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The effect of contractual governance, relational governance, and supply chain technology on tacit knowledge

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ABSTRACT

Purpose-Every business unit needs to implement tacit knowledge management to achieve its goals and win the competition. Many things can influence tacit knowledge. This study examines the effect of contractual governance, relational governance, and supply chain technology on tacit knowledge.

Methodology-Using a quantitative approach and survey methods, this study collected data through questionnaires distributed to business actors in the textile and garment sector in Asia with a sample of 109 respondents. Data was analyzed using Structural Equation Modeling with Smart Partial Least Square software.

Findings-The results showed that contractual and relational governance have a positive effect on tacit knowledge. Thus, supply chain technology also contributes to increasing tacit knowledge.

Research Limitations-This study's limitations focus on the textile and garment business sector in Asia. Therefore, its results cannot be used as a reference for business actors in other sectors and regions.

Novelty-This study provides a deeper understanding of the causal relationship between the variables studied. These findings are expected to offer practical recommendations for managers and practitioners in the field of supply chain management to improve the tacit knowledge of employees in the textile and garment industry.

1. Introduction

In an increasingly dynamic and complex business environment, information management is one of the key factors in improving organizational competitiveness (Nawab et al., 2015). Tacit knowledge plays an important role in innovation and decision-making (Pérez-Luño et al., 2019), namely knowledge that is undocumented and hidden in the experience and vision of individuals. Capturing and sharing tacit knowledge is important for improving organizational efficiency and competitive advantage (Pérez-Luño et al., 2016). For example, tacit knowledge is essential for quickly adapting to market trends, as experienced employees use their in-depth knowledge to

drive innovation and effective problem-solving. However, tacit knowledge is often difficult to identify, disseminate, and use effectively due to its implicit nature.

Technological developments such as internet of things (IoT), artificial intelligence (AI), and big data analytics have changed the way organizations manage and utilize data in the supply chain (Zamani et al., 2023). Richey et al. (2023) say that technological developments in supply chain management enable organizations to collect, analyze, and integrate information in real time and support learning and tacit knowledge processes. Jimenez-Jimenez et al. (2019) state that technology's role in supply chain management facilitates better coordination and collaboration among supply chain partners.

Contractual and relational management are two important approaches to managing relationships between parties within an organization (Lu et al., 2015), such as between a company and its suppliers or between employees and their leaders. Gunawan and Fidiana (2021) states that there are three assumptions about human nature in agency theory: people are generally self-interested, have limited foresight, and always avoid risk. Contract management refers to using detailed formal contracts to regulate the rights and obligations of both parties (Schuhmann & Eichhorn, 2015).

Good contract governance can provide clarity and certainty for all parties, minimize conflict, and improve operational efficiency (El-adaway et al., 2017). Sheng et al. (2018) argue that governance structures are essential in minimizing transaction costs and fulfilling contractual obligations. However, overly rigid structures can hinder innovation and the flow of tacit knowledge. However, overly rigid and formal approaches can hinder the flow of tacit knowledge, as individuals may feel they do not have the space to share personal and undocumented insights. On the other hand, good relational governance can create an environment conducive to tacit knowledge sharing. Relational governance mechanisms are essential for tacit knowledge transfer and collaborative innovation. Relationships based on trust and open communication encourage individuals to be more open in sharing knowledge and experiences. However, without a clear formal framework, relational governance may not be sufficient to address complex knowledge management challenges.

2. Literature Review and Hypothesis Development

Contract governance refers to using formal contracts to regulate the relationships between parties involved in an organization (Quanji et al., 2017). This governance includes various legal provisions and rules designed to reduce uncertainty and risk, ensure compliance, and define the rights and obligations of each party. On the other hand, tacit knowledge is knowledge that is not easily transferable but is acquired through experience (Oranga, 2023). According to Bernstein (2015), contract governance provides a structured framework that can facilitate aligning goals and expectations among the parties involved and create an environment conducive to transferring tacit knowledge. The provisions in the contract may include information-sharing mechanisms, joint training programs, and skills development, all of which contribute to the exchange of implicit knowledge. Thus, contract governance can help create an environment conducive to tacit knowledge transfer by ensuring that the objectives and expectations of all parties are clear and documented. Although contract governance tends to be formal and rigid, it is a basis for building trust between the parties involved. This trust is important for tacit knowledge exchange, which often depends on strong interpersonal relationships (Zhang & He, 2016). Well-structured contracts can be a foundation for trust, enabling parties to participate more openly in knowledge exchange. Effective contract governance in strategic alliances significantly increases tacit knowledge exchange (Wang et al., 2020). **H_1: Contractual Governance Has a Positive Effect on Tacit Knowledge.**

Relational governance in inter-organizational relationships has proven to be a key factor in implementing tacit knowledge management (Putra et al., 2017). According to Rutten et al. (2016), a high level of trust between organizations in a relational governance network creates a solid foundation for sharing complex tacit knowledge that is difficult to express formally. This trust facilitates more open and intimate communication, essential in informal knowledge sharing (tacit

knowledge). Long-term commitment between parties involved in relational governance saves time and resources needed to build relationships in tacit knowledge exchange (Chiu & Lin, 2022). The intensity of interaction and continuous communication between organizations also supports effective tacit knowledge management (Berraies et al., 2020). Routine and intensive interactions enable deeper exchanges of ideas and practical experiences not available in formal communication or written procedures. In practice, tacit knowledge is transferred and used more effectively when organizations utilize relational governance to create a context that supports continuous collaboration. According to Thomas and Gupta (2022), relationships based on trust and long-term commitment enable organizations to share tacit knowledge more effectively, reducing the uncertainty and risk associated with informal and difficult-to-measure information. Relational governance provides a framework that enables organizations to build trusting relationships and strengthen the communication necessary for tacit knowledge management (Zhang & Cheng, 2015). **H_2: Relational Governance Has a Positive Effect on Tacit Knowledge.**

Supply chain management encourages partner information exchange (Solaimani & van der Veen, 2022). Furthermore, when business situations become dynamic and uncertain, consumers demand that companies strive to exceed their competitors. This condition encourages companies to develop flexibility in their supply chains (Bag et al., 2019). Supply chain flexibility is necessary to meet stakeholder demands regarding time, scope, volume, and product innovation. In the past decade, information technology has transformed the implementation and use of supply chains (Gawankar et al., 2020). Additionally, information technology generates a large amount of data, information, and knowledge that must be analyzed using tools to ensure smooth supply chain operations (Hofmann & Rutschmann, 2018). Therefore, companies must implement innovative customer supply chain solutions based on data analysis, quality management, and information management practices (Gupta et al., 2019). Tacit knowledge is challenging to transfer between partners, unique to specific supply chains, and difficult for other partners to replicate. Tacit knowledge focuses on cognitive elements such as analogies, experience, individual beliefs, and perspectives to understand the information in complex situations. This supports the creation of continuously evolving technical solutions (Öberg & Alexander, 2019). This demonstrates that technology supply chains help integrate various knowledge sources into a unified platform, facilitating access to and use of tacit knowledge. **H_3: Supply Chain Technology Has a Positive Effect on Tacit Knowledge.**

Figure 1 illustrates the research model's framework and shows the factors that influence tacit knowledge. These factors include contractual governance, relational governance, and supply chain technology, each of which positively affects tacit technology.

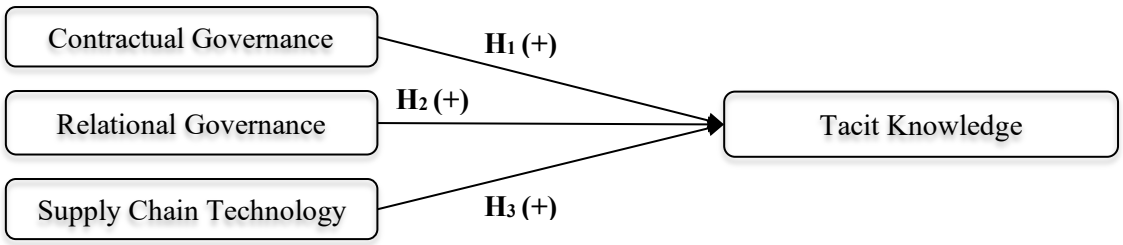

Figure 1. Research Model

3. Research Methodology

The population in this study was all textile and garment entrepreneurs in Asia. Each variable was represented by indicator items that were rated on a Likert scale. Three indicator items are used to measure contractual governance, relational governance with six indicator items, supply chain technology with four indicator items, and tacit knowledge with five indicator items. Smart PLS software evaluates The research data for validity, reliability, and regression tests. The

loading factor value on each indicator item of each variable is examined to perform a validity test. An indicator item can be considered valid if the loading factor value is more than 0.7 and vice versa (Hair et al., 2021). The validation test must be carried out if there are invalid indicator items and they are excluded from data analysis. The reliability test is carried out after the validity test. Variable reliability is assessed using Cronbach's alpha and composite reliability values. The research variable can be considered reliable if Cronbach's alpha is greater than 0.6 and composite reliability is greater than 0.7 (Hair et al., 2021). Next is hypothesis testing to determine whether the development of the hypotheses that have been formulated is accepted or rejected. The p-value of each hypothesis is the basis for regression testing. The hypothesis can be accepted if the p-value is less than 0.05 (Hair et al., 2021).

4. Result and Discussion

Characteristics of Respondents

Table 1 shows the characteristics of the respondents. Most of the respondents were male, with 64 respondents (59%), and the remaining 45 were female (41%). The age of the respondents was dominated by the age range of 20 - 50 years, namely 53 respondents (49%). Apart from the gender and age categories, the characteristics of the respondents can be seen based on the number of suppliers and employees. Most respondents (36%) have 5 – 10 suppliers and 20 – 40 employees (39%).

Table 1. Characteristics of Respondents

Classification	Description	Frequency	
		Total	Percentage
Gender	Male	64	59
	Female	45	41
Age	< 30 years old	42	38
	20-50 years old	53	49
	> 50 years old	14	13
Number of Suppliers	< 5 Suppliers	34	31
	5 – 10 Suppliers	39	36
	> 10 Suppliers	36	33
Number of Employees	< 10 Employees	17	16
	10 – 20 Employees	32	29
	20 – 40 Employees	43	39
	> 40 Employees	17	16

Validity Test

Figure 2 shows the research model when processed using Smart PLS. The model shows the loading factor value of each of the latest indicator items. These results were obtained after retesting because some indicator items were removed because they were proven invalid (less than 0.7).

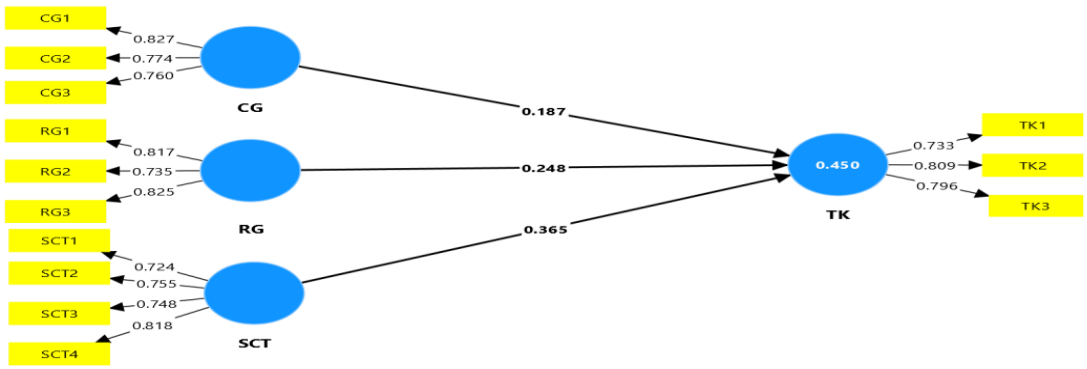

Figure 2. Measurement Model

Table 2 shows the tabulation of the loading factor value of each indicator item that represents contractual governance (CG), relational governance (RG), supply chain technology (SCT), and tacit knowledge (TK) in the validity test. Some indicator items in this study proved invalid because they had a loading factor value of less than 0.7, so they had to be eliminated and retested. The eliminated indicator items were TK 4, TK 5, RG 4, RG 5, and RG 6.

Table 2. Validity Test Result

Indicator	Contractual Governance	Relational Governance	Supply Chain Technology	Tacit Knowledge
TK 1				0.733
TK 2				0.809
TK 3				0.796
CG 1	0.827			
CG 2	0.774			
CG 3	0.760			
RG 1		0.817		
RG 2		0.735		
RG 3		0.825		
PD 1				0.724
PD 2				0.755
PD 3				0.748
PD 4				0.818

Reliability Test

The reliability test results shown in Table 3 show that all research variables are reliable. This can be seen from Cronbach's alpha and composite reliability values of the contractual governance, relational governance, supply chain technology, and tacit knowledge variables, each of which is more than 0.6 and 0.7.

Table 3. Reliability Test Result

Variable	Cronbach's Alpha	Composite Reliability
Contractual Governance	0.694	0.702
Relational Governance	0.706	0.713
Supply Chain Technology	0.760	0.764
Tacit Knowledge	0.677	0.780

Hypothesis Test

Table 4 presents the results of the hypothesis test. Based on these results, all the hypotheses from this study are proven to be accepted. This can be proven by the fact that all hypotheses show a positive direction, and the p-value is less than 0.05. Contractual governance, relational governance, and supply chain technology positively affect tacit knowledge.

Table 4. Hypothesis Test Result

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Value
Contractual Governance → Tacit Knowledge	0.187	0.192	0.072	2.577	0.010
Relational Governance → Tacit Knowledge	0.248	0.242	0.098	2.543	0.011
Supply Chain Technology → Tacit Knowledge	0.365	0.368	0.098	3.740	0.000

Discussion

The Effect of Contractual Governance on Tacit Knowledge

The analysis shows that contractual governance and tacit knowledge have a positive influence. This shows that when clear agreements are made between companies and business

partners, the flow of stored and unwritten knowledge in the organization tends to increase. Good contract arrangements create trust and reduce uncertainty, allowing individuals in the organization to share their information and experiences more freely. The use of formal contracts to govern the interactions between parties within an organization is known as contract governance (Quanji et al., 2017). This governance consists of several laws and regulations that guarantee adherence, lower risk and uncertainty, and specify each party's rights and responsibilities. Conversely, tacit knowledge is information learned by experience and is not readily transportable (Oranga, 2023). According to Bernstein (2015), contract governance offers an organized framework that can help the parties involved align their objectives and expectations and foster an atmosphere that encourages tacit knowledge sharing. Despite its formal and inflexible nature, contract governance provides a foundation for fostering trust between the parties. This trust is crucial for the exchange of tacit information, which frequently relies on solid interpersonal ties (Zhang & He, 2016). Properly drafted contracts can act as a basis for trust, allowing parties to engage in more candid information sharing. Tactic knowledge exchange in strategic alliances is significantly increased by effective contract governance (Wang et al., 2020).

The Effect of Relational Governance on Tacit Knowledge

Relational governance focuses on the quality of interpersonal relationships and communication between parties in a business network. Based on the results of this study, a positive influence was found between relational governance and tacit knowledge. Trusting and collaborative relationships, demonstrated through open communication and good personal interactions, facilitate more effective knowledge exchange. This explains why relational governance is so important in enhancing tacit knowledge. Implementing tacit knowledge management is significantly impacted by relational governance in the setting of inter-organizational connections (Liu et al., 2017). High levels of trust among companies in a relational governance network provide a strong basis for exchanging intricate tacit information that is challenging to articulate explicitly (Rutten et al., 2016). The process of tacit knowledge requires more intimate and open conversation, which is made possible by this trust. Time and resources required to establish connections in tacit knowledge exchange can be saved when parties engaged in relational governance have a long-term commitment to one another (Chiu & Lin, 2022). Effective tacit knowledge management is also supported by the level of engagement and ongoing communication between enterprises (Berraies et al., 2020).

The Effect of Supply Chain Technology on Tacit Knowledge

Supply chain technology is important in supporting knowledge management in a company. The analysis shows a significant positive influence between supply chain technology and tacit knowledge. Technology can support converting tacit knowledge into explicit knowledge, enabling individuals to record, store, and distribute knowledge that is difficult to capture in formal form. The results show that the efficient application of supply chain technology improves the accessibility and exchange of knowledge within a business, directly contributing to the improvement of tacit knowledge. Information sharing between partners is promoted by supply chain management (Solaimani & van der Veen, 2022). Furthermore, customers expect businesses to outperform their rivals when business conditions become dynamic and unpredictable. According to Bag et al. (2019), this circumstance pushes businesses to provide supply chain flexibility to satisfy stakeholder demands regarding time, scope, volume, and product innovation. Information technology has changed how supply chains are used and implemented over the last ten years (Gawankar et al., 2020). Furthermore, information technology creates a lot of data, knowledge, and information that needs to be examined using tools to guarantee efficient supply chain operations (Hofmann & Rutschmann, 2018).

5. Conclusion

This study shows that contract governance, rational governance, and supply chain technology each positively influence tacit knowledge. Clear relationships between companies and business partners encourage the flow of written and unwritten knowledge. Mutual trust and

collaboration encourage individuals to be more open in sharing knowledge and experience. Investment in information technology helps optimize learning and innovation processes and facilitates knowledge exchange between individuals and organizations. This study only involved respondents from entrepreneurs in Asia's textile and garment industry. This may affect the representativeness of the data obtained, as management characteristics and practices may vary across industries and due to business size. Certain aspects of contractual governance, relational governance, and supply chain technology that may be influential may not be apparent in the context of small businesses.

Furthermore, this study only considers three independent variables, contractual governance, relational governance, and supply chain technology, about the dependent variable, tacit knowledge. However, many other variables can influence tacit knowledge, such as organizational culture, communication patterns between teams, and knowledge management policies that may not have been considered in this study. These other variables could be important factors influencing the research results but were not included in this study, limiting comprehensive understanding. For future researchers, it is hoped that they can expand their understanding of the relationships between various factors not analyzed in this study and broaden the scope of the research.

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