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Communal Sharing and Digital Learning in Arts & Crafts Mobile Application Supply Chain Management: A Conceptual Study in Industry 5.0

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Abstract

Industry 5.0 combines human creativity with forward-thinking digitalization in manufacturing, yet digital learning in arts and crafts supply chain management (SCM) remains underexplored. This study aims to conceptually explore how integrating communal sharing with digital learning among employees, utilizing tools like mobile applications (Mapp) can enhance mobile SCM in arts and crafts. Using a conceptual methodology involving literature synthesis and proposition development, the study identifies key mechanisms through which communal sharing and digital learning can foster employee creativity and organizational innovation. It develops a digital learning model and proposes pathways for fostering creativity through inter-organizational information systems. The findings highlight benefits such as enhanced trust, collaboration, and information sharing, bolstered trading partner capabilities, data-driven insights, and creativity through collaborative ideation. This exploratory study navigates inter-organizational relationship dynamics among arts and crafts employees to elucidate how digital learning can optimize mobile application SCM in Industry 5.0. It contributes by introducing an integrated communal sharing and digital learning approach, underscoring their synergistic effects on arts and crafts SCM in the digital age. The study concludes with a conceptual model, practical implications and future empirical research directions.

Keywords*:* Arts and crafts, Communal sharing, Creativity, Digital learning, Industry 5.0, Mapp SCM.

1. Introduction

Fifth industrial revolution Industry 5.0 (I5.0), the next phase of industrial evolution, combines human creativity with advanced machine intelligence to create resource-efficient manufacturing solutions (Leng et al., 2022). A key technology for I5.0 is the Internet of Things (IoT), a network that connects people, processes, information and devices (Li & Xu, 2021; RM et al., 2020). IoT leverages I5.0 applications to reduce operating costs, eliminate communication barriers, and improve supply chain management (SCM) through wireless

sensor networks (Higginbotham, 2020). It facilitates information sharing and integrates mass customization with research on SCM to solve the challenging problem of supply chain and logistics performance (Maddikunta et al., 2022).

Many developing countries, including China, Malaysia and Thailand, rely on manufacturing as a primary economic sector, attracting investors due to low labour costs. However, this cost-based strategy is considered risky and unsustainable (Chan & Chong, 2013). To remain competitive, manufacturing companies must adopt effective strategic SCM practices to reduce operating costs (Burgess et al., 2006), and information technology (IT) plays an important role in SCM implementation (Craighead et al., 2006). Governments are actively promoting IT in SCM. Presently, within the SCM system there is a growing concern to preserve the arts and crafts industry in countries such as Sri Lanka (Hansika & Rajapakse, 2022). This industry makes a significant contribution to creative tourism development, fostering creativity and enhancing cultural tourism experiences (Duxbury & Richards, 2019; Sarantou et al., 2021).

Digital Supply Chain (DSC) encompasses various concepts such as IoT, Internet Technology (IT), Mobile Supply Chain Management (MSCM), Artificial Intelligence (AI) within SCM and Blockchain in Operations and Supply Chain Management (BOSCM). These concepts all emphasise how digital transformation can improve SCM across different industries (Weerabahu et al., 2023). Given this context, this study focuses on SCM within the arts and crafts industry and highlights the lack of digital learning among employees, particularly concerning the MApp SCM.

The MApp market has emerged as a very successful software industry, facilitated by platforms such as inter-organizational information systems (IOS) and Android, where third-party developers can introduce their applications to millions of users through stores such as Apple's App store and Google's play store. With billions of people adopting smartphones and tablets as their primary Internet devices, the MApp marketplace serves as a two-sided platform that connects developers and users, thereby reducing search costs (Bresnahan & Greenstein, 2014). MSCM has become increasingly important, leveraging MApps and devices to streamline SCM processes. Using mobile SCM to integrate with the IoT enables companies to track products globally and run multiple applications simultaneously (Chan & Chong, 2013; Eng, 2006; Rejeb et al., 2019). The proliferation of mobile channels has not only expanded adoption, but also changed user experiences and behaviours in a multi-channel landscape (Kumar et al., 2018; Shankar, 2016).

Attaran (2020) emphasizes the important role of opening the minds of managers and employees to the benefits of digital technology in improving DSC performance. Further, the research highlights the significance of addressing the question of whether employees and managers will readily adapt to technological changes. Therefore, organizations are strongly insisted to invest in digital learning initiatives to equip their employees with essential skills. These learning platforms not only provide critical insights for fostering innovation within the organization but also improve the creative performance of employees.

Consequently, this study emphasizes the importance of fostering employees' creativity and their involvement in digital learning as essential elements for improving organizational performance. For example, Francalanci and Galal (1998) found that management decisions related to the organization of clerical, managerial and professional staff mediate the relationship between IT and organizational performance. Later, Melville et al., (2004) identified the value of IT as contingent on internal factors such as complementary

organizational resources and relationships with trading partners. Therefore, while digital learning of SCM systems is valuable for emerging industries, strengthening inter-organizational relationships (IOR) is critical.

A recent investigation has prompted further inquiries into the nature of AI within SCM, questioning whether it is a disruptive innovation or an innovative disruption (Hendriksen, 2023). In support of a broader study, this study emphasizes the importance of industry-specific framework for implementing I5.0 transformation strategies, especially in sectors that are marginalized or underrepresented in digital industrial transformation efforts (Ghobakhloo et al., 2023). As such, this study aims to theoretically identify and define the elements of IORs, which play an important role in digital learning for Arts and Crafts employees in MApp SCM.

Also, it explores the role of the willingness to share knowledge which moderates between IORs and digital learning for stimulating the improved employee creativity within I5. 0 context. Therefore, the study recommends that managerial support should be provided for the implementation of SCM by adopting digital tools like MApp that enables CS to enhance the industry's SCM, although there are limitations to the study and possible areas for further research are discussed.

Despite a growing body of research on digital supply chains and mobile applications, the impact of collaborative sharing on employees' digital learning in creative industries such as arts and crafts has yet to be fully explored (e.g., lack of empirical studies on communal sharing driven digital training).

This study addresses this gap by proposing a conceptual model that explores;

RQ1: How do inter-organizational relationships impact employees' digital learning in MApp SCM within the arts and crafts industry?

RQ2: How does the willingness to share knowledge moderate the relationship between inter-organizational relationships and digital learning in the context of MApp SCM?

The research aims to enhance understanding of employee creativity through digital engagement in I5.0 settings.

2. Theoretical Background

2.1. Industry 5.0 and MApp Supply Chain Context

The transition to Industry 5.0, following the introduction of Industry 4.0 a decade ago, is now essential for achieving sustainable competitive advantages in modern business, though the critical success factors for this shift remain underexplored (Sarkar et al., 2024). Unlike Industry 4.0's technology-driven approach, Industry 5.0 is value-driven, emphasizing resilience in value creation, human well-being, and sustainable society while operating within Triple-Bottom-Line (TBL) sustainability boundaries to achieve economic, social, and environmental sustainability alongside high productivity (Narkhede et al., 2024). Industry 5.0 enhances human workers' ability to personalize products, requiring future focus on skill development and human-machine interaction guidelines (Lachvajderová & Kádárová, 2022). It prioritizes human-machine collaboration, creativity, and problem-solving with advanced technologies, shifting from Industry 4.0's automation and IoT focus to mass customization, sustainability, and ethical technological benefits for society (Leng et al., 2022b; Van Erp et al., 2024).

Scholars highlight gaps in existing Industry 4.0 maturity models (MMs), which lack human-cantered elements, and call for enhanced models incorporating employee needs and participatory aspects, developed through industry collaboration and stakeholder input (Hein - Pensel et al., 2023). Building on recent work by Nazarian and Khan (2024a), which proposed a conceptual framework linking Industry 5.0 technologies to key dimensions of supply chain performance efficiency, responsiveness, and visibility this study further explores how these human-centric and sustainability-driven innovations reshape digital supply chain strategies in emerging economies. With this, Nazarian and Khan (2024b) provide empirical evidence that I5.0 technologies significantly enhance supply chain effectiveness. Their work offers a robust theoretical and practical model linking human-centric, sustainable technological integration to performance improvement. It sets the stage for future supply chain research cantered around I5.0 and its enabling technologies. Dwivedi et al., (2023) conclude that effective circular supply chain management requires active stakeholder involvement and the use of Industry 4.0 technologies, which Industry 5.0 is expected to enhance. Their proposed framework highlights key drivers to guide industries and policymakers toward sustainable development and suggests future research on stakeholder engagement and technological evolution.

2.2. Role of IOS, IOR, and Digital Learning in SCM system

Inter-Organizational IOS place significant emphasis on facilitating the digital competence of employees in SCM systems. This includes understanding and using SCM system tools such as MApp services. For example, research by Archer et al., (2008) identified differences between adopters and non-adopters of IT in Small and Medium Enterprises (SMEs), despite the industry's growing reliance on such tools. They underscored the need for comprehensive education and learning among SME management on the benefits and barriers associated with online supply chain solutions.

In particular, integration of IOS, critical to connecting supply chain collaborators, emerges as a significant barrier to developing online solutions. This is compounded by the fact that some vendors of supply chain solutions offer Application Service Provider (ASP) models tailored to enterprises (Demirkan & Cheng, 2008). These systems have the advantage that the adopting system does not need to install and support them locally, and have small initial investments, allowing businesses to pay monthly fees based on usage. However, an important consideration is that a business that adopts such a solution must adapt and integrate its internal processes and adopt a new approach by its employees. Their view also supports the argument that employees digitally learn to MApp SCM as required by IOS. This is because the use of human factors, such as the digital learning of employees, improves the personalization of end-user experiences and improves efficient operations in I5.0 (Saikia, 2023).

IOS and IOR are allied concepts widely explored in academic literature (Humphreys et al., 2001; Mäkipää, 2006). IOS includes network-enabled information systems and technologies that enable real-time communication and information exchange between different organizations, while IOR refers to interactions and collaborations between them. Integration between these concepts is important as IOS significantly facilitates and enriches IOR (Asamoah et al., 2021; Chan & Chong, 2013; Yee-Loong Chong et al., 2009).

The integration of information systems among trading partners' organizations is fundamental to SCM. These systems, known as IOS, play an important role in enabling DSC management, with increased awareness of technological advancements and IT (Chan &

Chong, 2013; Rajaguru & Matanda, 2013). While organizations may recognise the benefits, no one is willing to force others in the supply chain to adopt IOS.

Furthermore, there is a lack of understanding of how macro-level IOS improvements in SCM can translate into micro-level benefits for each trading partner (Morrell & Ezingeard, 2002). The collaborative adaptation of multiple supply chain trading partners is essential to IOS, emphasizing the importance of IORs in influencing such decisions. Consequently, understanding IORs is critical when studying the adoption of MSCM by supply chain members (e.g., organization employees) as highlighted by Chan and Chong (2013).

2.3. Inter-Organizational Relationships and Knowledge Sharing in MApp SCM

Most past studies on digital-based SCM diffusion have used a technology, organization, and environment (TOE) framework, often overlooking the impact of the characteristics of IORs (Yee-Loong Chong & Ooi, 2008). However, subsequent research found that IORs can significantly influence the adoption decisions of DSC (Yee-Loong Chong et al., 2009; Chan & Chong, 2013). This study focuses on exploring IORs among employees of the arts and crafts industry to identify how digital learning can enhance arts and crafts SCM.

In modern supply chains, knowledge and learning are critical to gain competitiveness (Cheng et al., 2008). Successful supply chains rely on effective knowledge management to adoptive sharing among trading partners (Desouza et al., 2003). Although knowledge management involves various processes including identification, collection, selection, organisation, application, sharing and creation, knowledge sharing is often the greatest challenge (Ruggles, 1998). However, research suggests that willingness to share has a positive impact on knowledge sharing, learning and knowledge creation (Van den Hooff et al., 2003).

2.4. Relational Models Theory and Communal Sharing

Relational Models Theory suggests that individuals form relational expectations based on verbal and nonverbal categorical information before they shape their social interactions and relationships (Fiske, 1992). This theory identifies four models of global cognitive representations of social relations, including CS, authority ranking, equality matching, and market pricing, that influence the formation and maintenance of social relations and group dynamics (Fiske & Haslam, 2005). CS fosters a sense of unity among relationship partners, while authority ranking involves unequal distribution. Equality matching emphasizes even balance among relational partners, and market pricing revolves around cost-benefit relationships (Fiske, 1992). Individuals typically apply one model to a relationship at a time, but as Relational Models Theory suggests, relationships may evolve to incorporate multiple models over time (Haslam & Fiske, 1999).

The CS model fosters equal relationships in which all members are treated as equals based on shared beliefs or connections such as family ties. This model promotes a sense of unity and togetherness, emphasizing mutual support and care without creating responsibilities, using the principle of "all for one, and one for all". In CS partners are motivated to share resources to meet each other's needs without monitoring benefits or creating expectations. This approach encourages individuals to contribute according to their abilities, while taking what they need from shared resources, fostering strong bonds and cooperation (Rai & Fiske, 2011).

In this study, knowledge sharing is viewed as a social learning process intertwined with interpersonal relationships and social interactions (Almeida & Soares, 2014). Building on

Fiske's (1992) Relational Models Theory, the study focuses specifically on the CS model as its theoretical framework. Related to CS, this study develops a conceptual model for digital learning of MApp SCM system, incorporating attributes of IORs such as trust, collaboration, information sharing and trading partner's power, which will be explained in the following sections of the study.

3. Methodology

This study adopts a conceptual research methodology, employing structured literature mapping and synthesis to develop theoretical propositions within the framework of relational models' theory. The process involved three key stages: (1) identifying and defining the core constructs such as IOR, CS, and Digital Learning; (2) critically reviewing and synthesizing relevant peer-reviewed studies sourced primarily from Web of Science–indexed journals; and (3) constructing a theoretical model that reflects the relational dynamics in digitally mediated educational and organizational contexts. This approach enables analytical generalization, making it particularly suitable for early-stage theorization in underexplored domains where empirical data is limited or fragmented. The methodology is further supported by the arguments of Yadav (2010), who emphasized the crucial role of conceptual articles in advancing knowledge and theory within marketing and related disciplines. His study demonstrated that despite their declining prevalence, conceptual papers have a disproportionately high citation impact, validating their importance in knowledge development and theory building.

4. Literature Review and Development of Propositions

4.1. Inter-Organizational Relationships and Inter-Organizational Digital Learning

Chan and Chong (2013) investigated the determinants of MSCM system diffusion, highlighting the importance of IORs in the success of MSCM implementation. Similarly, (Wong et al., 2020) used a TOE framework (technological dimensions - relative advantage and complexity; organisational dimensions - upper management support and cost; environmental dimensions - market dynamics, competitive pressure and regulatory support) to examine the factors of BOSCM among small- and medium-sized enterprises (SMEs) in Malaysia. This study extends previous research by including IOR characteristics such as trust, collaboration, information sharing and trade partner's power, which contribute to the digital evolution of MApp SCM.

Trust is a key factor in fostering collaboration and openness between organizations, which is essential for digital learning. Research by Lee et al., (2014) found that trust, information access and sharing within supply chains can adoptive mutually beneficial interactions. Levels of trust facilitate improved communication and collaboration, fostering an environment conducive to successful digital learning development.

Collaboration requires coordinated efforts among organizations and is key to the successful development of digital learning. Prior research highlights that collaboration and integration between suppliers, manufacturers, and customers are vital for building agile, high-performance DSCs (Dubey et al., 2021; Scuotto et al., 2017). Moreover, an organization's ability to collaborate is crucial for its innovation (Cui et al., 2022). Team-based collaboration in a dynamic supply chain environment enhances learning potential and improves information flow, resource sharing, and expertise exchange, all essential for advancing digital learning (Tortorella et al., 2022).

Information sharing highlighted by Fawcett et al., (2007), fundamental to establishing and operating IOS. Connectivity promotes the ability to share information, which is positively related to the effective development and implementation of digital learning initiatives. Fostering an organizational environment that encourages information sharing streamlines decision-making processes, enhances collaborative efforts, and promotes the development of communal digital learning.

The power of trading partners as defined by Mora-Monge et al. (2019), refers to the organization's ability to influence the intentions and behaviour of others. Their study investigated its impact on IOS, revealing that such power can be detrimental to organizational supply chain integration within web-enabled supply chains. Conversely, when trading partners have equal power, it fosters cooperative dynamics, encouraging mutual investment in digital learning development.

In summary, research literature consistently indicates a positive correlation between IOR and inter-organizational learning (Yang et al., 2019). Thus, IOR enhances trust, collaboration, information sharing and trading partner's power among organizations, which in turn strengthens and optimises digital learning within a MApp SCM system. Based on this, researcher proposes:

Proposition 1: Arts and crafts employees who perceive more IORs will perform better in the digital learning of MApp SCM system

Proposition 1a: Arts and crafts employees who perceive more attributes of trust will perform better in the digital learning of MApp SCM system

Proposition 1b: Arts and crafts employees who perceive more attributes of collaboration will perform better in the digital learning of MApp SCM system

Proposition 1c: Arts and crafts employees who perceive more attributes of information sharing will perform better in the digital learning of MApp SCM system

Proposition 1d: Arts and crafts employees who perceive more attributes of trade partner's power will perform better in the digital learning of MApp SCM system.

4.2. Willingness to Share Knowledge and Inter-Organizational Digital Learning

Compliance with CS fosters communal motivation among trading partners, as opposed to exchange-based relationships. In communal-oriented relationships, individuals are motivated to share benefits while considering the needs of their partners. As highlighted by Williamson et al., (1996), neglecting to meet communal expectations or supporting a communal partner, which can have negative consequences, emphasise the importance of mutual help without explicit expectations.

Knowledge is a valuable strategic resource and an organization's most important asset because it plays a role in developing dynamic capabilities and maintaining competitive advantage. In view of this, knowledge sharing is fundamental to many competing concerns and acquiring knowledge and transferring it within the organization is critical to developing the capabilities required for competition (Foss et al., 2010; Singh et al., 2021). According to past studies, knowledge is a combination of information, experience, value standard and norm. In another view, knowledge is a situation, fact, example, phenomenon, rule, conjecture or model (Liebowitz & Beckman, 2020; Ruggles, 1998).

Knowledge sharing is essential for organizational success involving the transfer or exchange of information (Bock et al., 2005). Organizational meta-knowledge, understanding who knows what and who knows what within the organization, is critical to effective decision making and problem solving. Before acquiring instrumental knowledge, workers must know where and how to access it, including other workers and resources (Leonardi, 2014). Successful organizations foster an environment conducive to knowledge sharing among employees (Argote & Ingram, 2000; Tortoriello et al., 2012). Liu and Liu (2011) contribute to this field by identifying psychological and organizational factors that influence intra-organizational knowledge sharing. In addition, H-F. Lin (2017) found that knowledge sharing moderates the relationship between organizational capabilities and e-SCM diffusion, highlighting its important role in firm performance.

From the above facts, knowledge sharing is the exchange and discussion of knowledge with internal or external groups of employees through all types of channels (discussion, conference, informal and formal networks, best practices and database) aimed at expanding the value of knowledge. Applying and creating knowledge transfer. In general, people who share knowledge may want to receive some benefits, such as intrinsic benefits (personal satisfaction and satisfaction) and extrinsic benefits (rewards, promotion, or punishment). The main external benefits to an individual are economic reward, mutual benefits and reputation (Kankanhalli et al.,2005). As employees begin to view knowledge and information as personalized assets, it is common for employees to become reluctant to share behavior (Senge, 1997). Conversely, in a CS system, knowledge is considered common property by all members of the group and should therefore be shared. Such a relationship is often observed in the same background (Lin et al., 2012). In fact, CS is a relationship where people feel that they belong to a group in which each member is expected to share resources such as knowledge, which is natural (Chen et al., 2012).

To fully utilize the benefits of supply chain IOS, fostering greater willingness among key stakeholders is essential for all organizations in the chain. Managers play an important role in shaping this preference by endorsing programs that facilitate employee motivation and knowledge transfer (Fawcett et al., 2007; Fawcett et al., 2009). Given the importance of CS in the development of arts and crafts industries, fostering willingness to share knowledge before engaging in knowledge transfer is critical.

Therefore, it has significant relevance to investigate the moderating role of willingness to share knowledge in the relationship between IORs and digital learning in a MApp SCM system. When such is the case, researcher posits that:

> *Proposition 2:* Willingness to share knowledge moderates the positive relationship between IOR and digital learning of a MApp SCM, so that this relationship is stronger in the presence of higher willingness to share knowledge

4.3. Benefits of Digital Learning of MApp SCM system

As achieving an effective supply chain is impossible without information technology (IT), digital learning is critical for organizations to ensure the efficient flow of products, information and services to meet customer needs across supply chain relationships. For the sake of SCM, an organization must be a learning unit so that IT can be absorbed. For the lens of learning unit, 'organizational learning' refers to a process, such as a series of activities in an organization's learning effort, whereas 'learning organization' emphasizes unique cultural and structural organizational qualities that characterize the ability to learn (Hult et al., 2003).

In response to the introduction of IT, people and processes within an organization must undergo significant change, learning, adaptation and growth. Therefore, organizations should invest in developing their employees' IT skills to strongly emphasize the importance of having a learning system that explicitly supports agility in digital SCM (Gunasekaran & Ngai, 2004).

Adopting electronic supply chain management (e-SCM) provides competitive advantages such as increased productivity, shorter lead times, improved customer service, and stronger relationships with supply chain partners (Lin, 2017). A study by Sambasivan et al., (2009) demonstrate that firms with extensive knowledge of supply chain processes perform better and those with higher levels of supply chain learning also exhibit better performance. Furthermore, they establish a positive correlation between supply chain learning and applied knowledge of supply chain processes. This underscores the importance of continuous learning for organizations to ensure smooth product, information and service flow and effectively meet customer demands. Additionally, learning initiatives have been linked to improved end-customer satisfaction and performance metrics in supply chain management (Spekman et al., 2002).

Implementing a SCM strategy within a learning organization framework is critical to securing a competitive edge in the marketplace. By integrating learning practices into SCM, organizations can ensure a continuous focus on improvement and adaptability. Adoption of learning organization principles improves supply chain capabilities, performance management and supplier evaluation. A learning chain is adaptive to change, highly responsive to customer demand and constantly learning and growing exponentially. When employees and organizations work collaboratively and cohesively with trust, commitment, and open communication, it creates a cooperative and competitive advantage (Opengart, 2015; Peters et al., 2010; Spekman et al., 2002).

Sousa and Rocha (2019) in their study, 'Digital Learning: Enhancing Organizations' Capacities for Digital Transformation,' mobile technologies, tablets and smartphone applications are increasingly preferred by employees as important digital learning environments, prompting organizations to rethink their strategies to develop their ability to respond to digital transformation challenges. Therefore, Sri Lanka, a developing country with a growing arts and crafts industry, should prioritize a digital learning environment for supply chain management (SCM) over the diffusion of digital SCM technologies such as MSCM (Chan & Chong, 2013).

Many businesses operate in IOR systems, forming strong relationships that facilitate knowledge sharing, strategic alignment, and resource exchange to develop innovative products and services (Boughzala & Szostak, 2023). Lin (2022) found that integrating electronic green supply chain management (e-GSCM) internally and collaborating externally improves environmental performance and firm competitiveness. Similarly, the digital learning of the SCM system mapped in the arts and crafts sector improves competitiveness by improving the expertise and technical skills of artisans, which Manfredi Latilla et al. (2019) this approach not only fosters innovation but also contributes to the long-term sustainability of the industry, providing valuable benefits to companies seeking to improve creativity and performance among their employees. In accordance with this, researcher contends that:

Proposition 3: Arts and crafts employees with digital learning of a MApp SCM system will benefit of creative performance from digital learning of MApp SCM system.

5. Findings and Discussion

I5.0 refers to robotics and smart machines working alongside people, incorporating additional resilience and sustainability goals. Where Industry 4.0 (I4.0) focuses on technologies like the Internet of Things (IoT) and big data, I5.0 seeks to add human-centric, environmental and social aspects back into the equivalence (Ghobakhloo et al., 2023; Gürdür et al., 2022; Mansurali et al., 2023). However, I5.0 involves a strategy that transforms people from being seen as resources into real assets. In effect, this means that organizations serve employees rather than employees serving organizations. Therefore, instead of simply creating a competitive advantage for organizational profit and value for customers, I5.0 focuses on creating added value for employees to attract and retain the best SCM members (Xu et al., 2021). This approach empowers managers with insights to foster innovation within their organizations, thereby fostering the rapid development of creative performance among their employees.

With respect to recent literature, previous researchers focused on digital SCM diffusion. For example, Wamba and Queiroz (2022) proposed a multi-stage approach on the interplay between blockchain and SCM. Apart from supply chain digital learning and its benefits, they studied the diffusion of digitalisation. However, it is not useful to consider the diffusion of digitization among SCM before enlightening the digital learning of operational employees. Indeed, in network SCM, many organizations do not have an appropriate framework to effectively manage knowledge and information technology considering their supply chains (Gunasekaran & Ngai, 2004). With this background, this study attempts to develop what digital learning of SCM should look like in the future for a growing industry such as arts and crafts in a developing country.

This study, after presenting a brief theoretical background of knowledge sharing and learning based on a CS perspective and link between IOS and IORs, discusses recent paradigm shifts that emphasize arts and crafts employees who perceive more IORs will perform better in the digital learning of MSCM system to meet the challenges posed by the trends of the fifth industrial revolution. Another important point is that since mobile technology is fundamental digital learning for arts and crafts industry operations, this study focuses on the interplay between MApp and SCM.

Then, according to CS theory, this study proposes that willingness to share knowledge moderates the positive relationship between IOR and digital learning of MApp SCM and that this relationship is stronger in the presence of higher willingness to share knowledge. CS theory can help explain why organizations cooperate and form partnerships. By pooling their resources and combining their strengths, organizations can improve their competitiveness, expand their capabilities, and achieve mutual benefits that would be difficult to achieve individually. Furthermore, this theory emphasizes the importance of trust, collaboration, information sharing and trading partner's power in fostering positive IOR.

A decade earlier, Tarofder et al., (2013) studied the diffusion of web technologies in SCM functions and found the benefits of diffusion such as operational efficiency. Whereas, the benefits of the digital learning of a MApp SCM system among employees in emerging industries remain incompletely comprehended. Hence, to accomplish this gap, this study proposes that there is a positive effect of the employees' digital learning of MApp SCM system on the benefits of creative performance from the digital learning of the MApp SCM system.

In summary, combining CS with digital tools such as MApps and digital learning empowers stakeholders in the arts and crafts supply chain to collaborate effectively, enhance their skills, make data-driven decisions, and leverage crowdsourced innovation. This holistic approach not only fosters creativity and responsiveness but also improves overall performance and competitiveness in the market. According to the above discussion, this study proposes a 'digital learning of MApp SCM system model' (See Figure 01).

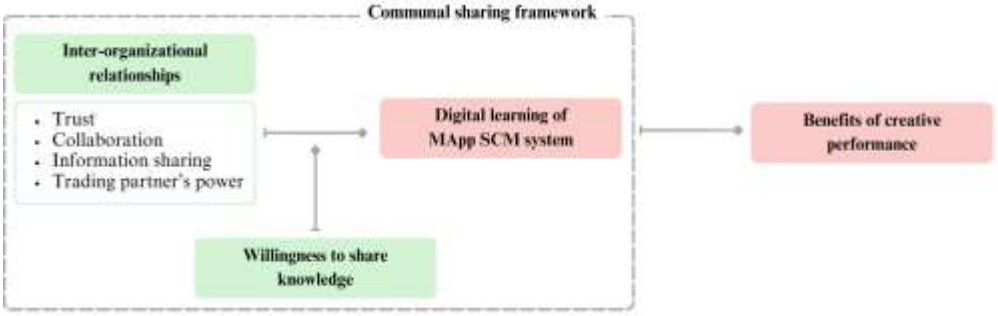

Figure 01. Digital learning of Mapp SCM system model
Source: Author Constructed

5.1. Theoretical Implications

This study not only adds to knowledge but also has thought-provoking theoretical implications. First, before explaining some aspects of the digital SCM system using CS, CS perspective has not been implemented in digital learning especially in the MApp SCM system in emerging industries. Some new concepts in CS settings, such as IOR and willingness to share knowledge, are adopted as a basis for this research in mobile SCM. Therefore, this study provides new knowledge about employees' digital learning of MApp SCM in evolving technology and human-centered I5.0, aiming to enhance human creativity.

Second, when analysing the importance of IORs, the important role of willingness to share knowledge, the digital learning of the MApp SCM system and the benefits of MApp SCM digital learning are theoretically linked in this study. Because of this, the model developed according to the CS model perspective under the theory of relational models resembles the theoretically explored research model of digital learning of the MApp SCM system (see Figure 1). Therefore, it clearly reveals that the perspective of CS fits well with the IOR viewpoint of this study and provides theoretical complementarity.

Third, in technologies that enable SCM, previous researchers have been concerned with the organizational dimensions of top management support and cost (Wong et al., 2020) as part of their focus on the TOE framework. But this study mainly focuses on IOR characteristics as an important dimension. This study uses the IOR framework and extends it with the willingness to share knowledge. That is, this study provides new theoretical thinking on how the essence of human-centeredness, sustainability and flexibility, which are characteristics of the current research findings of I5.0 (Leng et al., 2022), which is still relatively still in its infancy, can be analysed in a diversified essence towards the importance of IORs.

Fourth, (Agrawal et al., (2019) identified barriers to implementing DSC, such as lack of industry-specific guidelines, lack of digital skills and talent, etc. Their findings provide the insights for this study to propose a framework as industry-specific model for SCM employees'

digital learning. Without a doubt, the digital learning of the MApp SCM system model for SCM employees developed from this study adds new knowledge to I5.0, which places human well-being at the center of manufacturing systems, aiming to achieve social goals beyond employment. Moreover, the propositions developed from this study provide future researchers with further empirical studies and theory of SCM organizations and I5.0. Finally, as a research implication, this study summarizes questions that aim to investigate in future empirical studies;

Q1: To what extent do inter-organizational relationships influence digital learning in the emerging industry of MApp SCM?

Q2: To what extent does the CS model affect the emerging industry's willingness to share knowledge?

Q3: To what extent does the CS model between IORs and digital learning MApp SCM as a prospective source for the benefits of digital learning?

The proposed knowledge contribution of this study is to address the above questions by empirically investigating the relationship between emerging industries and their benefits through digital learning of a MApp SCM system in I5.0.

5.2. Practical Implications

Previous researchers suggested that internet technologies contribute more to operational activities. However, in practice, large organizations with sufficient resources to train their employees can overcome the problem of complexity (Tarofder et al., 2017). Firstly, for emerging Micro, Small and Medium Sized Enterprises (MSMEs), complexity can be a major barrier to internet adoption in supply chain management. Therefore, to increase adoption, technology developers need to create technologies that can be easily integrated into existing organizational operations. Emerging industries such as arts and crafts may think that digital learning for their employees is an insurmountable challenge. But if the industry applies a CS perspective in IOR, they can benefit from the MApp CSM system. For example, local artisans and craftsmen can benefit from the MApp SCM expertise of tourist agencies.

Secondly, the CS theory perspective provides insights into the underlying dynamics of IORs and emphasizes the importance of trust, collaboration, information sharing and trade partner's power, and common goals in fostering successful relationships between organizations. In the context of IOR, this theory can be used to describe the supportive and collaborative nature of interactions between different organizations. When organizations engage in such relationships, they can often share resources, knowledge, and expertise to jointly advance the goals of digital learning and the benefits of digital learning. For example, tourist agencies often have established online platforms or marketplaces to sell local artisan and craftsmen products to tourists.

Based on the findings of this research, the following implications of IORs for the arts and crafts industry are suggested. First, artisans and small business makers need to develop their artworks by building strong ties with suppliers who provide critical materials essential to the makers' artworks. Second, the study also confirms that specialty stores such as galleries or craft stores are important channels of distribution for artists' products, indicating that artists can increase interactions with such establishments by consigning or buying their products in bulk. Third, establishing and building grassroots artisan cooperatives and aesthetic collaborations between artists and ventures, resulting in new product creation and joint

exhibition creation, promotes integration. Finally, artists interact with educational institutions; after receiving resources such as workshops, classes and studios from institutions, artists can improve their skills and help develop art through mutually beneficial interactions between artists and these institutions.

Following these studies, the focus is on explaining IORs in the arts and crafts industry in terms of ecological, geographical and industrial differences. Noting that these collaborations, partnerships and businesses are geographically distributed and involve small companies, this work emphasizes the need to follow the principles of SCM, in particular I5.0. The main idea of this joint effort is to improve the use of human resources in the SCM system, resulting in various efficiency and creativity increases in interrelated organizations.

6. Limitations and Directions for Future Research

This study is conceptually grounded and does not include empirical validation, which limits its generalizability and practical application in real-world settings. It introduces a framework that links IOR, knowledge sharing, and digital learning in the MApp SCM system, focusing on the arts and crafts sector. However, it does not provide actual data to prove the effectiveness of these concepts. The model's relevance to other industries or regions also remains uncertain. Future research should test these ideas through practical studies, examining how MApp SCM's digital learning influences creative performance and operational resilience in Industry 5.0. Additional studies could also explore industry-specific factors like technology access, collaboration culture, and geographic differences to strengthen the model. Other areas for research include the impact of business size, industry experience, and institutional support on digital learning outcomes.

7. Conclusion

While research so far has investigated different aspects of IOR contribution to SCM (Fayezi & Ghaderi, 2022), little attention has been given to the digital learning through which MApp SCM can be augmented and managed via IORs among SCM. On this basis, the researcher in this study has developed future propositions that outline the contribution to literature on MSCM theory and practice. Furthermore, this study contributes to the literature on IOR in the arts and crafts industry by complementing RMT's CS perspective. In short, the main outcome of this research is to answer two questions that explore the relationship between the arts and crafts industry and their benefits of digital learning of the MApp SCM system; (1) How does employees' digital learning of the MApp SCM system relate to IOR? (2) What is the relationship between willingness to share knowledge with IOR and digital learning of the MApp SCM system?. This study is limited to conceptual exploration only. The findings suggest that empirical research should be conducted to investigate and measure the benefits of this approach/perspective. Therefore, this study is expected to raise lively discussions and future investigations and create an inclusive system of I5.0 by combining the strengths of IORs and encouraging the digital learning of MApp SCM to enhance human creativity.

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