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Developing an e-Collaboration Framework for Knowledge Sharing in the Australian Wine-Making Industry: Research in Progress

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Abstract

The Australian wine-making industry has undergone remarkable changes which have transformed it into a leading world innovator, producer and exporter of table wine. However, while Australia has been a leader in wine R&D, globalisation had led to the rapid proliferation and adoption of new technologies by new suppliers and wine-makers in various countries. To counter increasingly intense competition from emerging foreign suppliers, Australian wine-makers need to enhance their distinctiveness and innovation. One possible way for doing so involves knowledge sharing via electronic collaboration or e-collaboration. This paper contributes to the existing body of knowledge by developing an e-collaboration framework for the Australian wine-making industry. It focuses on how e-collaboration technologies are used for the purpose of innovation and knowledge sharing and how the Australian wine-making industry can benefit from it.

Keywords e-collaboration, knowledge sharing, framework,

INTRODUCTION

Since the mid-1980s the Australian wine industry has undergone remarkable changes which have transformed it into a leading world innovator, producer and exporter of table wine (Aylward 2004, 2006, 2008). Australia is the 4th largest wine exporting nation after France, Italy and Spain, and Australian wine exports reached a record \$3.02 billion in July 2007. With approximately 169,000 hectares spread across 2000 wineries, wine production growth is almost unmatched. Wine sales in Australia have grown steadily over the past decade by up to 4% a year (AWBC 2009). Australia's exports total over 32% of its total wine production, compared to only 17% for the major producers such as France and Italy (Aylward 2004, 2006, 2008). Changes in industry ownership and structure, the creation of an export culture, a superior marketing effort, and the combination of industry collaboration and strong commitment to innovation are believed to be the decisive factors for its sustained continuity (March & Shaw 2000).

While Australia has been a leader in wine R&D investments and in the rapid adoption of new technologies, Southern Hemisphere and Southern and Eastern European suppliers are catching up rapidly as a result of globalization. That in turn has been aided by reforms to restrictions on foreign investment and by the fall in communication costs thanks to the digital/information revolution. Smaller grape-grower and wine-making firms might be affected adversely in so far as the spreading abroad of Australian expertise in viticulture, wine-making and wine marketing eventually reducing the distinctiveness of 'Australian' wine in the global marketplace (Anderson 2001).

When discussing the success of Australia's wine industry, Paul van der Lee (1998), a leading profession economist recruited for wine industry planning in Australia, states: "It was the application of new technology which played the critical role for new world producers [such as Australia] to reformulate wine as a consumer

proposition” (cited in Aylward 2004). However, while new technology and innovation are critical they cannot diffuse in the industry without the appropriate collaboration mechanisms. Generally, collaboration quality directly impacts business performance. That is, the more collaborative the enterprises are, the better they perform (Frost & Sullivan 2006).

Preliminary research indicates that it is becoming increasingly essential for smaller organisations with similar or complementary capabilities to collaborate in order to survive in the increasingly competitive global market place. Using e-collaboration to form temporary or permanent business alliances to move towards the concept of a virtual enterprise through information, communication and technologies (ICTs) is a necessary path for the future of SMEs in some industry sectors. However, e-collaboration is not well understood. Collaboration is a rather broad term that means different things to different people. This paper, thus, aims to further contribute to the body of knowledge by developing a framework for e-collaboration for the Australian wine industry that focuses particularly on how e-collaboration technologies are used for the purpose of innovation and knowledge sharing. The framework provides details about how the Australian wine industry could benefit from it.

The remainder of the paper is structured as follows. A discussion of the benefits provided by e-collaboration sets the scene of e-collaboration in the wine industry. Then the literature review of e-collaboration leads to the development of a framework about e-collaboration for knowledge sharing. The Repertory Grid Technique is then proposed to develop and validate the framework before concluding remarks are made.

LITERATURE REVIEW

A substantial amount of literature theorises the benefits and the types of e-collaboration and the process of e-collaboration. The following discussion synthesises relevant literature. In this section, we first provide the rationale for focusing on and the examination of extant research on e-collaboration. In general, we note that extant e-collaboration research focuses on the e-collaboration types and processes, which concerns mainly setting up conceptual and informational infrastructures that foster e-collaboration rather than the outcomes e-collaboration is meant to achieve, namely, fostering innovation.

Why e-collaboration?

Organizational collaboration constitutes the effort made by two or more organizations to achieve results that they cannot achieve working by themselves. Collaboration amongst organisations can be limited by the transaction costs incurred in managing interactions (Williamson 1991). Typically these costs are comprised of coordination costs including cost of integrated decisions (Nooteboom 1992) and transaction risks which include risks of being exploited in mutual organisational relationships (Clemons & Row 1992). As transaction costs increase, market inefficiencies can ensue (Sanders 2007) which suggests that ICTs can promote organisational collaboration since they reduce transaction costs.

Market pressures for increased product complexity and variety based on a wide range of developing technologies and response at higher levels of quality and reliability but declining costs have demonstrated that few, if any, organisations can do it all by themselves. They need to supplement their core competencies by allying with other providers of complementary competencies to satisfy their customers. The real productivity, design and quality improvements are not obtainable unless the suppliers in partnering arrangements innovate to the best of their abilities in conjunction with the buyer organisations.

The benefits gained from collaboration may not always be for economic reasons. For example, manufacturing firms use collaborative communication tools to foster continuous supplier performance improvement by enhancing supplier knowledge (of manufacture needs) and by building supplier affective commitment. ICTs can enable sharing large amounts of information including operations, logistics, innovation, managerial practices, and strategic planning. In turn this can enable real-time collaboration between organisations thus providing them with forward visibility, production planning, inventory management and distribution (Sanders 2007).

The term e-collaboration extends collaboration with the use of information and communication technologies (ICT) (Kock & D’Arcy 2002). That is, e-collaboration is the purposeful use of networking and collaboration technologies to support groups in creating of shared understanding toward joint effects (Munkvold 2005; Qureshi & Keen 2005). Specifically, e-collaboration technologies enable all forms of distributed collaboration including “all types of information and communication technologies (ICT) supporting communication, information sharing, and coordination between individual and organizations. Examples of e-collaboration technologies include web-based team/project rooms (integrating email, instant messaging, group calendars, document management, discussion forums, etc.), desktop conferencing systems (integrating audio, video, and data conferencing), knowledge repositories, and workflow management systems.” (Munkvold 2005, p. 78).

Zigurs and Qureshi (2001) argue that “collaborative systems and web technologies have opened up a myriad of possibilities for creating new and different types of relationships, as well as increasing the reach of these relationships.” In fact, the last two decades have witnessed a significant growth in the use of e-collaboration technologies for enhancing inter-organisational collaboration (Beamish & Delios 1997; Hartono & Holsapple 2004). Increasing competitive pressures and rapid changes in collaboration technologies are some of the reasons that have made building and managing collaborative ties with partners a key strategic issue in different industries (Kim et al. 2008). Additionally, e-collaboration facilitates new kinds of collaborative work. Specifically, it enables conversations with new kinds of properties which shift from being fixed to being negotiated and externalized (Qureshi et al. 2006).

Use of technologies for collaboration offers organisations the potential to improve their business processes, reach new markets and reduce costs through increased information and knowledge based capabilities (Rust & Espinoza 2006). The ability to interactively communicate with customers and business partners has been heavily supported by the growth of electronic networks, search engines, and the internet (Rust & Kannan 2002). e-Collaboration can also encompass the notion of a virtual enterprise, which may consist of temporary alliances between organisations to share skills and resources in order to respond to business opportunities (Camarinha-Matos & Afsarmanesh 2004).

Enabled by e-business technologies, e-collaboration can improve organisational integration (Vickery et al. 2003) which can in turn enhance the performance of organisations operating in the wine-making industry by improving both inter- and intra-organisational collaboration (Bharadwaj 2000). Additionally, e-collaboration provides opportunities for achieving significant competitive advantage (Kathuria et al. 1999) and provide a track to upgrading skills and innovative production capabilities. Upgrading and innovating refers to creating new capabilities and making new investments in wine making technologies, or enhancements in communications between vineyard managers, wine makers, and international marketers. New capabilities usually require radically different knowledge from what the wine producers presently have and which can be both internal and external. Wine producers have to manage the external chain knowledge concerning innovations, products, markets, and rapid technological changes etc. and the internal knowledge of costs, existing techniques, and other organisation related concerns. Taken together, performance enhancements and competitive advantage can improve the ability of organisations operating in the wine-making industry and can translate to measurable economic benefits.

Due to their interoperability, open standards and low cost of all information technologies, internet technologies have had the greatest impact on collaboration and information exchange between organisations (Rabinovich et al. 2003). In fact, there is evidence that using collaborative technologies to support organizational processes can enhance productivity in organizations (Fjermestad & Hiltz 2001; Robey et al. 2000). However, extant research shows that use of collaboration technologies is not necessarily synonymous with organisational collaboration (Sanders 2007). Collaboration is an outcome of human relations which can be supported by e-collaboration technologies. The manner in which these technologies impact human collaboration remains unexplored (Sanders 2007). Hence, research in this area has practical implications as it helps prioritise funding of facilitating and enabling ICT projects that promote collaboration.

Nevertheless, beyond productivity gains and execution of transactions, organisations can also develop collaborative relationships that entail knowledge sharing, knowledge creation, and knowledge usage as organisations work jointly toward fulfilling various activities including research, design, production, marketing or logistics (Hart & Sauders 1998; Hartono & Holsapple 2004; Holsapple & Singh 2000). There is evidence that inter-organizational collaboration including that which is supported by e-collaboration technologies, has been characterised by appreciable levels of dissatisfaction in terms of expectations relative to actual outcomes, and by a corresponding high failure rate (Hartono & Holsapple 2004; Hennart et al. 1998). In fact, there are frequent reports on problems and challenges related to the use of these technologies involving technical, organisation, and cultural issues (Downing & Clark 1999; Karsten 1999; Munkvold 2003 & 2005).

Knowledge sharing can improve organisational performance (Lesser & Storck 2001), innovation (Powell et al. 1996) and the achievement of promoting competitive advantage (Argote & Ingram 2000), yet it can be challenging. Extant research attributes knowledge sharing difficulties to differences in language, locus of practice, and joint product conceptualisations (Bechky 2003). In fact, Bechky (2003) argues that knowledge sharing difficulty is largely due to mis-communication. Certain expressions can be interpreted by recipients in forms which are different from those that are intended by the communicators. Other problems concern i) lack of contextual information, ii) unevenly distributed information, iii) lack of understanding of salience of information, iv) uneven information access speed, and v) uneven interpretations of meaning of silence (Cramton 2001). Some studies found that the use of collaboration technologies enabled face-to-face negotiations (Qureshi & Zigurs 2001). Other barriers cited in literature include lack of knowledge sharing incentives as well as lack of suitable mechanisms facilitating access to knowledge resources Bechky 2003; Ruppel & Harrington 2001).

There is evidence to suggest that collaboration technologies can leverage knowledge resources, although it is still unclear how these key resources can be leveraged (Qureshi & Keen 2005; Schrage 1990). There is limited research that attempts to integrate knowledge sharing factors, processes and types (Alony et al. 2007).

In the wine industry, collaboration was conceived primarily as an organisational medium for managing transaction costs which are necessary for running wine production systems. Collaboration did also serve as a medium to diffuse both innovations and knowledge (Mazzonis 1989). The Australian wine industry is quite unique (Aylward 2004). It has a comprehensive and collaborative structure which is characterised by competition, collaboration, and negotiation (Marsh & Shaw 2000). It consists of many different types of actors, including, government agencies, trade and industry associations, higher education institutions, and consultancy firms. While Australian firms compete to increase their share in both domestic and international markets, they also collaborate on shared interests such as marketing and national brand development, innovation, collective market knowledge and intelligence. In this context, as it seems that complex social factors govern collaborative technology use in organizations (Alony et al. 2007; Qureshi & Vogel 2001) we focus on the question of how knowledge sharing occurs amongst organisations operating in the Australian wine industry and how these organisations use and shape their e-collaboration for knowledge sharing and use.

Classifying e-collaboration

Collaboration is widely discussed in the relationship marketing, strategic management, and sociology literature. Early effort in identifying specific forms of collaboration, such as joint ventures, trade associations, strategic alliances, franchises, virtual organizations, etc. (Gulati 1998; Oliver 1990; Barringer & Harrison 2000; Ahuja & Carley 1999) were very much based on business format. Kuman and Dissel (1996) did a pilot study on the role of ICT in supporting collaboration. They identified a collaboration typology according to the technologies that firms employed, such as long-lived technology, project-oriented technology, and network-oriented technology, and provided examples of ICT applications that can support different collaborations. However, this classification has been criticised for its narrow focus. That is, technologies are constantly evolving, thus, it is difficult to define the nature of technologies and their supportive role in collaboration.

Wang & Archer (2004) provided examples of electronic markets and their collaboration applications and developed a two dimension framework to classify e-collaboration. Their framework is based on the level of collaboration and the parties involved in the collaboration. In Wang & Archer's (2004) framework cooperation is the lowest level of collaboration and is used often for short term goals. There are no specific convergent goals and no real sharing of resources. Parties keep their autonomy and make complete contracts, recording every detail about how to buy and how to divide benefits. E-commerce technologies can provide a platform to let buyers know about each other's needs. This kind of information sharing can be supported by bulletin services or chat rooms in community type websites. This functionality would be mostly provided as a value-added free service.

In coordination, collaborators begin to share mutual goals and resources. They make plans on how to collaborate, and define contract terms. In this process, power is a big issue, since power will influence contract terms and the distribution of collective gains. Mutual planning and harmonizing the needs of different parties are important (Pirog & Taylor 1990) in this process. Power and trust also come into play. Trust is an issue because some buyers may default on their original commitment. Due to power and diversified needs between buyers, it is hard to aggregate multiple orders and negotiate one contract, and then break one contract into multiple orders again, unless communication, content, and workflow are very structured and similar.

The highest level of collaboration is less function-specific, and more strategic. It often requires a new structure, usually called a virtual organization or strategic alliance. Supporting this level of collaboration is very difficult, since much of the information and workflows cannot be structured in a cost-effective manner, and there are likely to be many complicated exceptions to organized processes and procedures. One solution that can help in a less structured environment is the use of inter-organizational corporate portals to support inter-organizational collaboration (Dias 2001; Raol et al. 2002). Corporate portals are software solutions that provide user-customizable access to a broad range of information and applications through web browsers. The benefit of an inter-corporate portal is that it provides one stop access to all relevant data in the collaborating companies. Advanced portals include collaborative tools such as groupware, e-mail, calendars, discussion panels, workflow systems, decision support from business intelligence tools, expert systems and analytical applications (Dias 2001).

The e-collaboration process

Much of the previous literature about e-collaboration centres on the determinants/conditions and the outcomes of e-collaboration. From the individual users' point of view, the perceptions of information culture, attitudes

regarding information ownership and propensity to share, as well as task and personal factors, influence the individual's use of collaborative media. Jarvenpaa and Staples (2000) found that task characteristics (task interdependence), perceived information usefulness and the user's computer comfort were most strongly associated with the person's use of collaborative media. Although a fully open, organic information culture is argued to support e-collaboration, it was found that a more structured, closed information culture may be preferred by heavy users, possibly due to their need to have reliable access to other individuals' knowledge and information. At an organisational level, a number of factors have also been identified, particularly in a supply chain environment. Researchers have been interested in justifying the driving forces and outcomes of collaboration, such as shared risks, information sharing, achieving synergies, and seeking competitive advantage and perceived e-collaboration efficiency (Madhavan et al. 1998; Lefebvre et al. 2005). It is generally agreed that for e-collaboration to occur a cultural change is required in order to establish real partnerships between buyers and suppliers in which information can be exchanged on a regular basis in an environment of trust (McIvor, Humphery & McCurry 2003).

Both researchers and practitioners are concerned about the "how to" question. Kock (2005) asserts that e-collaboration consists of the elements: collaborative task, e-collaboration technology, participants, mental schemas of the participants, physical environment, and social environment, which are relevant to the Australian wine industry. For example, collaborative task refers to tasks that parties can work on together such as jobs beyond the capacity of one organisation or jobs that require complementary skill sets. In the wine industry a collaborative task could be two or more vineyards working together to harvest grapes in a more efficient manner.

The most challenging aspects of collaboration involves the non-ICT components such as communication, information sharing, culture, change management, training (Vakola & Wilson 2004), and trust (Thoben & Jagdev 2001; Schuster 2002). Another challenge that will need to be overcome is the unwillingness of businesses to collaborate because of the fear that information sharing could weaken their negotiating position with their channel partners. To convince businesses, both interpersonal and technological are vital to developing trust, as is satisfaction with the collaboration process (Lawson & Hol 2004). Indeed, Boddy et al. (2000) have identified that making the decision to work collaboratively is easier than the implementation. That is, to change the mindset from viewing other organisations as competitors to viewing them as possible collaborators is a challenge itself. Certainly, without an established support framework it is likely that the collaboration would not be successful.

A FRAMEWORK FOR E-COLLABORATION FOR KNOWLEDGE SHARING

We propose an e-collaboration framework that addresses the pitfalls of extant e-collaboration research, in that in addition to creating conceptual collaboration infrastructures, it also attempt to foster innovating by focusing on knowledge sharing, thereby contributing to the existing body of knowledge. Specifically, our e-collaboration framework outlines the key elements of collaboration objectives, participants, process and outcomes and is based on Hartono & Holsapple's (2004) work. We argue that the participants, process and outcome components are important because they provide a systematic guide to cover all aspects of e-collaboration including collaboration between competing and collaborating firms and between public and private sector and it may be applicable to both intra- and inter-firm collaboration. Inclusion of these components is also anticipated to make the resulting framework more useful to practitioners as it highlights categories of issues that are beyond technology that are important to be addressed for collaboration to be successful. The objectives can be any or all of the following: product development, problem solving, and innovation (Qureshi & Keen 2005). Once objectives are clarified and agreed upon, participants are identified. Our framework emphasises six aspects of participants who may be involved in knowledge sharing outlined as follows.

Participants

Following Karsten (1999) as a basis we have identified six aspects or prerequisites that participants need to satisfy if they are going to be involved meaningfully in collaborative relationships. These six aspects corroborate findings in extant academic and commercial research, however, we present them as part of our framework in order to subject them to further scrutiny and validation in specific industries such as that of wine-making.

Need to Collaborate Extant research argues that for ICT to enhance collaboration, organisations must need to collaborate (Johnston & Lewin 1996). Nevertheless, due to organisational and external factors need for collaboration may not necessarily drive collaboration. Poor interpersonal communications and collaborative activities may result in 'bad collaboration' which ICT may only deteriorate (Easterbrook 1993). Additionally, ICT may hamper collaboration by allowing wider information exchanges than established by collaboration structures (Karsten 1999). In this context, three types of collaboration may be discerned, namely, planned collaboration which can be supported by specific applications; occasional collaboration which can be anticipated or unanticipated and may occur in shared information spaces; and emergent collaboration for which particular

supporting tools or applications can be incrementally developed (Karsten 1999). In any case, research shows that any type of collaboration needs to be characterised by reciprocity (Qureshi & Keen 2005), in that, the maturity of involvement appears to be positively associated with credibility and attraction (Burgoon et al. 2000).

Understanding ICT and How it Supports Collaboration There is a minimum threshold in ICT understanding that collaborators need to possess prior to inferring how it might support collaboration. However, collaborators need to increase their understanding of ICT to constrain or enable (Orlikowski 1995) their particular collaborative scenarios. Nevertheless, as ICT users enhance their understanding by learning and gaining additional skills about ICT and its possibilities, they can change original ways of using it. That is, increasing awareness can potentially open up new collaborative uses of the technology. It follows that, understanding of ICT and how it supports collaboration should be viewed as an evolving process (Karsten 1999).

Appropriate Support is unequivocally highlighted as a key ingredient for the adoption and continued use of ICTs for enabling collaboration. It includes training, hands-on support, and informational support (Ciborra 1996; Karsten 1999; Qureshi & Keen 2005). Additionally, as ICT solutions supporting collaboration appear to be standard groupware applications embedded in local organisational contexts, a proactive stance concerning adjustments to support collaborative processes rather than vice versa appears to be an important collaboration incentive. Nevertheless, appropriate support appears to be a necessary, though not fully sufficient, condition for e-collaboration effectiveness (Ciborra, 1996, Krebs, Dorohonceanu and Marsic 2004).

Collaborative Culture Early research has found that organisations with a culture that is incompatible with collaborative ICTs can encounter difficulties in finding suitable applications for them (Gallivan et al. 1993; Orlikowski 1993). Later research found different results. Collaborative ICT can be used to support or even enhance an organisational culture whether such culture supports collaboration or other kinds of cultures, such as individualistic, competitive, and independent (Karsten 1999, Hollocks 2006). However, evidence also shows that collaborative ICT can be used to challenge existing organisational culture (collaborative or not) and even change it (Karsten 1999).

Relationship Building has been found to be essential in collaborations. To form and strengthen relationships collaborators need to physically meet and socialisation should be enhanced via chat sessions and increased social communications (Powell et al. 2004). Collaboration outcomes entail a strong trusting and committed relationships amongst collaborators (Anderson & Weitz 1992; Rampersad et al. 2009). Trust has been cited to be a critical factor in collaborative relations (Dodgson 1993; Doz 1996; Morgan & Hunt 1994). It is generally accepted that trust reflects confidence in a partner's "reliability and integrity" (Morgan & Hunt 1994). With trust, information can flow freely amongst collaborators as less time and effort is spent invigilating and protecting against opportunistic behaviours (Inkpen 2005). In contrast, lack of trust may lead to collaborators becoming suspicious of each other (Powell et al. 1996). Recent research is consistent with earlier studies that have found trust to be fundamental in collaborative organisational relations (Qureshi & Keen 2005; Rampersad et al. 2009). Additionally, commitment that has been defined as the "desire to develop a stable relationship, a willingness to make short-term sacrifices to maintain the relationship, and a confidence in the stability of the relationship" (Anderson & Weitz, 1992, p. 19) has also been found to be critical in collaborative relationships (Rampersad et al. 2009).

Collaborative Compatibility of systems or lack thereof has been found to affect the ability of partners to become involved in collaboration activities (Guo & Sun 2004). Technical heterogeneity amongst collaborators systems and the manner in which they are used includes data formats (Fensel et al. 2001), document models (Omelayenko et al. 2002) and business processes (Dogac et al. 2002). Based on Guo and Sun (2004), collaborative compatibility refers to the ability to collect and interpret knowledge and local business data on a common context. Collaborative compatibility can "provide high levels of [inter-organisational knowledge] integration while maintaining local serviceability" (Tuttle 2002).

Process

The next key element in our framework for knowledge-based e-collaboration concerns the process. In saying "We can know more than we can tell" Polanyi (1966, p4) eloquently distinguishes between two types of knowledge, namely, tacit and explicit knowledge. Explicit knowledge refers to knowledge that is codified in reports, designs and formulae and is easily transmittable in formal and systematic language through different ICT and non-ICT systems (Polanyi 1966). Conversely, tacit knowledge has a personal quality and is hard to formalise and communicate using various information systems (Polanyi 1966). New knowledge can be created when tacit and explicit knowledge interact as a result of organisational collaboration (Kahn et al. 2006; Nonaka 1994). Thus knowledge-based collaboration processes that create new knowledge can be composed of mixtures of the following: combination, externalisation, internalisation, socialisation (Kahn et al. 2006; Nonaka 1994).

Combination occurs in collaborations when explicit knowledge of one member is merged with explicit knowledge of another (Nonaka 1994). Typically, combination occurs using sorting, adding, and categorising explicit knowledge between and among collaborating members (Kahn et al. 2006). Externalisation occurs when one of the collaborating members articulate their tacit knowledge into generic forms of explicit knowledge that can be understood by others (Kahn et al. 2006). For externalisation to be successful articulating members need to have a sufficiently intimate understanding of the mental models of the target members and it involves “long-term, intimate knowledge of [their] systems and methods” (Tuttle 2002). With internalisation, collaborating members converted newly created explicit knowledge tacit forms and used it in fulfilling their objectives. For internalisation to occur explicit knowledge needs to be made available on a regular basis and opportunities need to be created for members to share it (Kahn et al. 2006). With socialisation, members merge their tacit knowledge in order to create new joint tacit knowledge. Sharing of experiences amongst collaborating members constitutes the key to effective socialisation. Lack of sharing may cause difficulties for collaborating members to understand their other mental models which in turn may result in poor understanding of new information (Carroll et al. 2006). Kahn, Maltz, and Mentzer (2005) argue that socialisation requires some form of rich interaction that is consistent with face to face communication.

Outcomes

The last key element for e-collaboration is the outcomes or objective achievement. Maximum knowledge creation can occur when all patterns of interactions take place. However, these interactions must be the result of sustainable and synchronised long term organisational relationships the operational efficiency of which can be supplemented by e-collaboration technologies. This may lead to strategic collaborative partnering and achieve collaboration objectives for new product development or problem solving or innovation (Mentzer et al. 2000; Qureshi & Keen 2005).

PROPOSED METHOD

Given the idiosyncrasies of the Australian wine-making industry we propose using an inductive approach, namely, the Repertory Grid Technique (RGT), to collect data in this study. RGT is a systematic and flexible method that integrates both qualitative and quantitative analysis on a given research domain. This choice hinges on the fact that extant research concerning using of e-collaboration technologies for knowledge sharing purposes is both limited and fragmented. The studies that have been carried out to date have employed either qualitative semi-structured interviews or quantitative surveys which may contribute to biasing the participants’ responses by limiting the scope of information obtained. Based on Personal Construct Theory (Kelly 1955), RGT can enable researchers to generate large amounts of qualitative information concerning our question of how knowledge sharing occurs amongst organisations operating in the Australian wine industry and how do these organisations use and shape their e-collaboration for knowledge sharing and use (Kanellis, Lycett and Paul 1999).

After selecting elements which represent the domain of investigation, interviewing methods such as ‘triading’ and ‘laddering’ will be employed to elicit constructs to identify meanings for elements and elaborate on them, respectively (Mardsen & Littler 2002; Tan & Hunter 2002). An element can be an e-collaboration event or situation that is focused on when participations are invited to think about a situation in the research domain. Triading refers to the generation of three elements at a time for the purpose of eliciting research constructs which represent adjectives to describe similarities between elements that makes constructs stand out. Laddering, is a questioning technique about meanings of the constructs that enables researchers to enrich their understanding about constructs. Specifically, it allows researchers to compare data accurately. RGT can therefore help facilitate the identification of new factors, concerns and issues that may not have been examined in extant literature limiting the interference of researcher bias (Whyte & Bytheway 1996).

The use of RGT is important for several reasons. First, RGT has the advantage of being efficient in terms of time and effort and helps to ensure that the respondents focus on constructs in the specific issues under investigation (Wright, 2008) which is important for respondents who are giving their time to participate in the study. It also provides a way of doing research in a more precise, less biased way, without input from the observer (Stewart & Stewart, 1981). RGT also provides a means of comparing different grids for further analysis over time and between respondents (Wright, 2008) allowing more fruitful data analysis and further research opportunities.

Second, RGT avoids using of a priori categories in that it does not impose pre-determined structures. Instead, the categories emerge from the data through the identification of emerging themes (Whyte & Bytheway 1996; Tan & Hunter 2002). Thirdly, RGT allows sample participants to express their views in their own words. However, due to its systematic approach, it allows researchers to probe deeper into the responses in order to derive richer information which enhances understanding of participants’ perceptions while aiding data analysis.

The aim of the project is to assist wineries to eCollaborate using information communication technology (ICT) tools to enhance their productivity. There is increasing recognition in the literature that collaboration objectives

for achieving innovation in the wine-making industry can be achieved through the cooperation of multiple organisations. Thus the unit of analysis in this study will focus on individual organisations. Additionally, we will examine organisational outcomes derived from eCollaboration including antecedents and prerequisites. It is envisioned the project will take the following form:

- Identify businesses (clusters) in relevant regional areas across South Australia that will benefit from collaboration.
- Call for expressions of interest from wineries and other potential research partners (Industry Associations etc) to join the project.
- Conduct an initial investigation to identify the current 'state of play' (online survey)
- Prepare initial interview and guidelines
- Conduct in-depth interviews with participants
- Identify/validate eCollaboration challenges and success factors
- Formulate a framework to assist wineries to engage in eCollaboration activities
- Disseminate the proposed framework to the wine industry community through industry publications and seminars
- Trial an e-collaboration model and strategy for wineries.
- Disseminate the Model and Strategy to the wider winery community.

CONCLUSIONS

This research will provide the community in the wine industry with an understanding of how businesses can better collaborate using electronic means for communication and networking, what the typical barriers and impediments are and how they can be overcome. Like previous research into the diffusion process, organisations need to face a number of issues in addition to the adoption of the enabling technologies. The technologies are available to support collaboration, but successful e-collaboration has not yet reached the potential offered by the technologies. It is envisioned that the end result will be a framework that will clearly show how ICT tools can be used for e-collaboration, particularly in involving/motivating/enabling participants and how participants will benefit from e-collaboration to different extents depending on their level of collaboration. This will have practical benefits to the wine industry by enabling knowledge sharing in wine-making and grape-growing in a more effective and efficient manner and thus increase the industry's competitiveness. It also provides scholarly benefits by building on Kock (2005) and Hartono and Holsapple's (2004) work and contributing to the e-collaboration field of knowledge.

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