The effects of institutional factors on trust and knowledge sharing in supply chain collaboration

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Abstract

This study investigates the influence of institutional factors on trust and knowledge sharing (KS) in the context of supply chain collaboration (SCC). Two institutional factors including organisational culture and individual professionalism are selected to explore their effects on trust and KS among the supply chain network members. This research applies a multi-case study strategy. We collected empirical data across 5 manufacturing supply chain networks in Europe from 25 semi-structured interviews. This research identifies various trust dimensions in inter-organisational relationships. Furthermore, the research expands institutional theory in knowledge management, by investigating effects of selected institutional factors on trust and knowledge sharing.

Keywords: Institutional factors, Knowledge sharing, Trust, Supply Chain Collaboration

1. Background

The success of Supply Chain Collaboration (SCC) depends on frequent and bidirectional information sharing (IS) (Cai et al., 2010). However, knowledge sharing (KS) leads to more effective actions in comparison to information sharing (Nonaka, 1994). Moreover, effective KS combines all supply chain members' relevant resources and capabilities to achieve a common strategic goal (Cheng et al., 2008). The literature of SCC has examined the linkage among institutional factors and trust and subsequently with IS (Cai et al., 2010). Considering that knowledge makes actions more effective, this research fills the gap to examine the interrelationship among institutional factors, trust, and KS.

According to institutional theory, organizational decisions and operations can be affected by various pressures arising from both internal organizational factors and the external environment (Scott, 2014; Zhang and Dhaliwal, 2009; Zucker, 1987). The

study summarises institutional factors based on existing studies as follows (figure 1). The role of external factors such as government support and legal protection have been explored by researchers in SCC (Cai et al., 2010). In the review of Cerchione and Esposito (2016), existing literature seems to focus heavily on external factors (managerial, relational, environmental, and socio-political) whereas, internal factors (human resources, people skill, motivation, training and education, and spirit of collaboration) seem to be often neglected (Cerchione and Esposito, 2016). Thus, the study focuses on two internal factors, organisational culture and individual professionalism.

1.1 Institutional factors

The study summarises various institutional factors based on existing studies (see Figure 1).

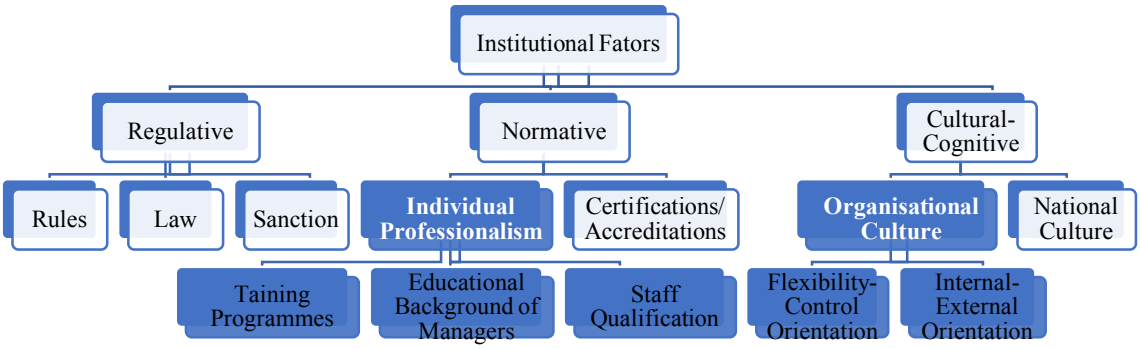

Figure 1-Dimensions of institutions

Source: Casile and Davis-blake, 2002, p.181; Grewal and Dharwadkar, 2002, p.84; Liu et al., 2010, p.375; Quinn and Rohrbaugh, 1983, p.367; Ruef and Scott, 1998, p.5; Scott, 2014, p. 75; Teo et al., 2003, p.24; Zucker, 1987, p.448.

First, individual professionalism is one dimension of normative institutions, which includes factors such as manager's educational background (DiMaggio and Powell, 1983), staff qualifications and training programmes. In the context of the present research, these internal factors that produce a higher level of professional knowledge are defined as individual professionalism.

Second, this research also investigates the cultural-cognitive institutions at the level of organisational culture. There are two reasons for focusing on organisational culture. First, government support and legal protection have been explored by researchers in operations management and supply chain management. For instance, Cai et al. (2010) examined the effects of government support and legal protection on information integration in supply chain. Second, organisational culture is important in supply chain management (Cao et al., 2015; Liu et al., 2010). Appropriate organisational culture not

only affects internal information sharing and team work within a firm (Schilke & Cook, 2015), but also influences inter-organisational relationships.

1.2 Trust

In the field of Operations Management, researchers have considered trust as a complex concept with multiple dimensions (Cheikhrouhou et al., 2012; Seppänen et al., 2007). However, there are few researches that have measured trust in more than one dimension; most studies measured from a general perspective (Whipple et al., 2013). This study interprets informants' opinions and attitudes towards various dimensions of trust.

1.3 Knowledge sharing

Among the various taxonomies of knowledge, this research uses the classification proposed by Kotabe et al. (2003), because this taxonomy has been adopted in the context of OM and SCM. According to Kotabe et al. (2003), knowledge is categorized into two types. They are technical and technological knowledge. On the one hand, technical knowledge is comprised of discrete know-how, which is required to deal with some particular operational problem. It involves relatively simple informational resources (Cai et al., 2013). For instance, supply chain management involves ongoing adjustments regarding the production process, which are typically based on updating technical knowledge. On the other hand, technological knowledge comprises a set of related techniques, methods, and designs applicable to an entire class of problem (Kotabe et al., 2003), and it involves higher-level capabilities.

2. Research question and conceptual map

The research question is: *How do organisational culture and individual professionalism influence trust and knowledge sharing among SCC network members?* A literature review was conducted to develop the conceptual map (figure 2) and the research question, which guides the data collection and analysis. According to Yin (2014), theoretical ideas are vital in case study research and are usually developed prior to data collection procedure, because they guide the type of data collected.

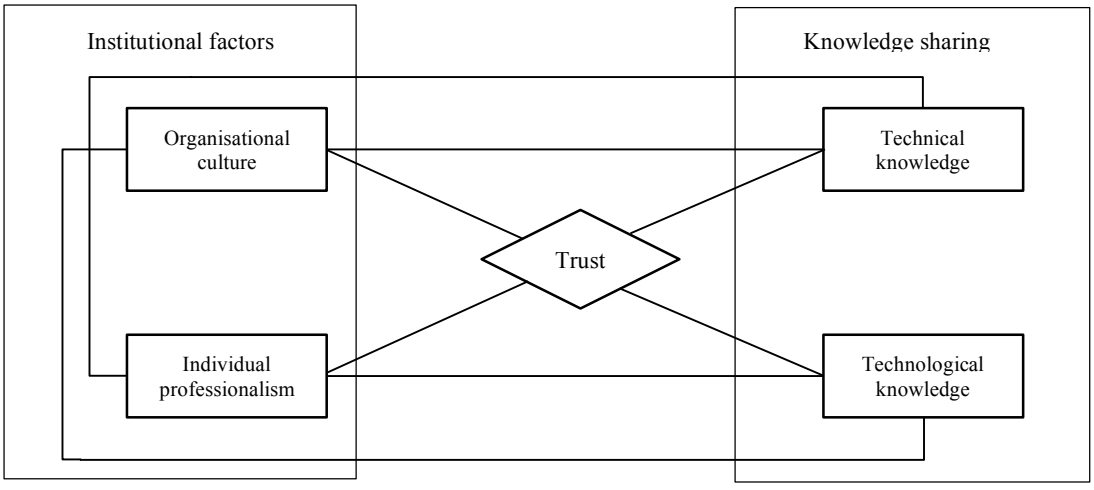

Figure 2-Conceptual map

3. Methodology

The aim of the study is to develop an in-depth understanding of how selected institutional factors influence trust building and knowledge sharing among network members. Yin (2014) suggested that the case study is the most appropriate research strategy to explore a contemporary phenomenon in depth within its real-world context. Therefore, multi-case study strategy was employed in this research. While the goal of using case study strategy is to generalise or expand theories, and does not focus on statistical generalisations (Yin, 2014).

3.1 Theoretical sampling and selection of cases

The study employs theoretical sampling to select cases, because the goal of case studies is to generalise or expand theories (analytic generalisations), and does not focus on statistical generalisations (Stuart *et al.*, 2002; Eisenhardt *et al.*, 2007; Yin, 2014). Stake (1995) also suggests the same understanding with Yin (2014), the purpose of conducting a case study is not to understand other cases, understanding this one case is the priority. Therefore, theoretical sampling is appropriate for case selection, because the purpose is to select particular cases, which are suitable for building up and extending relationships and logics among constructs (May & Stahl, 2016; Eisenhardt et al., 2007; Yin, 2014).

3.2 Data collection

Empirical data were collected across 5 manufacturing supply chain networks in Europe from 25 semi-structured interviews. The average interview time was 1 hour. An interview protocol was used to improve reliability of the case study research, because it provided a full description of the research questions, methods, and designs (Saunders et al., 2016). The protocol comprises of a set of questions reminding the researcher of the information that is needed to be collected, and why the information is needed. The design of the interview protocol was guided by the research question and developed conceptual map. Also, company documents and meeting reports were collected and analysed to achieve data triangulation (Yin, 2014). The case organisations' summary is presented in table 1. Most of the interviews were conducted with senior managers, because they were familiar with company-wide practices. Some interviews were conducted with staff, who are directly involved in knowledge sharing practices, or the arrangement of training programmes. Snowball sampling was used to recruit participants. The context of this research is collaborative networks, which normally comprise of a group of SMEs. It is hard to know who their director is or who is responsible for communication among them, because there is no such information on their websites. However, the internal staff, especially the managers are familiar with the company's structure. Therefore, it is a useful way of identifying relevant people to get in touch.

Table1-Case organisation summary

Case	No. of members	Business	No. of interviews	Position held	Additional data sources
Case	5	High precision mechanical	4	Founder and R&D	Website,

1		components.		manager, president, coach, managing directors of a network member.	network presentation slides, formal studies related to the case.
Case 2	28	The organisation provides customers various platforms, including space, design and engineering, mechanical production, surface and heat treatment, sheet metal processing, electronics development and manufacturing, control and regulation, assembly and OEM, research and innovation, IT services and communications, further education.	8	Coach, managing directors of network members, business development manager, member of the senior management group, CEO of network member.	Website, network presentation slides, formal studies related to the case.
Case 3	6	The organisation has a group of companies including fridges and freezers manufacturers, grain silos manufacturer, filtration equipment manufacturer, and companies providing services of refrigeration equipment installation and maintenance.	5	Continuous improvement and performance manager, member of the senior management group, group purchasing director, professional development project director, IT consultant (designing collaborative platform/process for the company).	Website, documents of training programme, meeting agenda, HR toolkit, employee handbook.
Case 4	3	The organisation has mobile and fixed line businesses in Europe.	3	Head of supplier development, supplier-relationship manager, head of sourcing.	Website, policies shared with partners, annual report.
Case 5	4	Provision of fixed-line services, broadband, mobile and TV products and services as well as networked IT services.	5	Group procurement governance manager, contract managers, global supply chain product leader.	Websites, social media updates, annual report, strategic report.

3.3 Data analysis

All interviews were transcribed before coding and categorising in Nvivo 11. Thematic analysis was conducted to generate themes from the codes following the six-phase analysis procedure proposed by (Braun and Clark, 2006). After analysing all cases individually, a cross-case analysis was performed to derive patterns and emergent themes (Yin, 2014).

4. Findings

The analysis first reviews what factors affect building trust among collaborative members. Then, interrelationships among selected institutional factors, trust, and knowledge sharing are discussed in the section.

4.1 Trust

The insights about trust gained from the analysis are summarised in table 2. According to opinions provided by participants, there are eight main factors influencing trust building among network members.

Table2-Factors affect building trust

	Description	Source of Evidence
1	Confidence in competences of partners	Case 1, Case 2, Case 3, Case 4, Case 5
2	Doing things together, and being familiar with partners	Case 1, Case 2, Case 3
3	Always consider other partners	Case 1, Case 2, Case 4
4	Personal relationship	Case 1, Case 2, Case 4
5	Commitment	Case 3, Case 4
6	Openness	Case 1, Case 3, Case 5
7	Size of network	Case 2
8	High level of ethics	Case 2

4.2 Organisational culture and trust

All participants thought that organisational culture plays an important role in building trust. Among the five cases, three cases use quality charts, which requires all members to be open, honest, and fair with others. Organisational culture is directly influenced by the top level of an organisation. A good atmosphere contributes to trust building among members. According to CEO of member A in case 2:

"The atmosphere is like a family, so you can also talk about personal issues and that leads to the trust building with other partners…if your culture is very open-minded, you are more likely to build a relationship with other partners. If your aim is to conquer all the problems by yourself, you definitely will have trust issues with other partners, because you always think about competition…I think culture influences trust".

The same opinion was provided by the senior manager of supplier relationship management:

"Trust is built up through the development of our terms and that sharing a culture with our venders. We share our objectives, and we share our way of working."

4.3 Organisational culture and knowledge sharing

There are different opinions towards the relationship between organisational culture and knowledge sharing. Some participants thought organisational culture has no effect on knowledge sharing, because all members are totally independent; knowledge sharing only occurred when they are required by each other. Other informants thought organisational culture plays an important role on knowledge sharing. Due to the culture of the network and all members being open, employees can feel free to go to another member when they need help. As the coach of case 2 explains:

"I think organisational culture is much more important than ICT… we are very open in the network. You don't hide, for example, if we decide something, you always see what your colleagues say. We don't do something under the table. For example, if you find there are small problems becoming bigger and bigger, you build up to the culture that are really open. We have an open discussion in the network. I think this is very important. This also needs a lot of time…. People are in the centre."

In addition, cultural difference is a crucial issue, which needs to be considered. Understanding partners' culture can avoid miss-interpreting things and expectations. Hence, partners should have a shared understanding towards culture. The contract manager of case 4 gave an example:

"I would say taking a partner as an example, their culture is hierarchical. Our company is not hierarchical. Both companies are getting to learn how each other works and working within their boundaries. Within the partner, a lot of their decisions go back to its headquarter, that is an example. In our company, you would find a lot of decisions are made locally, because people would have devolved the responsibility, which is a cultural shock, a cultural change of the way that we would normally work. So, if you don't have a good governance and communication within each company, you can't share that knowledge. People miss interpret things and expectations. So, it's all about being open, and the governance of the agreed structure, and use that structure to learn from each other, to learn how both parties work or doing work with respect, respecting the supplier and respecting us."

4.4 Individual professionalism and knowledge sharing

4.4.1 Training programme and knowledge sharing

Taking the same training programmes is a way of doing things together. Members become familiar with each other. As R&D manager of case 1 said:

"if you trained together, you were going to be familiar with others. You were more motivated to share with people you know. If you know someone personally, you are more motivated to share your knowledge with him. If this is a total stranger, maybe you are not very interested. The motivation is by knowing."

Also, training can help people to learn common knowledge, such as common terminology across the supply chain network. Then, it improves communication among partners. People need to be equipped with basic and essential knowledge to communicate with other people from different sites. According to the consultant of case 4:

"One of the outcomes we found that people are much clearer in terms of communication, because through the training, there is an opportunity to introduce a common terminology across supply chain network… there are supply chain and procurement terms, approaches, policies and procurement processes, for example. Those are then clear to all stakeholders, because they've been training as to what those terms mean, and in which context they used."

However, the professional development director of case 3 thought a continuous improvement would be helpful for sharing knowledge, rather than a one-off thing:

"It depends what you mean by training programme. If you mean some kind of course, no, actually I don't think that can be imparted within the court. I think it's a part of the organisational culture and a part of the ongoing professional development and training within the organisation, not a one-off thing. Then develop training and development will help. But it's much more than that I think. For example, one day

course in knowledge sharing would not be helpful at all, but some kind of longer term program where something is embedded within the organisation that would definitely help."

4.4.2 Educational background and knowledge sharing

There are different opinions towards this relationship. On the one hand, some roles in a company need particular knowledge and background. According to the head of supplier development of case 5:

"It influences how you implement it. If you don't know how to go about knowledge sharing in your domain, then perhaps yet, you won't be able to do it. Also, if you come from a background where the knowledge sharing is an alien or not the norm, then you might be resistant to do it."

On another hand, nearly half of participants thought there is no relationship between the two factors. Willingness of sharing knowledge depends on personality and culture, rather than the educational background of managers. An interesting opinion was given by CEO of member F of case 2:

"The more we want to present, and the less to listen. So maybe our education goes against knowledge sharing."

4.5 Trust and knowledge sharing

The contract manager of case 4 suggested that a partnership is about building trust. According to the coach of case 2, if there is trust, paper documents are not necessary. An example was provided by the participant:

"If you have trust, business is easier. You don't have to write everything on paper. We have few success stories. I can show you one. No one of our members have experience in waste bin. Nobody has idea. It was a big competition for the city of Zurich. Even they had no idea about waste, then we had the best concept. I think it is because they didn't speak about business and make contract at the first place. They said only by hands: "yeah, we do that." We started to investigate together. This is an important point. Now, we developed it further. There is an electronic press inside. If it is full, there is a sense signal. People can use app. It is a big system. The success is we sold more than 100,000 already. It started in Switzerland, Austria, Germany, also in China, in Vietnam, in Japan, it starts to become in that line now. It's a good example about how you can innovate in the network. and slowly start to build more and more products like that."

Meanwhile, building trust relies on long-term relationship, and doing things together such as sharing information and knowledge, participating in same projects. Therefore, there is a mutual effect between trust and knowledge sharing. The relationship between trust and knowledge sharing is a cycle. Initial trust stimulates knowledge sharing. Then, knowledge sharing promotes trust building among partners. As the CEO of member F suggests:

"You need trust first, and then, knowledge sharing. If I don't trust you, I'm just going to share a very guarded kind of story, not really going to tell you what I really feel if I don't trust you and so on. But maybe there is some interrelation if I'm trying to build trust. A good way to build trust is to share some knowledge, which help solve a smaller problem, and then I can see how we can get a conversation going, building some more understanding with each other. So, for now, I think a little bit knowledge sharing can help build trust, and could be a cycle."

5. Conclusions and Contributions

Trust has been recognised as a highly complex concept with multiple dimensions (Cheikhrouhou et al., 2012). However, most existing studies examine trust from a general perspective, rather than multiple dimensions (Whipple et al., 2013). This research takes a step toward identifying various trust dimensions in the inter-organisational relationships, by interpreting opinions provided by the participants in the interviews. Furthermore, the research expands theory on institutional theory in knowledge management, by investigating effects of selected institutional factors on trust and knowledge sharing. The findings indicate that there are some interrelationships among the institutional factors, trust and knowledge sharing in SCC. Some of them are mutual relationship. Different interpretations about the interrelationships are generated from the data.

The theoretical contribution of the study is to explain how trust and knowledge sharing among SCC network members are influenced by individual professionalism and organisational culture. Consequently, the conceptual map is refined through the findings of the research. The practical contribution is that the refined theoretical map can be applied to collaborative network members to increase decision makers' awareness of implementing KM-related training programmes and upskilling employees' ability to communicate. Furthermore, the goal is to enhance inter-organisational relationship through trust building and knowledge sharing among network members.

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