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Governance–knowledge fit and strategic risk taking in supply chain digitization

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ABSTRACT

Drawing upon the theoretical lenses of strategic risk taking and governance–knowledge fit, this study examines how decision rights and knowledge of the IT unit may support the firm to benefit from strategic risk taking in supply chain digitization. We build a mediated-moderation model to theorize that the fit between decision rights and knowledge of the IT unit drives the firm to strategically take risk in digitizing its supply chain, and such strategic risk taking enables the firm to realize both operational and strategic benefits. Our empirical study provides support to the mediated-moderation model. Specifically, we find that when allocated with more decision rights, the IT unit with more business knowledge and knowledge creation capability drives the firm to conduct more strategic risk taking in supply chain digitization, which in turn results in operational and strategic benefits to the firm. However, we also find that the fit between decision allocation and technical knowledge of the IT unit does not significantly lead to strategic risk taking, suggesting that the effect of governance–knowledge fit on strategic risk taking is contingent on knowledge type.

1. Introduction

Both practitioners and academic scholars have recognized the significant risk associated with information technology (IT) investments and initiatives, especially in the inter-firm environment [9,22]. For example, research has suggested that more than 70% of supply chain management projects have failed to deliver any return on investment [20]. A review of industry reports on CRM failure rates from 2001 to 2009 suggests that over this time period, the average failure rate of CRM projects was about 46.25% [30]. The academic studies on IT risk have recognized the risk associated with the return of overall IT investments at the firm level [13,56], and have identified various types of risk at different levels of IT projects and applications [25,31,37].

Due to the risk–return association of IT, organizations are likely to strategically take risk in adopting IT to pursue higher returns. In the existing literature, however, many key issues such as what drives the organization's strategic risk taking in IT and what influences the outcomes of strategic risk taking have been under-investigated. Moreover, since the risk decisions on IT cannot be made and executed without the IT unit, it is critical to consider the influence of the IT unit on the decisions and outcomes of strategic risk taking. The objective of this study is to address these issues from a perspective of IT governance. A central element of IT governance concerns the allocation of IT decision rights between the IT unit and decision makers from other areas [49,57,65]. In this research, we specifically focus on how allocating more decision rights to the IT unit influences the decisions and outcomes of the organization's strategic risk taking.

In relating IT governance with strategic risk taking, our research framework is built primarily upon two theoretical lenses. The first one is the knowledge perspective of strategic risk taking [51,53,63], which suggests that the knowledge and experience of decision makers lead to strategic risk taking. When decision makers have more knowledge about the problem domain of decision, it is more likely for them to better understand the nature and consequences of risk [51] and more rationally undertake risk-taking initiatives [8]. The second theoretical lens is the perspective of governance–knowledge fit [23,57]. From this perspective, the decision rights assigned to an IT unit (i.e., the governance configuration) should be aligned with the knowledge level of this IT unit. Assigning appropriate decision rights allows the IT unit to better leverage its knowledge in decision making. For some time, these two theoretical perspectives exist, in parallel, in separate streams of literature. However, in a very real sense, these perspectives are potentially complementary to each other. When the IT unit with domain knowledge is assigned appropriately with decision authorities, it may also leverage such knowledge to help the organization strategically take risk in adopting IT. The present research, therefore, constructs an integrated framework to align these two theoretical lenses with each other, and explicitly study how governance–knowledge fit at the IT unit influences the organization's strategic risk taking in IT adoption and the performance of this strategic risk taking.

To study strategic risk taking in IT, we use supply chain digitization (refer to *SC digitization* hereafter) as the research context. SC digitization

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refers to the adoption of inter-organizational systems (IOS) by business organizations to collaborate and transact with their external partners (e.g., key suppliers and customers) along their value/supply chains [4,44,45]. Compared to the adoption of other intra-organizational IT systems, SC digitization is often considered as more risky [31], primarily because the external parties and environment that organizations need to interact with are beyond their controls [46]. In this regard, the decisions on SC digitization reflect organizations' strategic risk taking in IT. Moreover, in our empirical analysis, we focus on SC digitization by a sample of Chinese companies. Compared to companies in developed countries (such as the US), Chinese companies have to bear more risks in SC digitization due to the underdeveloped macro-level network infrastructure, the lack of IT expertise in individual companies, the turbulent business environment of the emerging economy, and the relatively immature legal and regulatory systems [15]. Therefore, the study on SC digitization by Chinese companies provides an opportunity to better understand the strategic risk taking in IT.

In this study, we conceptualize strategic risk taking as the extent to which organizations aggressively adopt electronic supply chain systems to transact and interact with external partners even when they recognize the associated risk. When examining governance–knowledge fit, we consider different types of knowledge that the IT unit may possess, including technical knowledge, business knowledge, and knowledge generation capability. Although different types of knowledge are often complementary and utilized together in risk taking, the IT unit is less likely to possess the entire set of expertise [57]. Therefore, the differentiation between different knowledge allows us to examine different types of fit between the IT unit's decision rights and its knowledge, and develop more insights about different impacts of governance–knowledge fit.

Our analysis suggests that the allocation of more decision rights to the IT unit is associated with more strategic risk taking in SC digitization. In addition, with more decision rights, the IT unit's business knowledge and knowledge generation capability also lead to more strategic risk taking. The implication is that the fit between the IT unit's decision rights and its business knowledge and knowledge generation capability fosters strategic risk taking of the organization. However, our results also suggest that the decision right allocation does not significantly strengthen the relationship between the IT unit's technical knowledge and strategic risk taking. Rather, higher technical knowledge is directly associated with more strategic risk taking.

Organizations often pursue both operational benefits and strategic benefits in SC digitization [28,39,45,55]. We therefore consider these two types of benefits in examining the performance of strategic risk taking. Our empirical findings suggest that strategic risk taking leads to both types of benefits, and its impact on strategic benefits is even higher than that on operational benefits. More importantly, our analysis illustrates that strategic risk taking mediates the impact of governance–knowledge fit on the performance of SC digitization. The results suggest that strategic risk taking mediates the impact of fit between the IT unit's business knowledge and its decision rights, and the impact of fit between the IT unit's knowledge generation capability and its decision rights. However, risk taking does not mediate the impact of fit between the IT unit's technical knowledge and its decision rights. Therefore, the mediating effect of strategic risk taking on knowledge–governance fit is dependent on the type of knowledge.

The study contributes to multiple streams of literature. First, the study draws upon both the risk taking literature and the IT governance literature to explain how decision allocation influences strategic risk taking and the risk–return relationship in IT initiatives. Our theoretical perspective aligns the view from the risk taking literature (e.g., [3]) on how knowledge encourages risk taking with the view from the IT governance literature (e.g., [57]) on how governance knowledge fit enhances IT performance. Second, the study adds to the literature on project-level IT risk (e.g., [25,26]) by illustrating that organizations can benefit from strategic risk taking in IT initiatives, and they can enhance their benefits through assigning appropriate decision rights to their knowledgeable IT units. Third, the results also help better explain the risk–return association that prior studies have identified at the firm-level (e.g., [12,13]).

The rest of the paper is organized as follows. Section 2 presents the theory and hypothesis development. Section 3 introduces the data collection and the methodology. Section 4 presents the results. Section 5 discusses the results and Section 6 concludes the paper.

2. Theory and hypothesis development

2.1. Theoretical basis: knowledge and risk taking

The existing theories on risk taking suggest that knowledge plays an important role in motivating the strategic risk taking of organizational decision makers [3]. Sitkin and Pablo [51] conceptualize that strategic risk taking is influenced jointly by the risk perception and risk propensity of organizational decision makers. Decision makers' risk perception is dependent on their familiarity with the problem domain. The knowledge that decision makers developed from their past experience makes decision makers more familiar with the problem domain and thus helps mitigate their risk perception. In this way, knowledge is likely to foster strategic decisions on risk taking. This logic is consistent with the perspective of the behavioral agency model of risk taking [33,63], which argues that past successful experience mitigates risk perception and fosters risk taking by reducing the uncertainty regarding the likely outcomes of risk-taking actions.

More importantly, knowledge allows decision makers to better understand risk and motivates them to proactively take the risk they identify. The theory of Sitkin and Pablo [51] suggests that past successful experience of decision makers leads to risk propensity, because the knowledge that decision makers accumulate from the past success is likely to make risk seem reasonable. Similarly, the theory on reasoned risk taking [8] suggests that when decision makers learn from their past experience and possess sufficient knowledge about the decision domain, they are also more likely to convert their risk-taking incentives to the actual risk actions. Based on these views, knowledge is likely to foster strategic risk taking by enabling decision makers to more rationally bear risk to pursue higher returns associated with risk.

Besides the existing knowledge of decision makers, researchers have also taken a more dynamic perspective to consider how knowledge creation capability influences risk taking (e.g., [53]). Knowledge creation capability refers to the extent to which decision makers and knowledge workers have access to knowledge and information from other stakeholders and are capable of combining and exchanging information to generate new knowledge [29,42]. With such capability, organizations are able to develop creative ideas and solutions that are needed in handling the uncertainties in implementing new technologies. The existing literature suggests that knowledge creation capability motivates organizations to take risk in innovative activities, such as new product development [53].

2.2. Theoretical basis: governance–knowledge fit

A central issue in the governance of IT is the allocation of decision rights [49,62], especially that between the IT unit and other functional departments [57]. The strategic decisions of SC digitization are often the outcomes of group decision making. In this case, the decision rights of the IT unit mainly reflect the extent to which IT managers are included in the strategic decision team and are involved in the decision making processes of SC digitization.

In decision allocation, the fit between the knowledge and the decision authority of decision makers is often considered critical to the