Emergence and Development of Inter-Organizational Relationships in International Supply Chains: The Macedonian Winery Case

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Emergence and Development of Inter-Organizational Relationships in International Supply Chains: The Macedonian Winery Case

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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 an international wine supply chain that spans Northern, Central, Southeastern Europe and Southern China, we identify the importance of business partners’ relationships factor for ICT use and adoption due to ICT’s role in bridging suppliers and customers. Specifically, we identify six factors – trust, distrust, communication, information sharing, collaboration and ties – of inter-organizational relationships, and explore their impact on ICT use and adoption. These insights about inter-organizational relationships in an international supply chain have important implications for managers involved in managing international supply chain relationships.

Keywords
Inter-organizational relationships; cross-country study; SMEs;
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. A comprehensive integration of supply chain processes enables various value-added activities that assist in attainment of competitive advantage (Essig and Arnold, 2001). 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. Likewise, large proportion of ICT use and adoption research was carried out in developed counties such as USA, Australa and Canada (McGraph, 2006; Lawson et al., 2003; Ritchie and Bridley, 2005).

The latter entails that there is a lack of research on factors influencing use and adoption of ICT from inter-organizational perspective in developing countries. Hence, this study examines ICT use and adoption of SMEs in the Macedonian wine industry with reference to inter-organizational relationships.

CASE BACKGROUND: MACEDONIAN WINE INDUSTRY AND INTERNATIONAL WINE SUPPLY CHAIN
The supply chain of the Macedonian wine industry constitutes from upstream and downstream parts. The upstream part, which supplies fresh grapes for wine-making, spans the territory of Macedonia and is composed of thousands of disintegrated small grape farmers, vertically integrated vineyards, and eighty officially registered wineries. Other suppliers of raw materials – wine yeasts, label/carton, glass bottle, bottle capsule, and cork – are situated in Northern (France), Central (Germany), and South Eastern (Macedonia, Greece, Bulgaria, and Serbia) Europe, and represent an integral part of the upstream supply chain. Macedonian wineries represent focal organizations, where raw materials are aggregated to create bottled wine as a final product (see Figure 1). In addition, the downstream part of this international supply chain is comprised of importers/distributors, wholesalers, retailers and end customers, which are located on the territories of Central Europe, North America, Central Russia, and Asia Pacific.

![Figure 1: Wine Production Process and Supply of Raw Materials](image)

The selected wineries for case study are SMEs and are integrated with their upstream and downstream supply chain partners’ ICT to facilitate information flow. In this study we focus on investigating interaction between Macedonian wineries, European upstream suppliers, and Asian downstream customers. These supply chain participants utilize ICTs – email, instant messaging tools, video conferencing, web file hosting services, and mobile technologies – to communicate, share information and collaborate. In this paper, the mentioned ICTs’ use and adoption is studied in the context of inter-organizational relationships. Furthermore, supply chain information integration is fostered by inter-organizational relationships among the transacting parties.

INTER-ORGANIZATIONAL RELATIONSHIPS AND ICT USE AND ADOPTION
ICT Adoption Theories
The most widely used and validated models in the ICT adoption literature are Technology-Organization-Environment (Tornatzky and Fleischer, 1990) and Diffusion of Innovations (Rogers, 1995) model. While these models consider organizational factors of ICT adoption, they neglect to explicitly account for inter-organizational relationships. Underlying
business partners’ relationships are a significant factor for ICT use and adoption due to the supplier-customer mediation role. Lin (2008) recognized that adoption of ICT in the supply chain context requires joint efforts by two or more organizations, which emphasizes business partners’ relationships. Huang et al. (2008) in a study of 219 U.S. based companies recognized the importance of inter-organizational relationships in adoption of SCM technologies such as EDIs. ICTs differ from conventional information systems in the sense that they help establishing integrated business processes and facilitate inter-organizational cooperation. Further, given the ease of use, high system compatibility and low implementation costs of the ICTs, factors such as compatibility, complexity, and cost play a minor role. Most ICTs use Internet connections and technologies that are simple to understand and compatible with other information systems within organizations. Likewise, TOE and DOI models have a tendency to emphasize cost related factors, which are not relevant to the low implementation costs of ICT. Therefore, we assume that most supply chain partners adopt ICT based on their relationships rather than factors related to TOE and DOI models.

Transaction Cost Economics

The theory of Transaction Cost Economics (TCE) is deployed to explain ICT use and adoption in supply chains (Williamson, 2005). Nowadays, organizations decentralized their value adding activities through out supply chains to attain business agility. Despite reducing production costs, management of such distributed operations increases transaction costs. According to Shang et al. (2005) lack of trust between business partners contributes to 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. Use and adoption of ICT in inter-organizational context reduce transaction costs by being platform for search, contact, negotiation, contract, monitoring, assurance, and inspection, and therefore are seen as an essential component of supply chains.

RESEARCH MODEL AND PROPOSITIONS

Six factors – trust, distrust, communication, information sharing, collaboration and ties – were identified as core to the inter-organizational relationships of business partners in supply chain environments and are presented in the research framework (see Figure 2).

Trust and Distrust

Ratnasingam et al. (2002, pp.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”. Inter-organizational trust is seen as trust between two business entities that are conceptualized as two abstract systems. Trust is an essential element of the social capital that is directly linked to supplier performance (Zaheer et al., 1998) and satisfaction (Geyskens et al., 1998). Lee and Lim (2003) discovered that inter-organizational trust affected the extent of ICT adoption and data exchange performance. They revealed that trust among supply chain partners positively influenced information integration and exchange. Consequently:

Proposition 1a: Trust has a positive impact on ICT use and adoption by SMEs in supply chains.

The levels of trust and distrust are of particular importance for buyer-supplier relationships in supply chains. Chu and Fang (2006) acknowledged that distrust has a negative impact on buyer-supplier relationships, deteriorating the performance of both buyers and suppliers due lack of information disclosure and suspicion in information validity. Hence, distrust should also have a negative effect on inter-organizational communication, information sharing and collaboration, decreasing the probability of joint ICT use and adoption by supply chain partners.
Proposition 1b: Distrust has a negative impact on ICT use and adoption by SMEs in supply chains.

Communication and Information Sharing

To successfully implement ICT, supply chain partners need to have well-established communication and information sharing. One critical success factor in supply chain management is the free sharing of information. According to Macbeth (1998), supply chain partners exchange both routine and strategic information, depending on their level of commitment. Sharing of operational information such as inventory, demand forecast, product planning, and product delivery, between trading partners enhances supply chain visibility. Therefore, we suggest that business partners who emphasize communication and information sharing are likely to share more information regarding their supply chain operations thorough use and adoption of ICT.

Proposition 2a: Communication has a positive impact on ICT use and adoption by SMEs in supply chains.

Proposition 2b: Information sharing has a positive impact on ICT use and adoption by SMEs in supply chains.

Collaboration

For successful attainment of integrated supply chains, collaboration among trading partners is critical. Supply chain collaboration is defined as concentrated bilateral efforts of business partners in terms of joint programs, formal agreements, and joint boards that have the objective of improving operational efficiency, product quality and customer satisfaction (Mohr and Spekman, 1994). Subramani (2004) discovered that ICT use has significant influence on buyer-supplier relationships. Hence, it can be presumed that supply chain partners will use and adopt ICT if significant collaboration efforts are evident in their business interactions.

Proposition 3: Mutual collaboration has a positive impact on ICT use and adoption of SMEs in supply chains.

Ties

Kale et al. (2000) found that socialization assisted in the development of inter-personal relationships and trust in supply chain exchange relationships. In the Macedonian context, the term vrski (meaning ‘connections’) is used to describe a network of contacts that an individual can draw on to prevail upon another to perform a favor or service. Vrski is comparable with guanxi in the Chinese culture, with an emphasis on personal relationships or social connections, reflecting mutual interests and benefits (Yang, 1994). Guanxi is recognised as being deeply embedded into the social norms of Chinese society and as having a significant impact on both personal and organizational relationships, including supply chain management and supplier development (Lee and Humphreys, 2006). These two variations of ties – vrski and guanxi – are of particular importance for this study due to its international supply chain context, including Macedonia and Hong Kong. Ties are relevant to this study since personal relationships facilitate supply chain interactions among business partners.

Proposition 4: Ties have a positive impact on ICT use and adoption by SMEs in supply chains.

RESEARCH METHODOLOGY

An interpretive multiple case study approach was chosen, given the exploratory nature of the research context and the complex set of variables (Yin, 1994). A comprehensive investigation of the inter-organizational factors in upstream and downstream parts of an international wine supply chain was conducted, with qualitative interview-based data collected, supplemented with official company documents and on-site observations – in two wineries (in Macedonia) and one importer/distributor (in Hong Kong). Interviews were conducted with two winery managers and one manager of the importer/distributor, selected on the basis of their extensive knowledge about supply chain operations and buyer-supplier relationships. The research context included wineries, first-tier suppliers (manufacturers of glass bottles, bottle capsules, labels/cartons, additives and corks, and grape farmers) and importer/distributor. The selected suppliers belong to the upstream part of the international wine supply chain in Europe and the selected importer/distributor is included in the downstream part of the international wine supply chain in Hong Kong.

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 nine themes related to inter-organizational relationships, ICT use and adoption. Statements corresponding to these themes were selected, coded and analyzed with NVivo 9 (See Table 1 in Appendix 1).
CASE STUDY

**Delta Winery**

Delta is family-owned and focuses on limited quantity production of high quality wines. Delta works with a small circle of locally resident and trusted regional representatives of the various first-tier supply chain partners. Similarly, more than 90% of grapes are acquired from small, local grape farmers. In initial negotiations with new suppliers, Delta prefers to establish face-to-face contact. In most cases, suppliers personally visited Delta’s premises to introduce their company and products, and provide samples for testing. The owner/manager largely relies on non-verbal communication – body language, posture, facial expression, eye contact, clothing, voice and speaking style – to develop an initial perception about the trustworthiness of a particular supplier. As the cooperation deepens, the owner/manager and other employees prefer to communicate informally and develop strong social ties with their suppliers by operating in a “hassle-free” buyer-supplier exchange environment:

“[W]e have really open and relaxed relationships and ways of dealing with our suppliers. I can call my suppliers anytime I want and ask them how are they doing. [...] Whenever, I am in Greece for other things such as vacation or shopping, I have a habit to go and visit him there.”

An informal communication style is adopted with local/regional suppliers, but a more formal style with suppliers located in France and Germany that can transform to a more informal style with time. The importance of emotional and obligatory attachment in buyer-supplier relationships helps to “lubricate” interactions, and the winery regards its trusted suppliers as personal friends and practiced extensive social interactions with them. The owner/manager recognizes that the convention of giving and receiving favors is an integral part of business with suppliers:

“Sometimes I help him and in return he does me a favor. I think that is really normal. [...] Actually, we did many favors to the relatives of our grape farmers.”

The establishment of social ties with suppliers is seen as compensation for the need for information content certainty and precision regarding shipping dates and product availability. Delta deliberately nurtures social ties through interpersonal interactions so as to gather more reliable information about suppliers’ capability to deliver on time. During these informal meetings, the owner/manager is in a better position to judge the delivery capabilities of suppliers:

“When you have face-in-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.”

However, the existence of distrust in suppliers’ manufacturing and delivery capabilities caused Delta to engage in constant control and inspection activities. In particular, they are sometimes suspicious about the capabilities of grape farmers and label/carton suppliers, indicating that they had to have comprehensive control and monitoring mechanisms to ensure an acceptable level of quality. For example, Delta sends out its own team to personally inspect grape quality at each subcontracted vineyard before harvest and has frequent face-to-face meetings with each grape farmer to provide instructions about pruning, tying, stripping leaves and thinning out bunches of grapes that impeded e-collaboration:

“Therefore, whenever there is a new label design, I prefer to ‘stand on their heads’ until they get things done as they should.”

Strong social ties help lubricate Delta’s long-term business relationships suppliers. Their interactions tend to involve informal and non-verbal communication, which enable the winery to develop and confirm trust towards suppliers. Hence, Delta only occasionally relies on ICT to communicate, share information and collaborate with suppliers and expressed only little interest for adoption of advanced ICT such as e-procurement.

**Epsilon Winery**

Epsilon is family owned and specializes in production of entry- and mid-level wines. Epsilon employs approximately 30 workers who are responsible for grape-growing and wine production. The winery exports 90% of its production, and dedicates significant sources to quality sustenance and inspection. According to the manager, the most important aspect of wine production was working with reliable and stable suppliers to avoid potential difficulties related to delivery of sub-quality and unhygienic supplies that had direct impact on the final product quality. Epsilon distrusted suppliers’ manufacturing and delivery capabilities and preferred to cooperate with well-known, ISO-certified manufacturers. In particular, the manager expressed a wariness for grape farmers’ operations, which was related to winery’s decision to grow and harvest 50% of the grapes in its own vineyards:
“[Y]ou can’t leave the whole work at your suppliers’ hands. You have to control a reasonable part of the whole production process to avoid mistakes in terms of low productivity.”

To reduce uncertainty, Epsilon relied on formal contractual relationships with suppliers that were facilitated by formal and verbal communication. The winery frequently and interchangeably used ICT such as email, instant messaging and videoconferencing to communicate and share information regarding shipping dates and product availability. Nevertheless, the manager didn’t express much interest to adopt more advanced ICT due to distrust in technological capabilities and readiness:

“For a winery of our rank and size, it is better to communicate and share information in an informal way. I think all these efforts have to be done from both sides, supplier and us, which might not lead to significant increased productivity and efficiency.”

Besides its formal contractual relationships, Epsilon also held face-to-face meetings with new suppliers to assess their trustworthiness. The combined use of ICT and face-to-face meetings was recognized as a beneficial practice. For sharing technical product specifications, the winery relied solely on face-to-face communication to eliminate any possible misunderstandings. More importantly, it was acknowledged that solid business ties were essential for successful long-term cooperation with suppliers:

“[In face-to-face meetings] you can see what and who are your suppliers. In international trade, it is important to sign contracts with your supplier. And the best assurance for successful cooperation is allowing flexible payment terms.”

Epsilon didn’t seem to prioritize the cultivation of social ties with its suppliers. It was mentioned that formal contractual relationships should not be complemented with social ties due to the opportunistic behavior of suppliers. Similarly, distrust in suppliers’ commitment and readiness were regarded as main contributors to the low adoption potential for advanced ICT, and pre-manufacturing and physical collaboration:

“In Macedonia, if you try to have more informal relationships with any of your suppliers they might get too relaxed which might have a negative effect on their productivity. They think that if you are good with them in social life, you will tolerate them in the business.”

Omega Company

Omega is a Hong Kong based importer and distributor of Macedonian wines that was established in 2009. Its primary activities are sales, marketing, and distribution of wines from Delta and Epsilon in Hong Kong, Macau and Mainland China. Omega’s general manager has the responsibility to communicate and share information, working as a link between the Asian market and Macedonian wineries. In the initial negotiations with suppliers, the manager had a preference for face-to-face interactions. These in-person discussions were mostly of an informal character and regarded as “investment” in the development of long-term business relationship with suppliers:

“At the beginning of our cooperation, I have flown to Macedonia to personally meet with managers and see their vineyards. At my visit to Macedonia, I had the chance to sit down and negotiate face-to-face with the managers. Establishing this initial contact is of great importance for future cooperation because it shows your devotion to the business relationship.”

In the case of short-term suppliers, it was pointed out that face-to-face interactions were not necessary and such arrangements could be conducted over email and video conferencing tools. Nevertheless, ICT is not a direct substitute for face-to-face negotiations due to lack of medium richness. Moreover, it is crucial to involve social cues in the initial negotiations due to the nature of wine industry, which in turn enabled the company to find out more about suppliers’ personality, interest, and behavior:

“Whenever you talk about social topics you can find out more about suppliers personality and interest, which are closely related to their business decisions. Once you know their personality, it is easier to decide how you need to treat that particular supplier.”

Interestingly, it was revealed that mobile applications are deployed to facilitate initial negotiations with suppliers. It was mentioned that mobile applications are more likely to be used in negotiations with trusted and long-term suppliers for direct information sharing whenever the manager was outside the office. Moreover, due to the need for information content certainty and timeliness, Omega tended to use email and mobile applications to share shipping dates and product availability information.
Regarding wine customization, Omega prefers to use email and instant messaging tools. Product requirement information is shared with suppliers over email, and instant messaging tools are used to confirm details or straighten out misunderstandings. In this way Omega is able to have formal communication and unidirectional information sharing, which reduces the process uncertainty. Omega is willing to adopt more sophisticated ICT, such as a wiki-based solution with integrated chat function, to streamline its wine customization process. Additionally, Omega collaborates with its suppliers in the design of new wine labels through email and video conferencing tools.

Established trust has an impact on joint adoption of more sophisticated ICT with suppliers. Similarly, long-term relationships lead to more integrated inter-organizational operations and improved collaboration across supply chains:

“Well, it is important to do them favors sometimes because it shows that you have understanding. In such a way, your business relationship is strengthened [...] which opens doors for other types of cooperation.”

**DISCUSSION**

Delta and Epsilon needed to develop initial trust in their suppliers before they started using ICT for communication, information sharing, and collaboration. Having face-to-face meetings to discuss and finalize all commercial, payment, and delivery terms of a contractual relationship was essential for establishment of initial trust in new suppliers. Fundamentally, Macedonian wineries relied on both non-verbal communication and formal contractual relationships to develop initial trust in new suppliers, and afterwards switched to electronic communication and information sharing. Similar to the Macedonian wineries, Omega didn’t use ICT for communication, information sharing and collaboration in the short-term, and had preference for face-to-face interactions with its suppliers. As trust developed over time, Epsilon and Omega started to see each other as strategic partners, which encouraged them to adopt more advanced ICT such as e-procurement and a wiki-based collaboration platform to support supply chain operations. Therefore, we suggest that trust has a positive influence on ICT use and adoption by SMEs in supply chains.

We also noted that distrust has both positive and negative influences on ICT use in supply chains depending on the situation. Distrust in suppliers’ manufacturing and delivery capabilities compelled wineries to implement strict monitoring mechanisms to avoid consignments with sub-standard supplies, which involved low use of ICT to communicate, share information and collaborate. Similarly, distrust in suppliers’ ICT readiness discouraged wineries to consider further supply chain integration with the adoption of advanced ICT. Unlike the Macedonian wineries, Omega extensively relied on ICT to reduce information content uncertainty and lateness related to shipping dates and product availability. In addition, Omega was pressured to adopt advanced ICT to reduce the complexity of wine customization process.

The establishment of communication ties among business partners is crucial for supply chain success. We found that communication had both positive and negative impacts on ICT use and adoption by SMEs in supply chains. On the one hand, an informal, non-verbal communication style with suppliers was closely associated with occasional use of ICT and low adoption potential for advanced ICT. Strong social ties with suppliers implied a preference for face-to-face meetings, which lowered the use of ICT for communication, information sharing, and collaboration in buyer-supplier exchanges. On the other hand, a formal and verbal communication style facilitated frequent and inter-changeable use of ICT. Delta and Epsilon wineries and Omega relied on formal and verbal communication with suppliers over a variety of ICT applications. Furthermore, information sharing has both positive and negative impacts on ICT use and adoption. Supply chain partners involved in dynamic bi-directional information sharing were less likely to use ICT and preferred face-to-face interaction, and wineries engaged in one-directional information sharing in supply chains were inclined to interchangeable and synchronized use of ICT (cf. Dennis et al., 2008). Similar to the Macedonian wineries, Omega used ICT, such as mobile applications, to support its ad-hoc information sharing needs.

Collaboration is considered to be a significant factor of inter-organizational relationships in supply chains. Dhillon and Caldeira (2000) recognized that collaboration is one of the key success factors of ICT implementation. This study shows that supply chain partners involved in extensive collaborative efforts with their suppliers are likely to frequently use ICT. Wineries engaged in wide collaborations had confidence in suppliers’ manufacturing and delivery capabilities, and frequently
used ICT to coordinate collaborative processes. Likewise, Omega had extensive collaborative efforts with its suppliers for the large-scale wine customization, which encouraged the company to further integrate supply chain processes through adoption of advanced ICT.

Ties are also a significant factor related to ICT use and adoption. Wineries that developed and nurtured strong social ties with suppliers had the tendency to informally interact, which implied a preference for non-verbal communication and face-to-face dealings, occasionally used ICT for communication, information sharing and collaboration. Wineries that were bound to their suppliers by formal contractual relationships preferred formal interaction and were prone to frequently using ICT to support their one-directional information sharing with suppliers, and were more likely to adopt advanced ICT. Like Macedonian wineries, the Hong Kong importer/distributor had the tendency to frequently use ICT for communication, information sharing and collaboration with suppliers with whom they sustained long-term and mutually fair business relationships (See Figure 3 in Appendix 1).

It was discovered that TCE couldn’t solely explain the usage and adoption behavior of Macedonian wineries and the Hong Kong importer/distributor. In some situations wineries and the importer/distributor didn’t rely on ICT to interact with their suppliers despite its capabilities to reduce transactional costs by enabling search, contact, negotiation, contract, monitoring, assurance, and inspection functionality. Actually, supply chain partners relied on combination of several ICTs to attain adequate medium richness to communicate, share information, and collaborate. Therefore, TCE should be used together with the Theory of Media Synchronicity to explain use and adoption behavior among supply chain partners (Dennis et al., 2008).

CONCLUSIONS, IMPLICATIONS AND CONTRIBUTIONS

Regarding practical contributions, companies that have the intention to jointly use and adopt ICT with their international supply chain partners will be able to apply strategies derived from these findings. Initially, firms have to develop solid business ties with their suppliers by nurturing social interaction through out the years of cooperation, which will enable to establish trust in suppliers’ manufacturing and delivery capabilities and adopt advanced ICT, such as e-procurement or wiki-based collaborative solution, to enhance communication, information sharing, and collaboration. Secondly, to encourage ICT adoption by their suppliers, firms have to extensively communicate with and educate them about ICT capabilities to improve supply chain operations. Thirdly, firms have to choose partners with which they have significant collaborations.

In terms of theoretical contributions, this paper has extended prior research conducted in developed counties by investigating the correlation between inter-organizational factors and ICT use and adoption in Macedonian SMEs. This study introduced a different research approach, which extends beyond the models of TOE and DOI and focuses on inter-organizational factors rather than factors of traditional ICT adoption theories. Furthermore, TCE and Theory of Media Synchronicity can be used together to better explain the use and adoption behavior of ICT in supplier-buyer relationships.

To increase the validity of this study, authors will investigate inter-organizational relationship overtime. A longitudinal study is planned that will include other parties in downstream and upstream part of the selected wine supply chain. In particular, couple of other upstream Macedonian wineries, and downstream Asian wholesalers and will be considered for case studies. Furthermore, additional data, such as number of email exchanged and log time, will be collected to better quantify communication and information sharing factors of inter-organizational relationships.

REFERENCES


APPENDIX 1

<table>
<thead>
<tr>
<th>Distrust</th>
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<td>Emotional Attachment</td>
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**ICT Adoption Potential**

- Low adoption potential: **Pressure**
- High adoption potential: **Suppliers’ pressure**
- Medium adoption potential: **Clients’ pressure**

Table 1: Final Coding Template

![Diagram](image1.png)

Figure 3: Research Theme Correlation