

THE ROLE OF INNOVATION INTERMEDIARIES IN COLLABORATIVE NETWORKS OF SMALL AND MEDIUM-SIZED ENTERPRISES

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Abstract

The major challenge of European Union's agricultural industry is to ensure sustainable supply of quality food that meets the demands of a rapidly growing population, changing dietary patterns, increased competition for land use, and environmental concerns. Investments in research and innovation, which facilitate integration of external knowledge in food chain operations, are crucial to undertaking such challenges. This paper addresses how SMEs successfully innovate within collaborative networks with the assistance of innovation intermediaries. In particular, we explore the roles of innovation intermediaries in knowledge acquisition, knowledge assimilation, knowledge transformation, and knowledge exploitation in open innovation initiatives from the wine industry through the theoretical lens of absorptive capacity. Based on two case studies from the wine industry, we identified seven key activities performed by innovation intermediaries that complement SMEs' ability to successfully leverage external sources of knowledge for innovation purposes. These activities are articulation of knowledge needs and innovation capabilities, facilitation of social interactions, establishment of complementary links, implementation of governance structures, conflict management, enhancement of transparency, and mediation of communication. Our in-depth qualitative study of two innovation intermediaries in the wine industry has several important implications that contribute to research and practice.

Keywords: Innovation intermediaries, open innovation, collaborative networks, SMEs, wine industry

1 INTRODUCTION

The major challenge of European Union's agricultural industry is to ensure sustainable supply of quality food that meets the demands of a rapidly growing population, changing dietary patterns, increased competition for land use, and environmental concerns in general (EU 2014). Investments in research and innovation, which facilitate integration of external knowledge in food chain operations, are crucial to undertaking such challenges. Innovation and R&D initiatives are essential for maintaining the competitiveness of European agricultural industry. The trend of engaging in open innovation practices by the agricultural firms is seen as reaction to the exposure to severe, and increasing, global competitive pressures (Capitanio et al. 2010). Adoption of effective innovation strategy is crucial to successfully introduce and develop new products to the market (Schiefer et al. 2009).

In early 2000s, most of the empirical studies on open innovation investigate innovation behaviour in manufacturing firms without much industry-specific considerations. However, with the advancement of econometrical instruments and availability of panel data at company level, researchers began to recognize high heterogeneity in terms of innovation practices within a particular industry (Malerba 2007). More important, most of the prior literature on open innovation focuses on high-tech industries, and little research deals with the knowledge sourcing activities in traditional, mature, and low-tech industries, including those having dominant small and medium-size enterprises (SMEs) populations (Vanhaverbeke et al. 2014; West et al. 2014). Lundquist and Tripl (2013) suggest that mature industries are characterized by insufficient investments in R&D, high importance of internal practical knowledge, incremental innovations, and a high dependence on specialized suppliers of embodied technologies. Therefore, it is crucial, from practical perspective, to study the special needs and specific conditions of mature industries (Robertson & Patel 2007). We do so in terms of the traditional agricultural industry of wine production that is dominated by SMEs.

This paper addresses how SMEs from the wine industry successfully innovate within collaborative networks with the assistance of innovation intermediaries. In our study we investigate the activities of innovation intermediaries in two open innovation initiatives of SMEs from the wine industry. By deploying the theoretical lens of absorptive capacity (ACAP), we identify seven key roles of innovation intermediaries in collaboration networks of SMEs from the wine industry. Based on our in-depth case studies, we develop a theoretical framework through lens of ACAP that explains the roles of innovation intermediaries in collaborative networks for open innovation initiatives from the wine industry. Therefore, this study attempts to answer the following research question: *How innovation intermediaries facilitate open innovation initiatives in collaborative networks of SMEs from the wine industry?*

We organize the rest of our paper as follows. First, we present the literature review and theoretical background on open innovation and dynamic capabilities in the wine industry, and collaborative networks and innovation intermediaries. Moreover, we discuss ACAP as the theoretical foundation for the roles of intermediaries in collaborative networks from the wine industry. Second, we talk about the used research methodology. Third, we analyse two cases and develop seven propositions that are the foundation of our proposed research framework. Finally, we conclude with a discussion of the implications for theory and practice.

2 LITERATURE REVIEW AND THEORETICAL BACKGROUND

2.1 Open Innovation

The effectiveness of traditional innovation approaches, which are essentially conducted inside the boundaries of an organization, has been undermined by the augmented availability and mobility of knowledge workers, the easy access to connectivity infrastructures and venture capital markets, and

the broad scope of suppliers with flexible operations (Chesbrough 2003). As a result of these changes in the global business environment, the concept of open innovation has emerged, which refers to a 'distributed innovation process based on purposively managed knowledge flows across organizational boundaries' (Chesbrough & Bogers 2014, p. 3). Open innovation can be distinguished between inbound open innovation, referring to the organization internal use of external knowledge sources for innovation efforts, and outbound open innovation, referring to the transfer of innovations created internally to other external organizations (Chesbrough et al. 2006). More specifically, the creation of innovations with knowledge from external sources such as universities, research centres, customers, suppliers, competitors, venture capitalists, and industry/cluster associations can be considered as inbound open innovation, whereas the transfer of internal innovations to other organizations, for example, through out-licensing of patents or revealing of source code, can be considered as outbound open innovation (Chesbrough et al. 2006).

Open innovation may be considered at different stages of an innovation process, from idea generation, to idea development, to commercialization (Chesbrough et al. 2006). Idea generation refers to the discovery of market opportunities, envisioning of areas for technical breakthrough, development of initial insights, and basic and applied research. Idea development refers to the creation of deeper conceptualizations of products/services and creation of a model for a product or service. Lastly, commercialization refers to the production, promotion, distribution, and marketing of a product or service (Chesbrough et al. 2006).

Parida, Westerberg, and Frishammar (2012) argue that this classification of open innovation processes emphasizes more an inbound rather than outbound innovation. Inbound open innovation is widespread in the low-tech and traditional industries (e.g., wine industry) in which the exploration and exploitation of external knowledge through collaborative networks is more likely to occur rather than new venture spin-offs for technology development or out-licensing of technologies to other external firms (Albors-Garrigós et al. 2011). Chesbrough and Crowther (2006) state that high-tech businesses are less susceptible to engage in open innovation initiatives in the commercialization phase due to lack of marketing capabilities to successfully launch new products. Differently, Enzing et al. (2011) argues that agricultural firms, such as wine producers, are successful at balancing out their open innovation initiatives from idea generation through commercialization. These firms are more innovation dependent on large collaborative networks with upstream suppliers to use technologies to innovate their processes, and downstream costumers (i.e., distributors, retailers, and consumers) to overcome challenges with the introduction of new products to the market (Bianchi et al. 2011).

In our study we explore the open innovation initiatives of two firms from a traditional and a low-tech industry (i.e., wine production industry), which are dependent on external knowledge from their up- and down-stream supply chain parties to innovate their products.

2.2 Collaborative Networks and Innovation Intermediaries

The topic of innovation in SMEs has received a great deal of attention from scholars (Edwards et al. 2005). Most of the research efforts have focused on studying how SMEs manage collaboration and innovation relative to their larger counterparts (Hoffmann & Schlosser 2001; Narula 2004; Rogers 2004). Limited absorptive capacity (Mitchell et al. 2014), lack of innovation finance (Caputo et al. 2002), deficiency of functional expertise (Kaufmann & Tödtling 2002), diseconomies of scale (Bessant & Rush 1995), and short-term orientation (Nooteboom 1994) are documented as the weaknesses of SMEs that impede innovation. The latter weaknesses are considered as a justification for the necessity of SMEs to establish of collaborative networks with external parties.

Collaborative networks increase the flow of information and have a significant role in the diffusion and adoption of innovations (Pittaway et al. 2004). Correspondingly, facilitating collaboration or networking for innovation is important since it offers opportunities for new or alternative relationships, links, or markets and allows access to new or complementary competencies and technologies (Lazarini et al. 2001; Pittaway et al. 2004). The value of collaboration or networking for innovation is

seen as the rapid establishment of a complex knowledge base and diffusion system through streamlining information flows (Nambisan & Sawhney 2011; Pittaway et al. 2004). Especially for SMEs, network building is an important innovation strategy (Ketchen et al. 2007; Zeng et al. 2010). SMEs are more innovative when they are able to join and manage networking activities (Avermaete et al. 2003; Gellynck et al. 2007; Sarkar & Costa 2008).

Prior literature cites many benefits to SMEs associated with collaborative networks and innovation. The positive effects of collaborative networks include increased turnover, higher profit margins, and diversification of the product/service range (De Jong & Vermeulen 2006; Van Gils & Zwart 2004). Despite these benefits associated with collaborative networks, there are several reasons that SMEs find it difficult to benefit from such interorganizational innovation initiatives. First, SMEs are often managed by their owners-entrepreneurs, who are accustomed to operate independently and within a certain region. Wissema and Euser (1991) mention that entrepreneurs are not really keen on open collaboration with other organizations outside their immediate circles. Second, Hoffmann and Schollosser (2001) acknowledge that cultural differences and lack of joint research experience hinder collaborative networks amongst SMEs. Third, SMEs lack proper planning and management for orchestration of collaborative networks, which might lead to unintentional spillover of research knowledge. Last, an increase in the number and diversity of actors in these interorganizational collaborations adds to the complexity, which in the absence of related expertise among SMEs, decreases the success of the innovation initiative.

More important, the above-stated challenges encountered by SMEs with their open innovation efforts call for the rise of the intermediaries. In our study, we attempt to identify the roles of innovation intermediaries that assist SMEs in managing their open innovation initiatives in collaborative networks.

2.3 Absorptive Capacity (ACAP)

From an inbound open innovation perspective (i.e., integration of external knowledge to internal innovation initiative), ACAP can be considered as a foundation for the knowledge exchange in collaborative networks (West & Bogers 2014). ACAP is an organization's capability to acquire external knowledge that can be used to undertake innovation, assimilate this knowledge to be understood in the organization, transform it in combination with existing knowledge, and afterwards exploit it to innovate and generate added value (Zahra & George 2002)¹.

The first process, *knowledge acquisition*, refers to the identification and acquisition of knowledge from external sources that can be used in the internal organizational efforts for innovation. This knowledge can either complement or substitute organization's in-house R&D activities (Cassiman & Veugelers 2006). Potential external knowledge sources in turn are manifold and might include forward linkages to customers (Joshi & Sharma 2004), backwards linkages to suppliers or external consultants (Smith & Tranfield 2005), horizontal linkages to competitors (Howells 2006), and linkages to universities and other public research centres (Roper et al. 2008). In our study, we focus only on the roles of innovation intermediaries that are related to backwards linkages to external consumers, suppliers, experts for knowledge acquisition. The second process, *knowledge assimilation*, refers to the understanding of acquired knowledge. It covers aspects such as interpretation and comprehension of the acquired knowledge and is important to adapt new knowledge to the organizational context (i.e., make the acquired knowledge understandable to the organizational members) (Zahra & George 2002). The third process, *knowledge transformation*, refers to the combination of acquired and assimilated knowledge with existing knowledge to create new insights and to recognize opportunities (Jansen et al. 2005). It covers aspects such as reinterpretation or replacement of existing knowledge and changes organization's perspective on both the organization itself as well as its competitive environment

¹ ACAP was introduced by Cohen and Levinthal (1990) and conceptualized as a dynamic capability by Zahra and George (2002).

(Zahra & George 2002). The forth ACAP process, *knowledge exploitation*, refers to the process of leveraging the results of the acquisition and transformation outcomes (Zahra & George 2002). In the exploitation process, the new knowledge is used to create new or improve existing products, processes, or services (Zahra & George 2002). Moreover, in this process, innovation in both products and processes contribute positively to company growth, with product innovation having a short-term ‘disruption’ effect on labour productivity (Roper et al. 2008).

In our study we use the four processes of ACAP – *acquisition, assimilation, transformation, and exploitation* – as a theoretical foundation to identify the roles of intermediaries in collaborative networks of SMEs from the wine industry. More specifically, we develop four propositions for the roles of innovation intermediaries in open innovation initiatives that are framed within the four processes of ACAP.

3 RESEARCH METHODOLOGY

We have conducted an exploratory case study to facilitate collection and analysis of evidence on how innovation intermediaries facilitate open innovation initiatives in collaborative networks of SMEs from the wine industry. Yin (2013, p. 13) notes that case studies are appropriate for investigating ‘a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’. Our study adopts a case study methodology based on multiple cases with an interpretative approach. The interpretive approach is used to develop a comprehensive research framework, which is based on the evidence from the interviews, with propositions defining causal relationships related to the roles of innovation intermediaries in SME collaborative networks from the wine industry.

Qualitative interview-based data were supplemented by official company documents and observation notes. Data were collected from two Macedonian wineries – Tikveš and Skovin – that considered open innovation initiatives to rebrand specific products and product lines from their existing portfolio of bottled wine products, and develop brand new concepts for future product lines of bottles wine products. Focus group interview and online interview were conducted in two rounds with the marketing assistant and the marketing executive of Tikveš winery, and the executive director of an external public relations company who were responsible for running the redesign initiative from its initiation to completion. Focus group interview and online interview were also conducted in two rounds with Skovin’s marketing executive and the executive director of an external public relations company who were directly involved at all stages of the innovation initiative (see Table 1).

<i>Winery Name</i>	<i>Interviewees</i>	<i>Interviews</i>		<i>Annual Production</i>	<i>Number of Employees</i>
		<i>1st Round</i>	<i>2nd Round</i>		
Tikveš	1) Marketing assistant; 2) Marketing executive; 3) PR company’s director.	May-2013 (Focus Group); 90 minutes	February-2015 (Online); 90 minutes	100,000 bottles	150-180
Skovin	1) Marketing assistant; 2) PR company’s director.	May-2013 (Focus Group); 90 minutes	January-2015 (Online); 90 minutes	114,000 bottles	80-90

Table 1. *Data collection and case demographics*

Template analysis technique (King et al. 2004) was adopted for a thematic analysis of the transcribed interviews, interviews and observation notes, thoughts of the researcher, and other types of communication records with the respondents, such as informal discussions. The analysis began by developing a coding template that summarizes the identified themes as an essential set of data. These priori codes defined relevant themes for data analysis. Although the analysis began with preconceived ideas (i.e., priori code), the researchers were not fully constrained and allowed for codes to emerge (i.e., grounded code). Priori and grounded codes were modified several times throughout the analysis

based on their usefulness and suitability, which influenced the modification of several themes. The final coding template embodied four themes related to the activities of innovation intermediaries in knowledge acquisition, assimilation, transformation, and exploitation in open innovation initiatives from the wine industry. Statements corresponding to these themes were selected, coded, analysed, and visualized using the comprehensive qualitative data analysis package NVivo 10 (see Table 2). To meet the criteria for case studies (i.e., construct validity, internal validity, external validity and reliability construct), the study followed formal established procedures to ensure the systematic documentation and rigor of the research process (Yin 2013). To increase the construct validity, the marketing assistants from Tikveš winery and Skovin winery reviewed a drafted copy of case studies. We also examined inter-coder reliability for our study. Cohen's kappa equals to 0.72, suggesting a high level of agreement between the two coders.

<i>Knowledge Acquisition (Priori and Grounded)</i>		<i>Knowledge Transformation (Priori and Grounded)</i>	
Direction of search	Priori code (Zahra & George 2002)	Recodification	Priori code (Zahra & George 2002)
Scope of search		Combination	
Existing knowledge		Internalization	
New connections		Trust	
Innovation initiation	Priori code (Dhanaraj & Parkhe 2006)	Transparency	Grounded code
Social interactions	Grounded code	Network stability	
Innovation opportunities		Handling conflicts	
Knowledge needs		Expectations	
Innovation capability		Goals matching	
Manufacturing capability		Initiative adjustment	
Consumer preferences		<i>Knowledge Exploitation (Priori and Grounded)</i>	
Idea development		Implementation	Priori code (Zahra & George 2002)
Idea refinement	Harvesting resource	Grounded code	
<i>Knowledge Assimilation (Priori and Grounded)</i>			Mediation
Interpretation	Priori code (Zahra & George 2002)		Prototype production
Understanding		Complementary links	Priori code
Innovation learning		Heterogeneous networks	
Network composition	Priori code (Dhanaraj & Parkhe 2006)	Knowledge transfer	
		Governing mechanisms	

Table 2. Final coding scheme

For each cases we developed a detailed within-case description by drawing on data from interviews and other sources. Afterwards, we comparatively analysed the two cases using matrix technique. In these matrices, exemplary quotes for each innovation intermediary roles were sorted and mapped within the four processes of ACAP. Using this cross-case analysis technique we visually identified the differences and similarities regarding the roles of innovation intermediaries in SME collaborative networks (see Tables A1 and A2 in Appendix).

4 CASES ANALYSIS

4.1 Articulation of Knowledge Needs and Innovation Capabilities

In the knowledge acquisition process it is of great importance to properly start innovation initiatives by carefully evaluating the needs of knowledge receiver. According to Zahra and George (2002) the direction of knowledge accumulation influences the paths that an organization follows to obtain

external knowledge. The latter statement puts forward the scope of knowledge search as key success factor to open innovation initiatives.

In Tikveš case, the innovation initiative was internally initiated within the winery and externally orchestrated by the intermediary. The intermediary was involved in the initial idea development by assessing consumers' preferences, markets' trends, and suppliers' manufacturing capabilities. For example, the intermediary assessed the global wine drinking trends, the latest wine production practices of wineries from leading wine regions (i.e., Bordeaux, Tuscany, and Napa), and the manufacturing capabilities of Tikveš's suppliers (i.e., wine label and glass bottle manufacturers) to determine the knowledge needs and innovation capabilities that should be externally acquired and are crucial for successful rebranding of Tikveš's Chardonnay and development of new concepts for the honey-infused bottled wine. At this point of the knowledge acquisition process, the intermediary further refined the internally developed ideas about the rebranding and development of new concepts for Tikveš's wine bottled products by placing them into the context of consumers' preferences and suppliers' manufacturing restrictions. The marketing executive and associate of Tikveš winery mentioned that the initial idea generation and its further refinement is a dynamic and challenging tri-directional process that involves the winery, the intermediary, and the winery's suppliers.

In the Skovin case we revealed that the intermediary was involved in idea development for the rebranding of their Finest Selection and Barrique lines of bottle wine product by defining the knowledge needs and innovation capabilities of the winery. Through iterative discussion between Skovin and the intermediary the knowledge needs of the winery were clearly defined. For example, the intermediary considered bottled wine products of several globally leading wine producers and the manufacturing restriction of Skovin's suppliers to translate the rebranding ideas of the winery to explicit knowledge needs and innovation capabilities that should be acquired from external sources (see Table A1 in Appendix). Therefore, we formulate the following proposition:

Proposition 1a: To enable knowledge acquisition, innovation intermediaries should articulate the knowledge needs and innovation capabilities of SMEs in collaborative networks.

4.2 Facilitation of Social Interactions

Social interaction between stakeholders of an open innovation initiative is crucial for knowledge acquisition (Dhanaraj & Parkhe 2006). The intermediary has to be sufficiently visible to all stakeholders of a collaborative network to effectively initiate innovation (Klerkx & Leeuwis 2008). In particular, the intermediary has to be socially embedded in the collaborative networks of stakeholders to facilitate knowledge acquisition (Spithoven et al. 2011).

By being deeply embedded in the social networks of the wineries, graphical designers, and consumers, the intermediaries in Tikveš and Skovin cases were able to identify innovation opportunities in the collaborative networks. We discovered that besides articulating the innovation capabilities and knowledge needs of wineries, it is also crucial for intermediaries to identify potential innovation opportunities and evaluate prospective links within the collaborative networks that provide complementary knowledge. Intermediaries had access to large networks of heterogeneous knowledge experts, which was made use of to organize social events and facilitate social interactions in collaborative networks to better understand the innovation capabilities of the wineries and explore other innovation opportunities. For example, the intermediary organized a formal networking event and a workshop as part of a fashion show to become more socially embedded in the collaborative networks of Tikveš winery and graphical designers. In such a way, the intermediary was able to better understand the knowledge needs of Tikveš winery and explore innovation opportunities for rebranding and creating new concepts for Tikveš's bottled wine products. In the same manner, the intermediary in Skovin case relied on social activities (e.g., after-office-hours socialization, informal brainstorming sessions, and promotional events) to facilitate interaction between Skovin winery and end consumers. Such an informal approach to networking was also proven effective for exploring additional

innovation opportunities concerning the rebranding of Skovin's bottled wine products from Finest Selection and Barrique lines (see Table A1 in Appendix). Therefore, we propose:

Proposition 1b: To enable knowledge acquisition, innovation intermediaries should facilitate social interactions between SMEs in collaborative networks.

4.3 Establishment of Complementary Links

Network composition is another fundamental aspect of knowledge assimilation. Network composition involves exploration of the external environment to better comprehend the knowledge complementarity between stakeholders in a collaborative network (Dhanaraj & Parkhe 2006).

Maintenance of large and heterogeneous networks of knowledge experts was not sufficient to attain successful knowledge assimilation in Tikveš and Skovin cases. Wineries, their suppliers, and graphical designers had different working ethnics and priorities, which made it difficult to establish sustainable complementary links. Being a facilitator of knowledge transfer between stakeholders was another role of the intermediaries. In Tikveš case, it was mentioned that the intermediary promoted an interdisciplinary approach to the identified innovation capabilities. For example, the intermediary emphasized the importance of retaining diverse set of knowledge experts (e.g., graphical designers, industrial designers, massive media and marketing experts) who had to be properly linked to properly understand the needed innovation capabilities of Tikveš winery. Similarly, in Skovin case the intermediary had to integrate the knowledge from diverse sources (i.e., application developers, graphical designers, industrial designers, and Skovin's first-tier suppliers) to develop the social network application and create the rebranded concepts for Skovin's bottled wine products from the Finest Selection and Barrique lines. Fundamentally, the intermediary had a role to link complementary innovation partners, who had different sets of expertise, interest, and cultural backgrounds (see Table A1 in Appendix). Hence, we compose the following proposition:

Proposition 2a: To enable knowledge assimilation, innovation intermediaries should establish complementary links between SMEs in collaborative networks.

4.4 Implementation of Governance Mechanisms

Network composition also comprises establishment of procedures to guide the knowledge assimilation in innovation initiatives. Understanding of the acquired knowledge from external sources is a key to knowledge assimilation (Dhanaraj & Parkhe 2006). Therefore, it is important to establish governing mechanisms, which guide the actions of the innovation stakeholders, to support the interpretation of the externally acquired knowledge.

In Tikveš and Skovin cases appropriate governance mechanisms (e.g., procedures, tasks, and intellectual property rights) were implemented in early stages of the innovation initiatives to prevent stakeholders (i.e., graphical designers, end consumers, and first-tier suppliers) from withholding potentially valuable knowledge. Wineries benefited greatly from the experience of the intermediaries in establishing governance mechanisms for innovation initiatives with multiple stakeholders. For example, in Tikveš case it was mentioned that the intermediary, relative to the winery, had more experience with implementation of governance mechanism in innovation initiatives. The intermediary with the assistance from Tikveš winery, 1) laid down all the rules of the public call for the label design; 2) collected, stored, and organized all submitted proposals; 3) organized the selection of the best proposals; and 4) drafted the contracts for the purchase designers' copyrights. Despite the preference for formal governance mechanisms, the intermediary emphasized that all procedures, task, and contracts should not be overly detailed due to the risk of limiting the level of freedom and creativity of the graphical designers. The intermediary asserted that confidentiality and copyrights are the two most central aspects of the contracts that serve as a guidance in the innovation initiative.

Differently from Tikveš case, the innovation intermediary from Skovin case had a more informal approach to establishing governance mechanisms in the innovation initiative. For example, throughout

the innovation initiative, stakeholders relied on more flexible contracts that only set the basic procedures. It was pointed out that establishment of too many rules in the knowledge assimilation process might significantly impede the innovation potential of the initiative (see Table A1 in Appendix). Therefore, we propose:

Proposition 2b: To enable knowledge assimilation, innovation intermediaries should implement governance mechanisms to guide the actions of SMEs in collaborative networks.

4.5 Conflict Management

Managing of stability in a collaborative network is one of the most important elements for the operations of innovation initiatives with multiple stakeholders. That is, collaborative networks should be constructed in such a way that conflicts between stakeholders are quickly resolved (Klerkx & Leeuwis 2008; Winch & Courtney 2007). Nonetheless, due to the disparate interest of initiative stakeholders, conflicts are likely to occur; thus, the innovation intermediary has a crucial role of maintaining the stability in collaborative network by effectively resolving such conflicts.

The respondents in the Tikveš case stated that conflicts happened due to the existence of ‘hidden agendas’, differences in expectations, and lack of motivation. Initiative stakeholders had often difficulties executing tasks that were not primarily within their domain of interest. To manage such conflicts effectively, the innovation intermediary reconsidered the goals of Tikveš winery, graphical designers, and suppliers. It was mentioned that synchronization of stakeholders’ goals was a challenging task that was undertaken by the innovation intermediary. When handling conflicts, the intermediary placed emphasis on renegotiating the initial goals of stakeholders in an informal manner. We learned that the innovation intermediary preferred to personally discuss such conflicts with stakeholders to realign their goals. For instance, the intermediary relied on socialization and mediation techniques that facilitated dynamic consensus with minimal conflict. In Skovin case the respondents mentioned that the intermediary had a neutral position when handling conflicts in the collaborative network. The innovation intermediary also mediated the interaction between Skovin winery and the interviewed consumers, which considerably stabilized the collaborative network and reduced potential conflicts (see Table A2 in Appendix). Therefore, we compose the following proposition:

Proposition 3a: To enable knowledge transformation, innovation intermediaries should effectively manage conflicts between SMEs in collaborative networks.

4.6 Enhancement of Transparency

Besides the structural, motivational, and formal mechanisms, also informal mechanisms played a key role in stabilizing networks and managing conflicts in Tikveš and Skovin cases. Both formal and informal mechanisms, such as meetings or social events, have been shown to foster trust and enhance transparency in collaborative networks (Cousins et al. 2006; Lawson et al. 2009). Newell and Swan (2000) defined interorganizational trust as the subjective probability with which organizations assess whether other organizations will perform potential transactions as to their confident expectations.

In Tikveš case, respondents stated that transparency and openness of interactions in the knowledge transformation process were crucial for the stability of the collaborative network. We learned that disputes and issues in the collaborative network arose due to differences in expectations, undisclosed intentions, and misunderstanding related to dependencies. The latter causes of network instability were directly linked to unintended or deliberate lack of transparency in the interactions between initiative stakeholders. In Skovin case, the intermediary played a major role in the facilitation of transparency in the collaborative network too. The respondents stated that the innovation intermediary divided the initiative into several key milestones, which acted as ‘go/no-go’ decision points for the winery. For examples, at each milestones, Skovin winery and its suppliers were clearly informed about the progress of the feedback collection for the rebranding of Skovin’s bottled wine products, which enabled them to adjust the direction of the innovation initiative. In such a way, trust was gradually

facilitated in the collaborative network, which had positive influence on the knowledge transformation (see Table A2 in Appendix). Hence, we propose:

Proposition 3b: To enable knowledge transformation, innovation intermediaries should enhance transparency between SMEs in collaborative networks.

4.7 Mediation of Communication

Ring and Van de Ven (1994) stated that interactions and communication among stakeholders of innovation networks are crucial to success due to their positive influence on interorganizational trust. Innovation intermediaries are seen as the moderators of the interactions between initiative stakeholders in a collaborative network. In particular, innovation intermediaries act as mediators that facilitate harvesting of the existing and newly acquired and assimilated knowledge to innovate (Dhanaraj & Parkhe 2006).

We discovered that in both cases – Tikveš and Skovin – intermediaries had a role to mediate the interactions and communications of initiative stakeholders within the knowledge exploitation process. Respondents from both cases acknowledged the importance of formal and informal face-to-face meetings that were organized by intermediaries to facilitate knowledge harvesting. It was revealed that meetings were used to keep all stakeholders up to date with the initiative progress, especially at the end of the innovation initiative when the rebranded products and new concepts were manufactured. For examples, in Tikveš case depending on the availability of the initiative stakeholders, face-to-face meetings were organized to discuss production issues related to the rebranded Chardonnay and the new concept of honey-infused wine. Aside from face-to-face meetings, which required stakeholders to be physically present, intermediaries also promoted more flexible means of communication that mitigated the effect of different timeframes and locations such as email, web-based files sharing, and video conferring. We learned that innovation intermediaries relied on email and web-based file sharing services to send summaries of the discussions after each meeting that enabled all the issues related to the manufacturing to be voiced out. For example, in Skovin case intermediary mediated video conferences whenever multiple stakeholders at remote locations needed to discuss initiative related matters (see Table A2 in Appendix).

Proposition 4a: To enable knowledge exploitation, innovation intermediaries should efficiently mediate the communication between SMEs in collaborative networks.

5 DISCUSSION

This paper addresses how SMEs from the wine industry successfully innovate within collaborative networks with the assistance of innovation intermediaries. In particular, we explore the roles of innovation intermediaries in the acquisition, assimilation, transformation, and exploitation of knowledge in open innovation initiatives from the wine industry. Based on the two case studies from the wine industry, namely Tikveš and Skovin, we discovered seven key activities performed by innovation intermediaries that are directly related to SMEs' ability to successfully leverage external sources of knowledge for innovation purposes. These activities are articulation of knowledge needs and innovation capabilities, facilitation of social interactions, establishment of complementary links, implementation of governance structures, conflict management, enhancement of transparency, and mediation of communication.

5.1 Contributions to Research and Practice

SMEs and low-tech industries are two areas that have received little attention in research on open innovation so far (Van de Vrande et al. 2009; Vanhaverbeke et al. 2014; West et al. 2014). However, it is particularly organizations in these contexts that often have limited or no innovation capabilities, and consequently have to rely on external sources of knowledge for innovation purposes (Spithoven et al. 2011; Vanhaverbeke et al. 2014). By examining the open innovation efforts of two small wineries, our

study contributes to the understanding of open innovation practices in both SMEs and low-tech industries.

Our in-depth qualitative study of two innovation intermediaries in the wine industry has several important implications that contribute to both research and practice. First, our study contributes to the existing literature on collaborative networks (Batterink et al. 2006; Sapsed et al. 2007; Winch & Courtney 2007) by identifying the roles of intermediaries in the knowledge acquisition, assimilation, transformation, and exploitation. In particular, this study is the only one to investigate the activities of the innovation intermediaries that assist SMEs to successfully execute open innovation initiatives through the theoretical lens of ACAP. Second, we revealed how innovation intermediaries assist SMEs to innovate effectively in the different stages of the innovation process. We discovered that innovation intermediaries are actively involved in the innovation initiation, network composition, and innovation process management. Third, our study proposes more than a few ways for SMEs to improve their open innovation efforts in collaborative networks themselves, aside from the help of the innovation intermediaries. For example, SMEs should communicate with other stakeholders in a transparent way that will make explicit their knowledge needs and innovation capabilities. Such an open atmosphere improves the learning and innovation efforts in an interorganizational setting of collaborative networks. Last, considering the importance of intermediaries in the collaboration networks for the wine industry that we studied, governments might want to invest in establishment of more innovation intermediaries as instruments to strengthen their economies' competitiveness and improve the innovation capabilities of SMEs. Such investments should be considered by provision of tax reductions and beneficial policies, which stimulate the operations of these innovation intermediaries.

5.2 Limitations and Future Research

In our study there are several limitations. First, our theoretical framework for the role of innovation intermediaries in collaborative networks of SMEs may not be conclusive. For example, we discovered that innovation intermediaries initiate open innovation initiatives by articulating the knowledge needs and innovation capabilities of SMEs, and facilitating social interactions in collaborative networks. However, we don't exclude the probability of overlooking other important roles of innovation intermediaries in SME's collaborative networks. Second, these research findings are applicable to the other regions of the European wine industry that have dominant SME populations because these regions resemble each other in terms of infrastructure, knowledge flows, supply chain structure, and buyer-supplier interaction. Given the nature of case study analysis and this study's investigation of only two small wineries, its findings may not necessarily be generalizable to other open innovation initiatives of SMEs from other countries. We thus encourage future researchers to test the generalizability of our study to other countries, such as the US and Australia.

6 CONCLUSION

This paper addresses how SMEs from the wine industry successfully innovate within collaborative networks with the assistance of innovation intermediaries. In particular, we explore the roles of innovation intermediaries in the acquisition, assimilation, transformation, and exploitation of knowledge in open innovation initiatives from the wine industry. By investigating the open innovation efforts of two small wineries, our study contributes to the understanding of open innovation practices in both SMEs and low-tech industries. Our in-depth qualitative study of two innovation intermediaries in the wine industry has several important implications that contribute to both research and practice.

APPENDIX

<i>Case</i>	<i>Quotes</i>	<i>Role of Intermediary</i>
Tikveš	<p>‘We work on the development of the ideas that are channelled from the consumer market. We follow all the trends for the drinking preference of the end consumers and other trends related to the products of the wineries in Bordeaux, Tuscany, and Napa.’</p> <p>‘We do the market research globally and consult with foreign experts to make these innovations.’</p> <p>‘You try to see whether your available suppliers will be able to execute your idea. You have to be selective and choose the right supplier, not only based on costs.’</p>	Articulation of Knowledge Needs and Innovation Capabilities
Skovin	<p>‘We had couple of meetings with the agency in which we discussed the new direction we want to pursue with the new labels. We used some samples from other globally popular wines to explain the new label direction to the agency.’</p> <p>‘We gave these label instructions and requirements to the agency and they created 10 drafted labels.’</p> <p>‘We definitely had to be carefully with this requirement due to the limited availability of label printing paper types in Macedonia. There are only two printing houses in Macedonia and they are the ones that dictate what paper we will select for our labels.’</p>	
Tikveš	<p>‘Skopje Design Week is a global network event, which collaborates with various worldwide fashion experts, associations, fashion event organizers, and so on.’</p> <p>‘We also organized a networking event, which was followed by a workshop, for all the participants in the initiative. On this networking event the Tikveš marketing team had a chance to personally talk to many design experts and ask for their opinion on the label design.’</p>	Facilitation of Social Interactions
Skovin	<p>‘We had some formal meetings with the agency in our company, but most of the brainstorming sessions happened over a coffee. All of us gathered and started throwing some ideas, and most of the people tried to be open to innovation opportunities. We frankly discussed what can be done with this initiative.’</p> <p>‘The agency organized couple of promotion for our wines in the malls around Skopje, where we had chance to directly interact with our end consumers and ask them questions about their preferences for the rebranding of our lines’</p>	
Tikveš	<p>‘To reach this target group we have used our private relationships to publish the open call on the web portals of the carefully selected partners.’</p> <p>‘Tikveš and our company exist for more than 20 years now, and we have extensive networks of media and other partners.’</p>	Establishment of Complementary Links
Skovin	<p>‘And their primary function is to assist wineries in developing from scratch or further improvement of their overall brand. The company has a wide network of experts from different countries and different fields, who are used as a knowledge sources.’</p>	
Tikveš	<p>‘We even clearly mentioned in the open call that after the final selection of the best designs the rest will be deleted. And we will not anyhow use these other designs.’</p> <p>‘We are a responsible corporation and we don’t want to misuse any of their authorship rights. For the labels that we have chosen, we signed an agreement with the participants and we have the right to apply the design to our own labels.’</p> <p>‘But I still think that sharing designs with others might be a little bit sensitive. These freelancers will not be very happy to share all their hard work. They see the label designs as their babies and to a certain extend you might say that there are some emotions.’</p>	Implementation of Governance Mechanisms
Skovin	<p>‘It was a limited period of two weeks. And we encouraged contributors to contribute by giving monetary prizes for the most valuable suggestions. We actually rewarded five contributors with valuable coupons that can be used to redeem our wines.’</p> <p>‘The coordination of the initiative was not formal. We only signed a brief contract about the obligations of each side and did not go into too much details. The initiative had a more spontaneous and informal flow rather than overly controlled one.’</p>	

Table A1. Exemplary Evidence for the Roles of Innovation Intermediary in Knowledge Acquisition and Assimilation

<i>Case</i>	<i>Quotes</i>	<i>Role of Intermediary</i>
Tikveš	<p>‘Well, most of the so called conflicts were related to the copyrights of the label designs. As I mentioned before, sharing such work is little bit sensitive. You know the freelance designers are some sort of artists and they did this initiative primarily for pleasure and secondarily for financial reasons’</p> <p>‘In some cases, I remember that there was this freelancer who wanted more money than the others, and tried to negotiate with the winery. And in that cases, we had to personally sit down with her and renegotiate the financial award. At the end everything was fine and both of the sides were happy’</p>	Conflict Management
Skovin	‘They directly contracted the winners and set all the meetings. Actually, we were in the same room with them when we did the additional interviews. We asked most of the questions, and they were just leading the conversations and encouraging the winners to talk more. But, in general they had neutral position in the whole situation. They only mediated the conversations between us and the winners’	
Tikveš	<p>‘Well, the selection committee was made of 5 members: 2 professional designers from Switzerland, 1 representative from Design Today (Italy), 1 professional designer from Croatia, and 1 representative from our company. We gathered all the submitted designs and we had an initial pooling for the best 20 label designs’</p> <p>‘We brought together the winery, finalist of the freelance designers, and suppliers to discuss the initiative. We realistically looked at the available label designs and discussed whether it is possible produce them as given, or some details have to be changed’</p> <p>‘It is bit illogical to select a label design with costs of 0.6 EUR, when you have 1 EUR bottle. In that case you are selling you label rather than wines. You have to allocate your cost accordingly to all of the parts of the wine. You cannot have 0.6 EUR label on 1 EUR bottle’</p>	Enhancement of Transparency
Skovin	<p>‘As I mentioned previously, the agency prepared summary of the pooling results and valuable comments that were the major input for the refinements of the labels. We had several joint meeting with the agency and in 4 months’ time we came to the final label design’</p> <p>‘And afterwards, we send the final label design to the printing company to give us feedback whether our idea is feasible considering the availability of their production resources’</p> <p>‘The PR company has broken down the initiative onto several key points. The first one was at the end of the Facebook comment collection, the second was after the personal interviews with the winners, and the third one was at the time of meeting with the printing house. At all of these points we had to make a key decision whether we want to take the initiative to the next stage or discontinue it’</p>	
Tikveš	<p>‘Depending on the availability of the winery and the other involved collaborators, we had several face-to-face meetings to discuss production issues’</p> <p>‘Initially, each of the committee members has chosen several designs and wrote a joint email in the form of list. Afterwards, we had conference call with most of the members to discuss our selections, and make up the 20 best label designs’</p> <p>‘All the contestants had to zip their files and sent it to our email. At the beginning we thought that this would be sufficient, but when we received more than 200 submissions in the first 2 weeks, we decided to use the service of Behance, which is an online platform for uploads. Basically, the contestants had to create their profile on Behance.com and share their label designs with us’</p>	Mediation of Communication
Skovin	<p>‘Most of the communication was done over email, and we had meetings only for 4-5 times. On these meetings we discussed the progress of the initiative and made key decisions related to the design of the label’</p> <p>‘The PR company was moderating these meeting and they had the responsibility to send emails to all participants with the summary of the meeting’</p>	

Table A2. *Exemplary Evidence for the Roles of Innovation Intermediary in Knowledge Translation and Exploitation*

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