Is Trust Shapeable? Design Requirements for Governing Sharing Networks

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Abstract. Driven by digitization and the accompanying attempt to compensate for a lack of resources and capabilities, the number of inter-organizational collaborations in which resources are shared increases rapidly. The individual actors within such sharing networks (SN) form the foundation for the success of these collaborations. Successful collaborations have a high level of trust between these individual actors. However, it is still unclear how to design roles and relationships in networks in order to develop and foster trust. Thus far, scholars have done very little research investigating the relationship between structural properties of sharing network configurations and trust within them. By applying design science research (DSR), this study intends to shed light on design requirements (DR) to govern successful SN. We describe the review's findings as four meta-requirements, which set the cornerstone for our journey toward a holistic information systems (IS) design theory aimed at shaping roles and relationships to govern SN effectively.

Keywords: Inter-organizational sharing networks · Design requirements · Design science research · DSR

1 Introduction

Research has produced unique explanations of sharing networks (SN). These explanations partly overlap and partly contend [1, 2]. There are many different conceptions of networks, even among those concerned with organizations linked by resource exchange [3, 4].

Several researchers have discussed the idea that SN lead to improved performance, such as lower supply chain costs or an increase of revenues [5, 6]. Besides, the coordination of a complex ecosystem grounded on individual business relationships that exist between parties involved in the SN is critical to the success of a firm and the whole network [7]. In this regard, one can categorize the idea of focusing on individuals as well as their fulfilled roles and relationships under the relational governance concept. This concept, which recognizes the weaknesses of traditional, contract-based governance by governing an SN through an informal structure, is a suitable approach to addressing these challenges [8]. Inter-organizational exchanges are typically repeated exchanges that are

embedded in social relationships. Governance emerges from the values and agreed-upon processes found in social relationships [9], which may minimize transaction costs compared with formal contracts [8].

Derived from this approach, the key to successful network collaboration is based on trust. Trust is an essential relational part of resource sharing, as it helps with successful communications and procedures [10]. Working in collaboration across company boundaries can be testing for companies who are not accustomed to functioning throughout their corresponding jurisdictional and business boundaries [11]. A relational governance and focus on individual actors, their roles, and their relationships are, therefore, crucial for the overall network performance.

Furthermore, many contributions have already addressed roles and relationships in the context of governing inter-organizational sharing networks. Oliveira et al. [12] provide a detailed study of structural research on inter-organizational, data-related roles and responsibilities. They also define functions with a governance character, but these functions are only partially defined precisely. Moreover, Peterman et al. [13] as well as Knight and Harland [14] set a focus on inter-organizational roles and relationships. Although there is a partial link to role theory for explaining the behavior of the individual management roles, there is no holistic framework based on prescriptive design knowledge. Furthermore, they also do not consider trust as crucial variable of successful networks in this context.

In sum, none of the publications focus on how to separately design roles and relationships among network actors and, moreover, none of the publications address the relationship of different participants and their functional roles in an SN. Furthermore, there is no design-oriented approach attempting to develop design knowledge that places trust as the central variable of research, although academics accept this as an element success factor of SN in IS research [15, 16]. These problem statements lead to our research question: *How should one design roles and their relationships to encourage building a trustful data ecosystem?*

This study aims to utilize the importance of organizational design as a resource sharing enabler by growing reusable prescriptive design knowledge in form of an information systems (IS) design theory. To efficiently reach this target, we applied Gregor and Hevner's [17] guidance on how to structure a design-oriented research paper for maximum impact.

To configure our design process, we follow Peffers et al.'s [18] contribution. Absent generalized design knowledge on designing roles and relationships in data-sharing environments acts as our research entry point and constitutes our research motivation. We then defined our objective within the introduction section. We developed our design requirements through an initial literature review conducted within major IS and IS-related databases (AISeL, ScienceDirect, ProQuest, ACM, IEEE, and Business Source Premier). The conclusion section ventures ahead and explains the next milestones on the road to a well-developed design theory.

2   Design Requirements

In the following, we derive appropriate design requirements (DR) based on extant IS and IS-related literature. These theory requirements are general. They are not the requirements for a specific example of a system theory, offering theory-based principles in a prescriptive nature instead [19, 20]. To address, on the one hand, the concept of relational governance within inter-organizational networks and, on the other hand, the individual SN roles and their behavior, we have to discuss different constructs (Fig. 1).
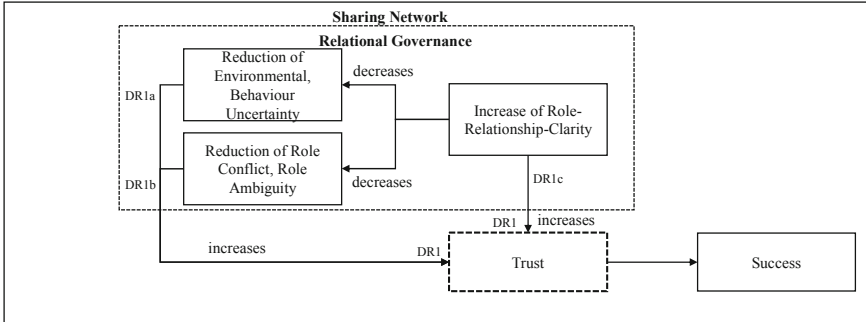

Fig. 1. Research framework

Since trust is the key to reduce or even avoid uncertainty, relational governance, also known as trust-based governance, offers a suitable approach for establishing trust as a central governance mechanism [21]. The grounding of governance as a whole hinges on agency theory. In this context, transaction cost economics has emerged as a typical structure for comprehending governance-mode-choice economic activities based on contracts [22]. These contracts are, however, the main criticism in the framework of the traditional, contractual governance [3]. Especially within inter-organizational networks, the relational aspect of governance has become crucial, as the network's coordination mode mainly relies on social contracts between network actors [23]. Besides, inter-organizational exchanges are observably repeated exchanges embedded in social relationships. Moreover, governance emerges from the values and agreed-upon processes found in social relationships [9], which may minimize transaction costs compared to formal contracts [8]. Generally, social mechanisms play a crucial role here to balance the lacking elements of contractual governance [24].

IS and IS-related literature assessed trust as crucial for sharing assets within these networks [25], and assessed the circulation of trust as vital for comprehending a network's interactions and whether trust is reciprocated amongst SN actors [15]. Trust between actors, and trust in the whole network plays a crucial role [26]. Trust, therefore, operates as a governance mechanism that reduces opportunism in sharing relations, and endorses cooperation [27].

DR1: *The design of roles and relationships within SN should foster the increase of trust between DE participants.*

Uncertainty, in contrast, decreases trust. Uncertainty initially describes the unpredictability that incomplete knowledge of alternative courses of action brings about [28]. Many SN do not work or succeed because actors cannot deal with two primary forms of uncertainty: behavioral and environmental [29]. Behavioral uncertainty occurs in the context of the possibility of sharing partners concealing or falsifying information. Environmental uncertainty takes place as a result of unpredictable environmental changes [30].

DR1a: *The design of roles and relationships within SN should minimize the adverse effects of both behavioral uncertainty and environmental uncertainty.*

Within investigating relational governance, Goo et al. [31] establish a nexus between relational governance and role-relationship-clarity (RRC). Within their contribution, they defined RRC as a construct of relational governance. Goo et al. [31] describe a lack of RRC as a direct function of the discrepancy between two functions, avoiding role conflict and ambiguity, and increasing trust. The origin of conflict generally can vary from power differentials or competitors over limited resources to tendencies to differentiate [32]. Role ambiguity may emerge if function settings lack role-relevant information, when information is limited, or when role assumptions are not specified [33].

DR1b: *The design of roles and relationships within SN should minimize role conflict and role ambiguity.*

Research already studied the interdependencies of role conflict, ambiguity, and clarity. Generally, scholars agree that RRC is kind of an antecedent to role conflict and ambiguity [34]. In this context, RRC describes the level to which required information is offered about how exactly the participant is expected to fulfill a role [35].

Participants develop trust in what they need to do and what they should expect from other participants, as they have a shared picture of what needs to be achieved to accomplish mutual goals in an SN [36]. Explicitly putting effort into creating a cross-boundary community that better collaborates, coordinates, and interacts among its members was apparent. The more these individuals interacted, organized, and partnered with one another, the clearer their roles and responsibilities were established [37].

DR1c: *The design of roles and relationships within SN should endorse to increase RRC.*

3   Conclusion

In this research-in-progress paper, we have identified four design requirements for governing SN. We gathered the requirements from IS and IS-related literature, focusing on the constructs of role clarity, uncertainty, role conflict, and trust. This study provides the foundation for further developing an IS design theory for a trust-based governance of SN. This generalized prescriptive knowledge could be beneficially reused by IS research in a future design science project; moreover, this knowledge could possibly refine existing kernel theories too. The next steps should therefore be to draft design principles, which address the given design requirements. These principles are grounded on kernel theories or related knowledge. Evaluation iterations in form of case study research, as well as the derivation of testable design propositions, will also follow.

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