

#### Knowledge storage

- Identify and record best practices and lessons learned; the knowledge gained is recorded in the format of reports; brand protection (e.g., Wines of Portugal); use of IT as an aid for electronic document management; information available on the intranet, web pages; and digital platforms for information and KM.

#### Distribution of knowledge

- Promotes and shares knowledge to achieve the objectives of the network; shares best practices and lessons learned; benchmarking (internal and external) to improve results and performance (e.g., meetings, technical visits, fairs, and excursions); promotes learning to prepare organizations to participate in trade fairs; adoption of collaboration tools (portals); adoption of information and communication technology (email, whatsapp, intranet, digital platform, e-commerce, mobile/mobile phone app, etc.).

#### Use/application of knowledge

- Development of product and process improvement activities; changes in the routines and procedures of the organization; use of knowledge to create new products and processes; creation of strategies to manage crises or unforeseen events (e.g., war and Covid pandemic); creation of a marketing plan to promote the network and associated organizations; generates learning for exportation; and use of knowledge for innovation.

Source: prepared by the authors

The findings of the present study indicate that the use and adoption of KM processes enable companies that participate in interorganizational networks to use external knowledge resources when effectively shared by the network. These findings corroborate the research by Vesperi and Coppolino (2023) and reinforce the positive effect of interorganizational relationships as an important alternative for obtaining knowledge.

The results show that the most developed KM processes are the acquisition and distribution of knowledge, through the adoption of different KM practices adopted by the researched networks, these findings are better identified in networks A and B that have similar network objectives. Network C presents different characteristics that can be correlated with its network objective.

The knowledge storage and application processes should be better conducted by the networks, the reason may be related to the need to increase financial investments in the information technology infrastructure and in the improvement of the capacities of the organizations inserted in the networks.

However, they need to adopt and promote practices that strengthen knowledge processes in a formal way, since the role of networks as facilitators of cooperation and collaboration between companies to access knowledge is evidenced in the study.

### 5. Final Considerations

The present study contributed to the advancement of research in the areas of KM, as it indicates that the KM processes of acquisition, storage, distribution, and use of knowledge are essential to strengthen the competitiveness of organizations inserted in interorganizational networks of the Portuguese wine production sector. In the context of the study, it is highlighted that the intangible resources of knowledge are presented as an alternative for collaborative networks to contribute to the associated companies in the sector to meet market requirements and develop competitive strategies to promote innovation.
The data analysis shows that the interactions between the participants of the networks generate external knowledge, which is created and transferred collaboratively and accessed by organizations that alone would not be able to obtain this knowledge. This research finding can be verified in the companies participating in the studied networks, many of them small companies, which have few resources to increase their competitiveness.

It is important to highlight that although the findings of the present study indicate that the adoption of KM processes in the networks surveyed does not occur through a formal project, the results show that the most developed KM processes are the acquisition and distribution of knowledge, and through the adoption of different KM practices used in the relationships of cooperation and collaboration of associates, promoted by network managers, the absorption of knowledge can happen, even if only partially.

It is stated that the KM processes of storage and use of knowledge can be strengthened with the adoption of new KM practices and better promoted by network managers. The results lead to an understanding of the relevance of the KM processes for better network performance. In this sense, it is interesting that managers continue to establish strategies to improve the capabilities of organizations to access the knowledge available in the networks.

The present study has some limitations, for example only Portuguese wine networks were analyzed, organized according to national public policies and culture of the country—Portugal—which should be different from other countries. The sample and number of respondents is also limited for generalization of our findings at the international level. Thus, it is suggested that future research expand the sample and/or analyze different contexts and cultures of the same wine sector, analyzing different producing countries, as well as applying the study of KM processes in the networks of other agribusiness production chains. It is also suggested that future studies research factors related to knowledge loss in an interorganizational network.

Acknowledgement

Research work funded by CAPES PRINT/UFSC.

References


