THE EMERGENCE AND DEVELOPMENT OF INTER-ORGANIZATIONAL RELATIONSHIPS IN THE WINE INDUSTRY: MODERATING ROLES OF TRUST AND DISTRUST IN ICT USE

Kristijan Mirkovski, Information Systems Department, City University of Hong Kong, Kowloon, Hong Kong, kmirkovsk2-c@my.cityu.edu.hk

Robert Davison, Information Systems Department, City University of Hong Kong, Kowloon, Hong Kong, isrobert@cityu.edu.hk

Abstract

Recent developments in information and communication technology (ICT) have facilitated integration along supply chains. Besides technological advancement and governmental support, Small and Medium Sized Enterprises (SMEs) still face significant challenges when integrating into global supply chains. In a study of SMEs operating in the Macedonian and American wine industries, we investigate the importance of the moderating roles of trust and distrust on ICT use. Specifically, we identify seven factors – information sharing, collaboration, trust, distrust, contractual bonds, social bonds, and environmental uncertainty – of inter-organizational relationships, and explore their impact on ICT use in the artisan-oriented and disintegrated wine industry from a cross-cultural perspective. These insights about the moderating roles of trust and distrust of the wine industry have important implications for managers involved in managing dyadic buyer-supplier relationships.

Keywords: Trust, distrust, ICT use, cross-cultural study.
1 INTRODUCTION

Organizations in today’s competitive business environment have to effectively and efficiently enhance their competitiveness to survive and thrive. Organizations seek to establish strategic partnerships and effective links with their business partners by integrating into supply chains, where internal processes are highly interlinked and cut across organizational boundaries. Recent developments in ICT facilitated integration process along supply chains. With the emergence of Internet and e-business technologies, SMEs are able to integrate their processes through collaborative information sharing and planning in a cost efficient manner. A comprehensive integration of supply chain processes enables various value-added activities that assist in attainment of competitive advantage (Essig and Arnold, 2001).

An abundance of research has been undertaken into the low levels of ICT adoption by SMEs. Lawson et al. (2003) revealed that concerns for security and privacy of transactions, high implementation costs, lack of government support and lack of IT knowledge are the most common barriers of ICT adoption among Australian SMEs. Most ICT adoption studies focus on investigating technological, environmental and organizational factors rather than inter-organizational relationships in supply chains. Zaheer and Venkatraman (1994) disclosed that trust is considered to be a significant determinant for the establishment of inter-organizational governance structures such as supply chains. Particularly, trust and distrust are crucial elements of inter-organizational relationships in the artisan-oriented wine industry that is composed of various fragmented parties that collaboratively operate to produce the final product of bottled wine. Similarly, due to the underdevelopment of formal institutions as market mechanisms for societal exchanges in emerging economies, such as the case with Macedonia, the research framework took into consideration the influence of social bonds, contractual bonds, and environmental uncertainty on trust and distrust. Additionally, a large proportion of ICT use research was carried out as single cases in developed counties such as the USA, Australia and Canada (McGraph, 2006; Lawson et al., 2003; Ritchie and Bridley, 2005). The latter prior studies entail that there is a lack of research on factors influencing the use of ICT from the inter-organizational perspective of trust and distrust as moderators in cross-country settings. Hence, this study examines ICT use by SMEs in the Macedonian and American wine industries with reference to the moderating role of trust and distrust in buyer-supplier relationships.

2 CASE BACKGROUND

2.1 Wine Industry

2.1.1 Macedonian Wine Industry

The Republic of Macedonia is a landlocked country in South-Eastern Europe. The Republic of Macedonia has 55,000 acres of vineyards that generate an output of 77.5 million liters annually. The vineyards are predominantly owned and maintained by independent grape farmers and larger agricultural conglomerates. Currently, there are 86 licensed wineries, which bottle around 5 million cases annually, and approximately 20,000 independent farmers who contribute more than 50% to total wine grape production (GMWP, 2009). The majority of the wineries are of small-to-medium capacity and focus on the production of high quality bottled wine through the use of sophisticated equipment and technology. The Macedonian wine industry is considered to be significant for the national economy and has considerable contribution to the employment levels by creating direct and indirect jobs for 25,000 people (DSVW 2010-2015, 2010).

2.1.2 Washington State and Ohio Wine Industries

Washington State is considered to be one of the leading wine producing regions and the second largest wine producer situated in the Northwest corner of the United States. With 43,000 acres of vineyards, the Washington State wine industry has an economic impact of 3 billion US dollars and employs approximately 14,000 people directly and indirectly. There are 739 licensed wineries, which bottle 11.2
million cases annually, and around 350 independent wine grape farmers. The five largest producers account for more than 70% of the state’s total wine production, the next 30 wineries represent about 20% to 25%, and several hundred small producers contribute only 5% (Stonebridge Research Group, 2012). Comparatively smaller in size and operations, the Ohio wine industry is located in the Eastern part of the United States and has 1,900 acres of vineyards and 160 licensed wineries that annually produce around 477,000 cases of bottled wine. Approximately 85% of Ohio’s wineries are small producers with a capacity of less than 5,000 cases, and it is estimated that there are around 60 independent wine grape farmers. The annual economic impact of Ohio wine industry is 582.8 million US dollars that creates full-time jobs for 4,108 people (MKF Research, 2010).

2.2 Wine Supply Chain

The supply chain of the above-mentioned wine industries comprises both upstream and downstream parts. The upstream part supplies all raw materials: fresh grapes, wine yeast (additive), labels/cartons, glass bottles, bottle capsules, and corks. In the fragmented upstream supply chain, wineries represent focal organizations that aggregate different raw materials from various suppliers to create bottled wine. The downstream part of the wine supply chain is composed of importers, distributors, wholesalers, retailers, and consumers (see Figure 1).

![Wine Production Process and Supply of Raw Materials](image)

Figure 1. Wine Production Process and Supply of Raw Materials

The selected wineries for this study are integrated with their upstream and downstream supply chain partners’ ICT to facilitate information flow. In this study we focus on investigating the interaction between wineries and their upstream suppliers that utilize ICTs – email, instant messaging tools, video conferencing, and web file hosting services – to share information and collaborate. In this paper, the ICTs’ use is studied in the context of the moderating roles of trust and distrust with reference to inter-organizational relationships. Trust and distrust are considered to be moderating mechanisms rather than control mechanisms in the dyadic exchanges between wineries and their suppliers. On the one hand, a winery that has trustworthy exchanges with its suppliers is less likely to impose controlling restrictions, which promote information sharing and collaboration through the use of ICT. On the other hand, a winery that distrusts its suppliers is more likely to frequently engage in control activities concerning suppliers’ decisions in order to reduce the potential for their opportunistic behavior, which in turn reduces the collaborative efforts through the use of ICT.

3 THEORETICAL FRAMEWORK

3.1 Transaction Cost Economics (TCE)

The two major assumptions of TCE are bounded rationality and opportunism. Opportunism, together with bounded rationality, contributes to market governance inefficiency, which makes organizations select
particular exchange governance to reduce transaction costs (Williamson, 1975). Under environmental uncertainty, both bounded rationality and opportunism are amplified and make organizations closely monitor/control their exchange partners’ opportunistic activities (ignorance of responsibilities, inflation of prices, late deliveries, and partial information disclosure) and increase transaction costs (Noordewier et al. 1990). Similarly, Shang et al. (2005) stated that lack of trust in dyadic exchanges contributes to an increase in transaction costs, where organizations impose preventive mechanisms – information search, contact, negotiation, contract, monitoring, assurance, and inspection – to reduce transactional uncertainty associated with outsourcing. More important, Clemons and Row (1992) acknowledged that ICT plays an essential role in the establishment of these inter-organizational governance structures. Clemons et al. (1993) pointed out the ability of ICT to reduce coordination costs, operational risk and opportunism associated with external transactions in supply chains. ICT use in the inter-organizational context reduces transaction costs and opportunistic behavior by being a platform for search, contact, negotiation, contract, monitoring, assurance, and inspection, and therefore is seen as an essential component of dyadic exchanges in the wine industry.

3.2 Social Exchange Theory (SET)

SET complements TCE by focusing on how social relationships impact and transform market-based relationships and market governance (Nooteboom, 1996). While TCE emphasizes the dyadic exchanges between partners, the social exchange proposes that social ties in a network of buyers and suppliers are likely to impact mutual interactions (Provan, 1993). Given that trust may influence a supplier’s motivation to meet buyer needs and a buyer’s willingness to utilize supplier expertise (Bradach and Eccles, 1989), the factors that contribute to development of trust may play a significant role in inter-organizational relationships. Contractual arrangements, which are led only by market-based mechanisms, are initiated as an arms-length relationship and are modified over time through social exchange processes. As organizations voluntarily consider adjustments that are essential for inter-organizational relationships, reciprocal obligations are invoked (Hallen et al., 1991). More important, the social ties embedded in inter-organizational networks prevent opportunistic behavior in dyadic contexts (Granovetter, 1985) that contributes to the establishment of trust (Kirchler et al., 1996). The seemingly unselfish deeds of social bonds between the winery and its suppliers usually lead to the development of trustworthy relationships.

4 RESEARCH MODEL AND PROPOSITION DEVELOPMENT

Seven factors – information sharing, collaboration, trust, distrust, contractual bonds, social bonds, and environmental uncertainty – were identified as being core to the inter-organizational relationships of business partners that influence ICT use in wine supply chains (see Figure 2).

![Figure 2. Research Model](image-url)
4.1 Information Sharing

One critical success factor in supply chain management is the free sharing of information. Sharing of operational information such as inventory, demand forecast, product planning, and product delivery, between trading partners enhances supply chain visibility and reduces opportunistic behavior. According to Handfield and Nichols (2002) ICT substantially reduces paper work and cycle times in supply chains. ICT constitutes a platform for search, contact and negotiation that both reduces opportunistic behavior and minimizes transaction costs associated with exchanges, and therefore is seen as a preferred channel for information sharing in exchanges relative to other communication channels. Hence, we assume:

**Proposition 1:** Information sharing has a positive impact on ICT use.

4.2 Collaboration

Supply chain collaboration is defined as concentrated bilateral efforts of business partners in terms of joint programs that have the objective of improving operational efficiency, product quality and customer satisfaction (Mohr and Spekman, 1994). Whenever buyer and supplier tightly collaborate, it is more likely that they will have aligned operational strategies, which leaves space for opportunistic behaviors on the suppliers’ side. Dyer (1997) revealed that synchronized collaborative efforts of supply chain partners minimized transaction costs associated with procurement. Collaboration through ICT not only mitigates opportunism but also reduces transaction costs, which stimulates a winery to use ICT over other collaborative channels. Therefore:

**Proposition 2:** Collaboration has a positive impact on ICT use.

4.3 Trust and Distrust

Ratnasingam et al. (2002, 387-388) regarded inter-organizational trust as “the subjective probability with which organizations assess that another organization will perform potential transactions according to their confident expectations”.

Frequent information exchange, which is a trait of a trustworthy exchange relationship, assists a winery to better comprehend its suppliers and the business environment. By having free access to suppliers’ information, the winery is better prepared to properly respond to market contingencies (Ryu et al., 2008). Eyuboglu et al. (2003) discovered that a manufacturer with a higher level of perceived benevolence in suppliers’ interests about his/her welfare is less likely to be apprehensive about suppliers’ opportunistic behaviors, which may justify the use of ICT for information exchange. Therefore, a winery that has trustful relationships is less likely to expect failure of suppliers to meet the expected performance levels, which in turn encourages both parties to use ICT to share supply chain information:

**Proposition 3a:** The positive relationship between information sharing and ICT use is moderated by trust such that when perceived trust is higher, the positive relationship between information sharing and ICT use is stronger.

Schurr and Ozanne (1985) found that inter-organizational trust stimulates positive attitudes and behaviors among business partners, and resolves difficulties associated with dyadic exchange such as power and conflict. According to Coleman (1990) a manufacturer’s perception of its suppliers’ trustworthy performance, such as timely deliveries and acceptable level of substandard products, may reduce the suspicion of suppliers’ opportunism that lowers control activities and encourages e-collaborative initiatives:

**Proposition 3b:** The positive relationship between collaboration and ICT use is moderated by trust such that when perceived trust is higher, the positive relationship between collaboration and ICT use is stronger.
The levels of trust and distrust are of particular importance for buyer-supplier relationships in supply chains. Distrust functions as a mechanism for social control that recognizes risk and decreases uncertainty through advancement of risk avoidance (Barber, 1983, and is considered not only as opposite but as well alternative/equivalent to trust (Luhmann, 1988). Chu and Fang (2006) acknowledged that distrust has a negative impact on buyer-supplier relationships, deteriorating the performance of both buyers and suppliers. In particular, distrust causes supply chain partners both to hesitate to disclose information and to suspect the validity of information received. Hence, in distrustful relationships the winery is more likely to avoid use of ICT for collaborative purposes and engage in controlling activities over suppliers’ decisions:

**Proposition 3c:** The positive relationship between collaboration and ICT use is moderated by distrust such that when perceived distrust is higher, the positive relationship between collaboration and ICT use is weaker.

### 4.4 Bonds

#### 4.4.1 Contractual Bonds

Contractual bonds refer to business partners’ adherence to specific written or oral agreements (Coleman, 1990). As stated by TCE, organizations rely on market governance to control their exchanges with external contractors, which makes them exposed to opportunism (Williamson, 1975). In dyadic exchanges, formal contracts represent a critical mechanism for protection against opportunistic behavior (Joskow, 1987). Coleman (1990) revealed that contractual bonds, which include formal agreements or internal policies, increase trust in new buyer-supplier relationships by reduction of associated uncertainty. Gounaris and Venetis (2002) in their study of industrial service relationships found that contractual bonds have a significant positive influence on trust in novel relations in comparison to mature ones. A winery that has tight contractual bonds with its suppliers is more likely to have higher levels of trust in relative exchanges due to the reduced opportunism. Hence:

**Proposition 4a:** Contractual bonds have a positive impact on trust, which in turn positively moderates the relationships between information sharing, collaboration and ICT use.

#### 4.4.2 Social Bonds

Social bonds are conceptualized as ‘the degree of mutual personal friendship and liking shared by the buyer and seller’ (Wilson, 1995, p. 339). In the Macedonian context, social bonds are closely associated with the term vrski (meaning ‘connections’) used to describe a network of contacts that an individual can draw on to prevail upon another to perform a favor or service and comparable to guanxi in the Chinese culture. Vrski is essential element of the social bonds within the Macedonian business society and functions as a corporate asset in inter-organizational contexts. In a study on embeddedness and roles theory in dyadic exchange context, Montgomery (1998) revealed that absolute trust becomes primary as the relationship evolves, and the friend roles surpass the economic agent roles as mutual interactions intensify. Haytko (2004), in her study of interpersonal relationships, discovered that higher levels of trust are present in more personal relationships between business partners. Hence, we suggest:

**Proposition 4b:** Social bonds have a positive impact on trust, which in turn positively moderates the relationships between information sharing, collaboration and ICT use.

Engagement in unethical or opportunistic activities by suppliers can possibly lead to deterioration of long-term business relations and the emergence of distrust. Nevertheless, dyadic exchanges that are reinforced by socially oriented trust tend to be more stable and long term, which can mitigate potential opportunistic behaviors by business partners (Dorsch et al., 1998). When a winery and its suppliers establish profound personal ties and identify with each other, they will have the perception of mutual interest and shared responsibility, which will reduce distrust in exchanges. Therefore, we propose:
**Proposition 4c:** Social bonds have a negative impact on distrust, which in turn negatively moderates the relationships between information sharing, collaboration and ICT use.

### 4.5 Environmental Uncertainty

Environmental uncertainty indicates the degree of change and instability in the environment (Dess and Beard, 1984). Turbulent environments are characterized by high levels of uncertainty for the availability, production, supply, demand and price of major products on the market (Krishnan, et al., 2006). One of the central postulations in TCE states that buyers and suppliers are rarely in a position to fully anticipate all possible contingencies to be developed during the course of their relationship, which implies incompleteness of formal contracts that in turn makes the pursued market governance vulnerable to opportunistic behavior relationship (Williamson, 1996). Under environmental uncertainty, where unexpected contingencies constantly arise, the winery is more likely to avoid establishment of firm contractual bonds with suppliers due to the surpassed roles of the contract as a preventive mechanism against opportunistic activities:

**Proposition 5a:** Environmental uncertainty has a negative impact on contractual bonds, which in turn influence trust that moderates the relationships between information sharing, collaboration and ICT use.

On the other hand, the development and cultivation of social bonds with suppliers may prevail over the shortcomings of contract-based governance in uncertain environments. Dyer and Singh (1998) argued that social ties, which are predominantly based on mutual commitment and shared values between business partners, are more effective and efficient in comparison to formal contracts in turbulent environments. Thus, we assume that in uncertain environments, a winery is more likely to establish and cultivate tight social bonds with its suppliers to reach the necessary flexibility to mitigate contingencies:

**Proposition 5b:** Environmental uncertainty has a positive impact on social bonds, which in turn influence trust and distrust that moderate the relationships between information sharing, collaboration and ICT use.

### 5 RESEARCH METHODOLOGY

A positivist multiple case study approach was chosen to investigate ICT use in the wine industry given the unclear relationship between the phenomenon and context, and the complex set of variables. Case study is appropriate to examine and develop in-depth understanding of the ICT use phenomena in the underexplored context of wine industry with reference to inter-organizational relationships and SMEs. To meet the positivist rigor criteria – *construct validity, internal validity, external validity, and reliability construct* – the study follows formal procedures (see Table 1) to ensure systematic documentation and rigor of research process (Lee, 1989; Yin, 1994).

A comprehensive investigation of the inter-organizational factors within two upstream wine supply chains was conducted, with qualitative interview-based data collected, supplemented by official company documents and on-site observations. Data was collected from four Macedonian wineries (Skopje, Ovce Pole, Tikves), four Washington State (Seattle) wineries and one Ohio State (Columbus) winery. Face-to-face and online interviews were conducted with seven general managers/owners and two operational managers due to their extensive knowledge about supply chain operations and buyer-supplier relationships. Interviews, as a primary data collection tool, were more effective for analyzing issues related to SMEs due to the scarce time of managers and their poor appreciation of academic research. On-site observations included informal conversations with operations staff that revealed important aspects about companies’ background. The template analysis technique (King, 2004) was adopted for thematic analysis of the transcribed interviews and observation notes, company documents and researcher thoughts. The analysis involved hierarchical coding where the identification of broader themes precedes narrower and more specific ones. The final coding template embodied eight themes related to inter-
organizational relationships and ICT use, which were emerging and developed from past literature (see Table 2). Statements corresponding to these themes were selected, coded and analyzed with NVivo 10.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Procedures From Literature (Lee, 1989; Yin 1994)</th>
<th>Whether/How Proposed Procedures Were Addressed in This Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Validity</td>
<td>Pattern Matching</td>
<td>Predictions derived from falsifiable propositions were matched with empirical pattern</td>
</tr>
<tr>
<td>Construct Validity</td>
<td>Explanation-building</td>
<td>Not relevant since testable propositions are used</td>
</tr>
<tr>
<td>Establish validity</td>
<td>Multiple Sources of Evidence</td>
<td>Multiple interviews with key informants from each selected company; access to company documentation; other modes of interaction with informants: social, e-mail, instant messenger, and mobile instant messenger</td>
</tr>
<tr>
<td>Review of Case Study by Key Informants</td>
<td>Drifted copy of the case studies have been reviewed by several owners and managers from Macedonian and American companies</td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>Establishment/Chain of Evidence</td>
<td>Researchers maintained a chain of evidence with detailed processual narrative and cross-referencing with transcripts</td>
</tr>
<tr>
<td>Development of Case Study Protocol</td>
<td>Notes: interview transcripts; narrative: coding scheme; documents: questionnaires, brochures, summary tables</td>
<td></td>
</tr>
<tr>
<td>Increasing Degree of Freedom</td>
<td>Multiple observation of each prediction; multiple (nine) cases studies</td>
<td></td>
</tr>
<tr>
<td>Application of Replication Logic</td>
<td>Same propositions tested in Macedonian and American cases; each case can be considered to be a separate study where different instances have been tested for the same propositions</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1. Rigor Criteria of Positivist Case Study**

<table>
<thead>
<tr>
<th>Distrusting Beliefs</th>
<th>Information Sharing (Grounded Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier’s benevolence</td>
<td>Synchronous information sharing</td>
</tr>
<tr>
<td>Supplier’s competence</td>
<td>Asynchronous information sharing</td>
</tr>
<tr>
<td>Supplier’s integrity</td>
<td>Content certainty and precision</td>
</tr>
<tr>
<td><strong>Distrust Related Behavior</strong></td>
<td>Content tolerance and vagueness</td>
</tr>
<tr>
<td>Information distortion</td>
<td>Direct information sharing</td>
</tr>
<tr>
<td>High control activities</td>
<td>Indirect information sharing</td>
</tr>
<tr>
<td>Refusal of influence</td>
<td>Operational information sharing</td>
</tr>
<tr>
<td>Limited autonomy</td>
<td>Strategic information sharing</td>
</tr>
<tr>
<td><strong>Avoidance of business txns</strong></td>
<td><strong>Bonds (Prior and Grounded Code)</strong></td>
</tr>
<tr>
<td>Grounded code</td>
<td>Contractual Bonds</td>
</tr>
<tr>
<td><strong>Trust (Prior and Grounded Code)</strong></td>
<td>Social Bonds</td>
</tr>
<tr>
<td>Mcknight and Chervany, 2001</td>
<td>Grounded code</td>
</tr>
<tr>
<td><strong>Brand-equality Trust</strong></td>
<td><strong>ICT Use (Grounded Code)</strong></td>
</tr>
<tr>
<td>Grounded code</td>
<td>Frequent ICT use</td>
</tr>
<tr>
<td><strong>Referal Trust</strong></td>
<td><strong>E-collaboration</strong></td>
</tr>
<tr>
<td>Grounded code</td>
<td>Occasional ICT use</td>
</tr>
<tr>
<td><strong>Collaboration (Grounded Code)</strong></td>
<td>Combined collaboration</td>
</tr>
<tr>
<td>Grounded code</td>
<td><strong>Legal Enforceability (Grounded Code)</strong></td>
</tr>
<tr>
<td>Mcknight and Chervany, 2001</td>
<td>Protection of interest</td>
</tr>
<tr>
<td><strong>Environmental Uncertainty (Prior and Grounded Code)</strong></td>
<td><strong>Money collection</strong></td>
</tr>
<tr>
<td>Grounded code</td>
<td>Money refund</td>
</tr>
</tbody>
</table>

**Table 2. Coding Scheme**

6 CASE STUDY ANALYSIS

6.1 Macedonian Winery Case

The Macedonian winery case comprises four enterprises that have been operating for more than 10 years. All four of the wineries focus on production of middle to high quality wines in quantities ranging from 3,500 to 9,500 cases per annum. The wineries deal with a certain number of vineyards, manufacturers and
The environmental uncertainty for fresh grapes is low in terms of product manufacture, product supply, product availability, and price volatility due to the abundance of independent grape farms. The operations of these independent grape farmers lack formal coordination, which has a positive impact on the development of social bonds. Wineries prefer to establish social (emotional and obligational) with their grape farmers in order to have better inspection and control over the quality:

For example two years ago while our enologist was checking the grape conditions she found out that some vines have been treated with copper sulphate even though it was strictly specified to the farmers not to use it [...] I would like to see my supplier in person so that I can judge if he/she is able to execute the design (Delta Winery’s Manager/Owner).

The supply of other raw materials such as corks, glass bottles, yeast, labels and capsules is characterized by substantial environmental uncertainty (price volatility, product manufacture and product availability) that encourages the establishment of social bonds (obligational) with suppliers. Wineries point out that “calling in a favor” is important for doing business with suppliers due to the fact that it lowers price volatility and product manufacture uncertainty:

Well, it is important [to call in a favor]. As a small winery, sometimes we have orders of 100 bottles with a private label where printing houses have to do us a favor. For them it is not profitable to turn on their machines for orders of less than 2000 pieces (Kappa Winery’s Manager).

Development of social bonds (vrski) with a supplier has a positive influence on wineries’ trusting beliefs about supplier’s integrity and benevolence. Wineries that are emotionally attached to suppliers are more likely to have some degree of confidence that suppliers make good faith agreements, tell the truth, fulfill promises and care about wineries’ profits. Similarly, the establishment of social bonds (vrski) with suppliers is positively correlated to the trust related behavior of free information sharing. Furthermore, social bonds reduce a winery’s distrusting beliefs about a supplier’s integrity and manufacturing capability. Wineries deliberately nurture social bonds through interpersonal interactions so as to gather more reliable information about a supplier’s trustworthiness:

Whenever we discuss on topics “outside” the business domain, still they are somehow related to our business [...] In such a way we can obtain useful information about our competitors in terms of their best selling wines (Sigma Winery’s Manager).

When you have face-to-face meetings with new suppliers you can get a pretty good idea of what kind of people they really are, by the direction of your conversation (Delta Winery’s Manager/Owner).

Winery state that contractual bonds are an important element related to trust in supplier-buyer relationships. It is discovered that contractual bonds positively influence wineries’ trusting beliefs about suppliers’ benevolence. Contracts are seen as a supplier’s commitment to act in a winery’s interest:

In international trade, it is important to sign contacts with your supplier [...] the best assurance for successful cooperation is allowing flexible payment terms. In such a way, the supplier shows that he/she trusts in you and gives your guarantee for the order (Epsilon Winery’s Manager).

Trust and distrust are considered to have moderating roles in the use of ICT for information sharing and collaboration. Wineries prefer to use ICT for information sharing with trustworthy suppliers’ who they believe are competent to manufacture and deliver quality goods on time. Wineries with such trusting beliefs about their suppliers are more inclined to engage in trust related behaviors of acceptance of influence and high autonomy, which facilitates use of ICT for information sharing and collaboration.
Likewise, wineries that have some degree of confidence that a certain supplier cares about its profitability are more likely to share information freely and indulge in business transactions, which encourages information sharing through ICT:

*At the moment, we are designing the new label ... and we rely on our trusted printing houses to tell us honestly whether they can execute the label that we want [...]. We trust certain suppliers because they are honest enough to tell us their real production capabilities so that we can change or adapt our needs and wants (Kappa Winery’s Manager).*

Our supplier trusts at us at the first place. Otherwise, why would they send us all of these technical drawings and specifications of their products? They know that we would use them in an appropriate way and won’t take advantage of their copyrights over the bottle design (Kappa Winery’s Manager).

Distrusting beliefs in suppliers’ manufacture capability and trustworthiness lead to the distrust related behavior of high control activities, limited autonomy, and avoidance of business transactions, which have a negative impact on the use of ICT for information sharing and collaboration. Likewise, wineries that have little confidence in a supplier’s capability to deliver goods on time and utilize ICT properly are less likely to use ICT for collaboration purposes. Moreover, wineries that distrust suppliers’ benevolence are more included to engage in information distortion, which reduces use of ICT for information sharing:

*No, I still feel more comfortable and secure if we meet and talk in person with my supplier over this issue [...] it is better to clear out all issues face-in-face with your supplier. In such a way you can hold him/her liable for any potential mistakes (Delta Winery’s Manager/Owner).*

### 6.2 American Winery Case

The American winery case is composed of five small-and-medium enterprises that have been operating for more than 5 years in the winemaking business. Most of the wineries are family-run and focus on production of middle to high quality wines in quantities ranging from 800 to 2,000 cases annually. Throughout the year, wineries deal with limited numbers of vineyards, manufacturers and distributors regarding the supply of their raw materials. Fresh grapes are purchased from vineyards in Washington State and Ohio, and other supplies – corks, glass bottles, yeast, labels and capsules – are sourced from local distributors and nation-wide manufacturers.

For fresh grape supply, wineries face considerable environmental uncertainty in terms of product manufacture, product supply, product availability, and price volatility. Wineries state that the quality of fresh grapes is difficult to be defined in contractual terms due to the subjectivity of measurements and the dependence on several uncontrollable factors such climate, soil type, pruning techniques and so on. Therefore, wineries prefer to establish social bonds (mostly emotional and less obligational) relative to contractual bonds with vineyards responsible for the supply of fresh grapes in order to bypass related environmental uncertainties:

*The guy that we have known for so long, we don’t ever know what grapes actually we are going to get from him until we come up to the season and see what the harvest is. And then we will not know whether he will have for us (Pi Winery’s Manager/Owner).*

*With the grape suppliers we have to establish a relationship since grape quality is hard to be defined in simple words [...] you cannot standardize such things and you just have to listen and believe what your suppliers tell you (Pi Winery’s Manager/Owner).*

For the supply of other raw materials such as corks, glass bottles, yeast, labels and capsules, wineries reveal that there is low environmental uncertainty, which contributes to establishment of contractual bonds rather than social bonds with suppliers. Suppliers of these raw materials are in abundance, which significantly lowers the environmental uncertainty in terms of product supply, product manufacture, product availability, and price volatility:
Then a lot of these suppliers, like this supplier down in Portland that I get lot of winemaking supplies from, Davison Winery Supplies. I have never met any of those people but you know they area reputable business (Phi-Beta Winery’s Manager/Owner).

Wineryes assert that legal enforceability influences the preference for development of either contractual or social bonds with suppliers. On the one hand, the presence of legal enforceability (protection of interest and money refund) encourages wineries to engage in contractual bonds with suppliers. On the other hand, the legal enforceability in place reduces the need for wineries to establish social bonds with suppliers. Owners/managers regard social bonds as being of less value in business environments that are reinforced by sound legal systems:

*I just want simple quotations from them and I don’t need to ask them to be my friends or close. And yes, I think in here [US] we have a solid legal system that promotes business integrity and there is no need for me to establish relationships with my suppliers (Upsilon Winery’s Manager/Owner).*

Establishment of social bonds with suppliers has a positive impact on wineries’ trusting beliefs about suppliers’ integrity, benevolence, manufacturing and delivery capabilities. Wineries that have an emotional attachment to suppliers are more likely to believe with some degree of confidence that suppliers make good faith agreements, are motivated to act in wineries’ interest, and possess manufacturing/delivery capabilities to fulfill demands. Additionally, legal enforceability (money refund and protection of interest) has positive influence on trust:

*Yeah. I have been working with them for a long time and we have a trustworthy relationship. I just believe the numbers that they provide me with and I trust them to supply quality grapes (Omega-Rho Winery’s Manager/Owner).*

*For the most part, I mean the grape suppliers are different than the other ones. I have a personal relationship with them. And I am really counting on them for the core of the product (Upsilon Winery’s Manager/Owner).*

Concerning the moderating roles of trust and distrust, both have a significant impact on the use of ICT for information sharing between wineries and their suppliers. On the one hand, wineries tend to use ICT for information sharing with suppliers whose integrity, benevolence and competence they trust. Wineries that believe in a supplier’s trustworthiness with some degree of confidence are more likely to engage in trust-related behavior of low control, acceptance of influence, and indulgence in business transactions, which all facilitate the use of ICT for information sharing. On the other hand, wineries that distrust a supplier’s integrity and competence are less likely to use ICT for information sharing since they have practice to avoid future business transactions and limit the autonomy by imposing control mechanism. In addition, distrust in a supplier’s integrity is closely associated with distortion of information behaviors that decrease the use of ICT for information sharing:

*So it just depends and like this other vineyard that I emailed back and forth with him, it is because we have known each other for so long […] I do lots of personal email and asking for grapes at the same time. And I always pay the price he demands, I never bargain (Pi Winery’s Manager/Owner).*

*You always get a few people you don’t trust very well. Usually though if … sometime somebody will tell you one thing and then whenever you going to pick it up they will give you another price […] I will just not order from them any more. I will not communicate with them any more (Sigma-Rho Winery’s Manager/Owner).*
DISCUSSION

As one of the central notions of TCE, buyers and suppliers are hardly in position to fully predict all eventualities that are to emerge during the course of their relationship (Williamsons, 1996). The inevitable incompleteness of contractual bonds is subject to opportunism under circumstances of high environmental uncertainty and social bonds are seen as a more flexible option. Environmental uncertainty has a positive influence on the development of social bonds (proposition P5b is supported) in the Macedonian winery case due to the fact that glass bottle and label manufacturers have a monopolistic position in the market. Similarly, environmental uncertainty has positive/negative influence on social/contractual bonds (P5a and P5b are supported) in the American winery case. It is pointed out that American wineries face considerable environmental uncertainty for fresh grapes supply, which contributes to the tendency for establishment personal relationships with grape farmers. Opposing to the supply of fresh grapes, American wineries don’t encounter environmental uncertainty concerning other supplies that encourages establishment of contractual bonds. Interestingly, in the mature market for wine supplies such as corks, glass bottles, yeasts, labels, and capsules, where goods and transactions are standardized and reinforced by regulations, wineries have preference to establish contractual over social bonds. Development of social bonds in such highly regulated market is considered to be waste of time according to the American wineries’ managers/owners. The determined impact of legal enforceability on contractual and social bonds is consistent with the findings of a study conducted on 399 buyer-supplier exchanges in China, which revealed that when legal enforceability is perceived to be high/low managers tend to use explicit contracts/relational reliability to safeguard transactions involving risks (Zhou and Poppo, 2010).

Macedonian wineries that sign formal contracts are more likely to believe in suppliers’ motivations to act in wineries’ interests (P4a is supported), which is consistent with Coleman’s (1990) finings that contractual bonds have positive influence on trust in new buyer-supplier exchanges. Comparably, American wineries disclose that contractual bonds have a positive impact on wineries trusting beliefs about suppliers’ integrity and benevolence (P4a is supported). Further, it is revealed that social bonds have positive impact on wineries’ trusting belief about suppliers’ benevolence and integrity in both Macedonian and American winery cases (P4b is supported). Surprisingly, social bonds have negative effect on distrusting beliefs about suppliers’ integrity and manufacture capabilities (P4c is supported) in the Macedonian winery case, which is congruent to Granovetter’s (1985) study on social bonds’ role in dyadic relationship, and social bonds don’t seem to be correlated to distrust in the American winery case (P4c is not supported). The different levels of legal enforceability in Macedonia and US might explain the latter findings, where wineries tend to prefer/avoid establishment of social bonds with new suppliers in highly regulated/deregulated markets.

Trust and distrust are considered to be moderating mechanisms rather than control mechanisms in the dyadic relationship between the wineries and their suppliers. On one hand, Macedonian wineries reveal that trusting belief in suppliers’ integrity, benevolence, and competence (manufacture and delivery) leads to acceptance of influence, high autonomy, free information sharing and continuance of business, which have facilitate use of ICT for information sharing and collaboration (P3a and P3b are supported). Macedonian wineries that distrust in suppliers’ manufacture capability and trustworthiness impose high control mechanisms to limit suppliers’ autonomy, which condenses use of ICT for both information and collaboration (P3c is supported). On the other hand, it is found that trust influences the use of ICT for information sharing rather than collaboration in the American winery case (P3a is supported). American wineries that believe in suppliers’ integrity, benevolence, and competence tend to use ICT for information sharing since they have practices associated with low control activities and acceptance of influence from suppliers. Unexpectedly, it was discovered that in both Macedonian and American winery cases distrust has impact on use of ICT for information sharing. More specifically, Macedonian and American wineries that distrust in suppliers’ integrity and competence avoid to use ICT for information sharing due to high control activities, limited autonomy to suppliers, and discontinuance of business transactions. Moreover, there was not enough evidence to support P3b and P3c in the American winery case, which might be due
to insufficient collaborative efforts between wineries and their suppliers. Concerning ICT’s role, both Macedonian and American wineries prefer to use ICT for information sharing and collaboration due to its cost reduction and efficiency improvement capabilities (propositions P1 and P2 are supported) and not much evidence is found about ICT’s capability to reduce opportunism.

![Diagram](Image)

**Figure 3. Summary of results for Macedonian and American Winery Cases**

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Description of Proposition</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Information→ICT Use (+)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P2</td>
<td>Collaboration→ICT Use (+)</td>
<td>U.S. Supported</td>
</tr>
<tr>
<td>P3a</td>
<td>Trust→Information sharing and ICT use (+)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P3b</td>
<td>Trust→Collaboration and ICT use (+)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P3c</td>
<td>Distrust→Collaboration and ICT use (-)</td>
<td>U.S. Not Supported</td>
</tr>
<tr>
<td>P4a</td>
<td>Contractual Bonds→Trust (+)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P4b</td>
<td>Social Bonds→Trust (+)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P4c</td>
<td>Social Bonds→Distrust (-)</td>
<td>Macedonia Supported</td>
</tr>
<tr>
<td>P5a</td>
<td>Env. Uncertainty→Contractual (-)</td>
<td>Macedonia Not Supported</td>
</tr>
<tr>
<td>P5b</td>
<td>Env. Uncertainty→Social (+)</td>
<td>Macedonia Supported</td>
</tr>
</tbody>
</table>

![Table](Image)

**Table 3. Summary of Propositions**

8 CONCLUSION, IMPLICATIONS AND CONTRIBUTION

Regarding practical contributions, companies that have the intention to jointly use ICT with their supply chain partners will be able to apply strategies derived from these findings. Initially, firms have to develop both business and social bonds with their suppliers, which will increase/reduce trust/distrust that leads to use of ICT for information sharing and collaboration. Secondly, firms have to choose partners that operate in a regulated business environment, which significantly contributes to use of ICT for information sharing and collaboration. Thirdly, to encourage ICT use by their suppliers, firms have to extensively communicate with and educate them about ICT capabilities to improve supply chain operations.

In terms of theoretical contributions, this paper has extended prior cross-cultural research by investigating the moderating roles of trust and distrust on ICT use by Macedonian and American SMEs in the wine industry. This study introduced a different research approach that focuses on inter-organizational factors rather than traditional determinants of ICT use in an artisan-oriented industry. TCE and SET can be used together to better explain the use behavior of ICT in supplier-buyer relationships from the perspective of trust and distrust’s moderating roles. More important, it was revealed that the legal enforceability is crucial factor that directly and indirectly influences the moderating roles of trust and distrust.


