RESEARCH PAPER

Uses of Information Systems to Develop Trust in Family Firms

Raphael Lissillour · Jean Michel Sahut

Abstract The family business literature has not addressed the role of information systems (IS) in the development of trust in family businesses. Through an in-depth analysis of a Chinese industrial family business in Qingdao, this study shows how several IS contribute to trust within the organization. Trust is conceptualized according to three dimensions, namely interpersonal trust, competence trust, and systems trust. Three main IS have been identified in the organization, namely WeChat, DingTalk, and the Enterprise Resource Planning system (ERP). This exploratory study analyzed how eight departments use these IS to understand which institutional logic is embedded within each IS. Each information system is conceptualized as embedded in a specific institutional logic which is not neutral in terms of trust building. These findings highlight the fact that Chinese executives use specific information systems to develop trust. ERP (here SAP) has a specific inherent institutional logic, namely rational managerialism, which contributes to system trust. Social media such as WeChat and DingTalk are embedded in their own institutional logic which makes them more adapted to specific activities. Unlike rational managerialism, the institutional logic associated with WeChat includes a strong focus on interpersonal communication, cooperation and problem-solving. WeChat is associated with the development of interpersonal trust whereas rational managerialism is rather associated with transparence and formality, thus unsuitable for developing interpersonal trust. Chinese executives use WeChat to create an informal and dynamic social space which promotes the development of stronger social ties with each other. DingTalk is associated with another logic which promotes formal information sharing, reliability and internal management. This information system contributes to the development of another type of trust, namely competence trust. The two social media contribute to sustaining interpersonal trust and competence-based trust which are critical in the development stage of a family business. Findings also show that family members need to create a forum without their presence for employees to exchange freely, thus creating a space in which trust can blossom. This paper concludes with theoretical contributions and implications for practitioners.

Keywords Family business · Trust · Institutional pluralism · Institutional logic social media

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1 Introduction

In today's increasingly complex and uncertain environment, trust is a crucial element of organizational life and an important trend in information system (IS) and business and information systems engineering (BISE) research (Steininger et al. 2009). Trust can be understood in different ways and thus conceptualized differently depending on the chosen perspective (Rousseau et al. 1998). Trust is a source of competitive advantage for family businesses (Steier 2001) because of their singularity as they involve the participation of family members, the connections between whom transcend economic rationale (Aldrich and Cliff 2003). Indeed, trust is understood as a governance

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mechanism which is particularly relevant to the study of family businesses (Eddleston et al. 2010; Sahut et al. 2022). Numerous research studies have demonstrated how the family and business spheres are intertwined in family businesses (Eddleston et al. 2012; Cater and Kidwell 2014). Furthermore, trust is viewed as being fundamental because it enhances predictability and restricts agency costs between stakeholders (Steier 2001). The concept of trust is often mentioned in family business research to explain governance and power relationships at different levels, such as the individual, interpersonal, inter-group (Eddleston et al. 2010), and inter-organizational level (Smith et al. 2014; Stanley and McDowell 2014).

But trust conceptualized as a single phenomenon across contexts may be of limited value when considering the different levels and situations in which it is required. Indeed, prior research led by Shi et al. (2015) proposed that "family business owner-managers should try to avoid relying on a single type of trust, which may incur extra costs to the entrepreneurial processes". The latter drew on Sako's (1992) proposition of goodwill, competence, and contractual trust, with a focus on inter-firm relationships. For a conceptualization of trust which is more appropriate to the internal analysis of family business, this study draws on a framework from the family business literature that argues for a focus on interpersonal trust, competence trust, and systems trust (Sundaramurthy 2008). Interpersonal trust is continuously developed by interpersonal relationships between colleagues and among family members (Carney 2005). Competence trust relies on the proven capacity to perform effectively (Mishra 1996), notably due to access to resources (Aronoff and Ward 1996) and prior experience in other companies (Borch and Huse 1993). System trust is impersonal and relies on "the collective characteristics of an administrative organization and top management group which are not reducible to features of individual actors and which ensure some continuity of activities and direction when those actors change" (Sydow 1998, p. 45).

This research addresses a gap in the literature concerning the role of information systems (IS) in the development of trust in family businesses (Eddleston and Morgan 2014). Shi et al. (2015) argue that in a Chinese setting interpersonal trust is predominant while the other dimensions of trust are marginal. Does this conclusion also apply to IS? To address this question, this study conducts and presents an in-depth case study to analyze the role of several IS in the development of trust according to these three dimensions, and their role in the type of information and knowledge exchanged in the organization.

An institutional perspective allows for a social analysis of local practices situated in a larger organizational context (Orlikowski and Barley 2001). Friedland and Alford's

concept of institutional logics provides insights into the organizing principles or "rationalities" which support individual practices (Friedland and Alford 1991). This approach allows for a complex social understanding of organizations that are characterised as institutionally plural. Prior research has shown that IS are not institutionally plural and likely embody a specific institutional logic (Berente and Yoo 2012).

Instead of relying on quantitative measurements to assess the role of IS on trust and information exchanged, which is often considered as a limitation (Julsrud and Krogstad 2020), this exploratory study used a qualitative case study design to give a full account and provide a deeper understanding of this complex phenomena in a real-life context (Dibbern and Heinzl 2009). A manufacturing family business in China, Qingdao Zhangshi, based in Shangdong province was selected. The choice of this company was motivated by trial-and-error experience in implementing ERP and its wide use of social media, and due to its nature as a family business. In this firm, interviews, focus groups and direct observations were conducted (70 pages of transcriptions were generated, including field notes). In terms of methodology, this research is an interpretive field study (Klein and Myers 1999) in accordance with the standards of a qualitative case study methodology (Eisenhardt 1989).

The data analysis led to the identification of three main IS used within the organization, namely WeChat, Ding-Talk, and an ERP (SAP). This study analyzed how eight departments use these IS to gain an understanding of which institutional logic is embedded within each IS. Each IS is conceptualized as being embedded in a specific institutional logic which is not neutral in terms of trust building. The ERP has a specific inherent institutional logic, namely rational managerialism, which contributes to system trust. WeChat is connected with an institutional logic which includes a strong focus on interpersonal communication, cooperation and problem-solving. So, this IS promotes the development of interpersonal trust. DingTalk is associated with another logic which promotes formal information sharing, reliability and internal management, and contributes to the development of competence trust. This study makes two main contributions to the literature on family businesses. First of all, it supports the conceptualization of family businesses as institutionally plural organizations that require different types of trust to respond to sometimes contradictory institutional logics. Secondly, it draws the attention of managers to the role of IS in trust building in family businesses. Indeed, each IS is coherent with an institutional logic and leads to the development of a specific type of trust. Finally, this study contributes to prior research on trust in computer-mediated communication which has employed surveys conducted with student

samples within a specific setting of computer mediated teams by providing a real business case (Cheng et al. 2013). Moreover, it responds to the need for more longitudinal studies based on qualitative data (Riegelsberger et al. 2003).

Theories used to conduct IS research provide insights into how people make sense of technology and integrate it into their work practices (Burton-Jones and Grange 2013; Liang et al. 2015). While IS research impacts the ways in which technological projects are designed and engineered (Strong et al. 2014; Wagner et al. 2010), they also impact how technologies and their interfaces are designed (Bichler et al. 2016; Jones 2014; Leonardi et al. 2012). If the purpose of technologies is to augment rather than replace humans (Brynjolfsson and McAfee 2014), then system engineers must understand the patterns of interaction between humans and technology to develop genuinely intelligent and self-adapting technologies. While the theory of institutional logic has been mentioned in business engineering in a bid to understand the rationales for system design (Skog et al 2018), this article contributes by enabling a discussion on how specific institutional logics are associated with information systems. The sociological insights on user groupthink can contribute to the development of efficient designs of user-centric systems, which is arguably a promising potential for IT-functions (Legner et al. 2017).

This paper is organized into four sections. In the next section, trust is briefly introduced in relation to IS and the institutional approach that guided the analysis is developed. This is followed by a presentation of the methodology and case analysis. It concludes with a discussion of the findings and with theoretical contributions and implications for practitioners.

2 Theoretical Framework

2.1 Information Systems and Trust

Given that technology supports interactions between people, the relation between trust and technology has motivated several researchers to look at virtual teams (e.g., Nolan et al. 2007; Piccoli and Ives 2006; Staples and Zhao 2006), online markets (Pavlou and Dimoka 2006) and online communities (e.g., Nandhakumar and Baskerville 2006; Shin 2010). A common view is that computer-mediated communication reduces the exchange of social information which is instrumental in the development of trust in computer-mediated teams (Wilson et al. 2006). Since these exchanges of social information occur at a different rhythm in a computer-mediated forum than face-to-face, the dynamics of trust building is different (Cheng et al. 2013). In addition, technology-mediated interactions enable a lower level of social control, which is likely to lead to a lower level of interpersonal trust (Rousseau et al. 1998). In addition to studying the relationship between trust and technology, more recent studies have looked at the facilitating role of IS.

IS can enable trust building among users such as in virtual teams (Jarvenpaa et al. 1998; Kanawattanachai and Yoo 2002, 2007), with an e-commerce vendor (Bhattacherjee 2002), and among bloggers (Chai et al. 2011). This research does not focus on the audience, but rather on the type of trust that is developed via different kinds of IS within one company. Indeed, technology and trust have been studied through a variety of perspectives which have often focused on measuring how users develop trust in technology (Thatcher et al. 2011; Hajli et al. 2017; Jarvenpaa et al. 2017). However, this phenomenon is arguably more complex and requires new perspectives (Lankton et al. 2015; Califf et al. 2020).

For example, social media impacts many aspects of business and management, such as customer involvement (Cheng and Shiu 2019), innovation (de Zubielqui and Jones 2020), resource mobilization (Drummond et al. 2018) and trust building (Wang et al. 2020). For instance, based on the hypothesis that social media is generally dominated by weak ties, Wang et al. 2020) have shown that the role of social media for entrepreneurship success depends on entrepreneurs' propensity to trust. Information technologies enable new types of transaction with distant actors, including social media more often than not characterized by weak ties, which raises the issue of how to build trust with people we do not know (McKnight et al. 2002; Sahut et al. 2021).

Strong institutions are incentives for people to behave in a trustworthy way because they provide social sanctions for those who do not (Levi 1996; Rothstein and Stolle 2008). Due to a lower risk associated with trusting others as fair institutions (Nannestad 2008) and democratic institutions (Levi and Stoker 2000) positively moderates trust building. While the role of institutions in the development of trust in inter-organization relationships has been of interest in prior research (Bachmann and Inkpen 2011), the link between institutional logics, IS and interpersonal trust has not been established.

Prior research has shown that enterprise IS are both the carrier and the object of institutional forces (Gosain 2004). For instance, ERP such as SAP seem to embody an inherent institutional logic that can be named managerial rationalism, promoting accountability and control via standardization (Berente and Yoo 2012). But the institutional logic of enterprise IS has not yet been compared to other IS used in organizations, namely social media. So, while prior research has looked at the link between social

media and knowledge sharing (Davison et al. 2018), little is known about which IS is optimal for trust building.

2.2 The Analysis Grid

Predominantly based on the work of Thornton et al. (2008), the analysis grid includes the five dimensions of institutional logics use domain, belief, value, assumption and identity. First of all, the predominance of a specific institutional logic over others depends on the domains in which it can be most applied (Powell and DiMaggio 1991; Jepperson et al. 1991). Secondly, institutional logics embody the beliefs and values of the institution (Thornton et al. 2008; Friedland and Alford 1991; Townley 1997). Thirdly, institutional logics are underpinned by assumptions concerning the causal means-end relationships that are by-and-large taken for granted (Thornton et al. 2008; Friedland and Alford 1991). And finally, institutional logics are a source of identification which contribute to shaping individual identities (Thornton et al. 2008; Friedland and Alford 1991; Jepperson et al. 1991; Townley 1997).

In addition to these five dimensions, two additional dimensions apply especially to the study of information systems, namely, characteristics and memory. he IS can be characterized in terms of open versus closed systems. An open system allows users to interact with other users located outside of the company, whereas closed systems operate locally within the organization with no direct information exchange with the outside world. Open systems are more flexible and allow for inter-organizational connectivity (Malhotra et al. 2007) and knowledge creation (Gosain et al. 2003; Malhotra et al. 2007; Markus et al. 2006). Moreover, open systems do not require partner-specific customization nor arduous technical training (Zhu et al. 2006). Closed systems have the advantage of high managerial efficiency between tightly coupled stakeholders (Clemons et al. 1993). Second, IS also defers in the extent to which they can create organizational memory as they allow for the "acquisition, retention, maintenance, search, and retrieval of information" (Stein and Zwass 1995) which depend on the system's capacity for long-term storage of data.

Finally, two dimensions were added to the analysis grid because they are key to gaining an understanding of trust, namely, transparency and formality. First of all, information transparency can be defined as "a person's perceived willingness to disclose negative information about their job experience to other people so they will learn" (Hwang et al. 2013). Prior studies have associated information transparency with a sense of organizational procedures (Morrison 1993) effective relationship management and high performance (Witt and Burke 2002). Secondly, organizations need knowledge exchange to ensure performance and innovation. Formal and informal knowledge exchanges are supported by different networks and systems (Allen et al. 2007).

If IS choice is not neutral in terms of trust building potential, and knowing that in a Chinese setting interpersonal trust is predominant (Shi et al. 2015), we may wonder which IS are used to build interpersonal, competence and system trust in Chinese family businesses. Drawing on an institutional perspective, this question is investigated more generally from the following angle: to which institutional logics are IS associated and which is more favorable to trust building in Chinese family businesses?

3 Research Method

3.1 Research Methodology

Although some research studies have identified the contribution of IS to establish trust as presented in the literature review section, the subject remains largely unexplored when it comes to understanding the institutional context which generates a difference in their trust building potential, and the use of social medial in this context. Qualitative research is needed to explore and investigate complex and new contexts (Manset et al., 2017). Among the various qualitative methods, the case study approach has proved its efficiency for providing an understanding of the phenomenon in real life settings (Eisenhardt 1989; Yin 2017). According to Yin (2017), a single case study is justified when it is a common case, thus enabling us "to capture the circumstances and conditions of an everyday situation". In this study, we seek to better understand the social processes related to how, in family firms, information systems can help to build different types of trust via the institutional logics embedded therein. We selected a common case that matches this theoretical interest, namely, a family firm which uses several types of information systems. The concept of family firms has been defined in many ways and relies on a different research stream than research on small and medium-sized enterprises (Harms 2014). The field of family business research became an autonomous academic field with the Donnelley foundational work which argued that "a company is considered a family business when it has been closely identified with at least two generations of a family and when this link has had a mutual influence on company policy and on the interests and objectives of the family." (Donnelley 1964, p. 94) Thus, unlike company size, family members' involvement in the business became the specific features of family businesses (Zachary 2011). Indeed, family business "ranges from small mom-and-pop shops to billion-dollar family-owned corporations" (Handler 1989). The selected company has been founded by the

father and is currently run by the two sons. Consequently, it fulfils the criteria of a family business.

This study adopted the case study method proposed by Yin (2017) as a research strategy in order to investigate the research question in depth, based on a research protocol and analysis grid (see Table 1) inspired by the literature review. More precisely, considering that a single case can confirm, challenge or develop theory (Eisenhardt and Graebner 2007), a single case study in the Chinese context was chosen, wherein the culture is inclined towards informal knowledge exchange (Davison et al. 2013). Indeed, the value of the case study approach lies in its ability to consider theory in the context of the rich picture of the organisation studied, including its unique idiosyncrasies (Hoskisson et al. 1999).

3.2 Research Context

A longitudinal case study of Qingdao Zhangshi Corporation, a Chinese manufacturing company founded in 2003 based in Qingdao, Shandong province, was conducted. With more than 600 employees, the company manufactures spare parts for the automobile industry, such as piston rods and shock absorbers. Unlike in the service sectors, manufacturing firms are typically larger in size, so this company fulfills the requirements of a common case. Moreover, since we seek to investigate different types of information systems, a small family business may not have been relevant. The choice of this company was motivated by trial-and-error experience in implementing ERP and its wide use of social media to share knowledge among employees. The first author knows a high-level executive in the company,

thus enabling interviews with executives occupying different functions and from different hierarchical levels.

The activities of the company are managed by two main IS, namely a Manufacturing Execution System (MES) and an ERP. The MES helps create and manage manufacturing processes that cover the whole transformation from raw materials into finished goods. It is mostly used by the production department to organize and optimize production output. The quality department also uses MES to deal with quality test requests, record results, and track back material flow in case of quality defects. The manufacturing department uses MES for resource scheduling and order execution. The logistics department manages the warehouse and inventory with MES. However, the production managers also use the ERP which provides the production schedule. Indeed, the sales department records sales contracts into the ERP and converts them into production orders to be scheduled. The procurement department manages the suppliers and raw material purchases using the ERP. In the same way, the logistics department registers incoming raw material, manages the warehouse and coordinates the material flow with production using the ERP:

> When the warehouse sends goods, these goods are registered in Yonyou. Logistics are partially organized by Yonyou. We check the availability of goods and print delivery sheets from Yonyou. But Yonyou does not include the production chain. To include it, we would have had to upgrade Yonyou, but the cost was higher than the benefits. Consequently, we gave up on the idea of upgrading Yonyou and we implemented MES in 2014 which had more functions than Yonyou (SL1).

Table 1 Analysis grid

Dimension	Definition	References
Use domain	The specific domain in which the logic is the most salient (such as G group work and problem-solving)	Jepperson et al. (1991), Powell and DiMaggio (1991)
Belief	"the belief systems and related practices that predominate in an organizational field' (Scott 2001, p. 139)	Scott (2001), Thornton et al. (2008), Friedland and Alford (1991), Townley (1997)
Value	"institutional sectors […] locate the origins of values"	Thornton et al. (2008), Friedland and Alford (1991), Townley (1997)
Assumption	"embodied in practices, sustained and reproduced by cultural assumptions"	Thornton et al. (2008), Friedland and Alford (1991)
Identity	The sense and collective construction of who we are	Chreim et al. (2020a, b), Thornton et al. (2008), Friedland and Alford (1991), Jepperson et al. (1991), Townley (1997)
Characteristic	Open or closed system	Qu et al. (2015), Gosain et al. (2003), Malhotra et al. (2007), Markus et al. (2006)
Memory	Short term versus long term storage	Stein and Zwass (1995)
Transparency	"willingness to disclose negative information" (Hwang et al. 2013)	Hwang et al. (2013), Morrison (1993), Witt and Burke (2002)
Formality	Informal versus formal knowledge exchange	Allen et al. (2007)

Apart from the formal process management performed by these two IS, social transactions and trust-building interactions seem to follow another map. Indeed, the social setting is fragmented between groups which do not understand each other because of different mindsets and lack of communication, a situation which undermines trust, notably between production and office workers. Interviewees from most departments describe the procurement department as being central within the organization: it has built relationships with more employees from other departments than any other. Thereafter, the production and quality control departments are also very influential because workers of these traditional mechanical units benefit from high consideration from the other departments, although they focus primarily on technical processes and tend not to socialize with employees from other departments. Indeed, as a spare part factory that has developed from a local factory into an international company, most employees are local workers without academic education. Hence, they are much more familiar with traditional departments which have existed since the beginning. In contrast, newer departments such as finance, R&D and IT are rather new, modern and standardized units, which are less well understood by the rest of the company.

Despite this lack of interaction between its departments, the company could generate a common vision and uniform strategy thanks to embedded relationships between departments. These are traditionally maintained through informal interpersonal interactions between staff and managers. According to interviewees, many processes were not managed by the MES and the ERP, thus creating a void where social media platform WeChat began to be used for management purposes. As the company grew, the CEO sought to make their services and structure more scalable and normalized by applying another social media platform, namely DingTalk, to optimize social media use.

The smart terminal WeChat was created by Tencent in 2011 with instant messaging services as its main functionality, thus enabling users to quickly send free text and voice messages, videos, and pictures. In addition to supporting cross-communication operators and cross-operating system platforms, WeChat added new functionalities, such as shopping, gaming, and banking. It is now the most popular social media platform in China, with over one billion monthly active users.

DingTalk was created by Alibaba in 2014 to help companies to improve their management and internal collaboration. Including mobile phone, computer, telecommunication, and decision-assistance technologies, this platform supports organizational communication, coordination and decision-making. Akin to WeChat, DingTalk has a chatting platform for internal communication via telephone, SMS and voice messages. Unlike WeChat and similar to WhatsApp, users can check whether their messages have been read. DingTalk's main difference from other platforms is the fact that it integrates numerous management features, including administrative approval and work logs (http://www.dingtalk.com/).

3.3 Data Collection and Analysis

We developed a semi-structured interview protocol (see Appendix; available online via http://link.springer.com) to guide our interviews, covering the following topic areas: what IS are used and in which contexts, IS adoption, why certain IS are used in preference to others, the purpose of use, impact of use on work. We interviewed 16 people ranging from senior managers to warehouse staff, either individually or in small groups. Interviews lasting between 14 and 55 min were recorded (with the interviewee's permission) and later transcribed. These interviews took place in 2019 and were conducted in Chinese by the first author of this paper, transcribed, and finally translated into English. The selection of respondents relied on theoretical sampling rather than statistical sampling as per case study principles (Glaser and Strauss 2017) to address theoretical categories rather than replicating previous cases. We selected respondents on the basis of their ability to give us valuable understanding on concepts relevant to the emerging theory or additional insight into relationships among concepts (Eisenhardt and Graebner 2007).

The first author of this paper also engaged in direct observation to understand the organizational structure of the company. In addition, in order to generate a plurality of perspectives toward triangulation (Yin 2017), interviewees were selected from different hierarchical positions and functions such as procurement, production, sales and logistics (Table 2).

Data analysis was conducted manually using an analysis protocol adapted from the Gioia methodology (Gioia et al. 2013) in four steps:

1. First of all, we carried out an initial content analysis of the semi-structured interviews in order to verify the relevance of the first version of our analysis grid, which included the five dimensions of institutional logics: use domain, belief, value, assumption, and identity. These themes were predicted by our review of the literature and were included in the interview guidelines. However, other themes were not predicted by the literature, such as the inclination of some interviewees to discuss issues related to open systems and memory.

    This analysis enabled us to identify four emerging themes: characteristics, memory, transparency, and formality.

Table 2 Interviews, focus group and observations

| Code	Department	Title	Gender	Entry Year	Data type	Duration (in min)	Transcript page nb
IT1	IT	IT Manager	Female	2014	Interview 1	24	10
PD1	Production	Planning Director	Female	2018	Interview 2	14	5
SL1	Sales	Sales Manager	Female	2009	Interview 3	55	5
PD2	Production	Production Manager	Female	2013	Interview 4	19	8
PD3	Production	Raw Material and Machine Supervisor	Male	2013	Focus group 1	31	11
PD4	Production	Grinder	Male	2005	Focus group 1	31	11
PD5	Production	Heat Treatment Worker	Female	2018	Focus group 1	31	11
QL1	Quality	Quality Manager	Male	2017	Focus group 2	17	5
QL2	Quality	Quality Director	Female	2017	Focus group 2	17	5
PC1	Procurement	Procurement Manager	Female	2010	Interview 5	20	12
SL2	Sales	Customer Quality Engineer	Male	2018	Focus group 3	18	7
SL3	Sales	International Order Manager	Female	2018	Focus group 3	18	7
SL4	Logistics	Shipping Planner	Female	2014	Focus group 3	18	7
HR1	HR	HR Specialist	Male	2017	Interview 6	16	6
CEO	General director	CEO	Male	2003	Interview 7	32	11
WR1	Logistics	Warehouse Charger	Male	2018	Interview 8	10	3
FN	Detailed visit of the production line, logistic platform, offices and warehouse				Observations	**300**	1
8 interviews	8 departments	All hierarchical levels	9 women and 7 men	Experience of various durations		6 h 11 min	
3 focus groups (8 people)							
1 observation							

2. In a second step, we replicated the above with the focus groups in order to verify that these four new emerging themes were also present therein. This enabled us to add these themes to our analysis grid.

3. The coding of all the interviews and focus groups was then carried out using our analysis grid (Strauss and Corbin 1998).

4. The last step consisted of categorizing the verbatims to identify thematic patterns. Indeed, categorization consisted of grouping the data into categories and then into themes, by making connections in order to reassemble the data and bring out its deeper meaning. Finally, the categories were also reassembled to form global themes. It should be noted that for each of these actions, the analysis led to a higher level of abstraction, in order to gain height in the analysis. The result of this step is set out in Table 4.

The following section is dedicated to the case analysis, in which the case study results are briefly presented in line with the data coding used, and the analysis grid is used as a lens through which to investigate the use of information for trust in the case study, then their contribution to trust building is systematically compared (Fig. 1).

4 Case Study Analysis

4.1 The Development of IS Use

The company can be described as a family business: the four chief managers are the father and his three sons who share the main responsibilities. The first is mainly responsible for the sales and marketing department and in charge of large purchases such as machines and material. The second is responsible for the financial department and
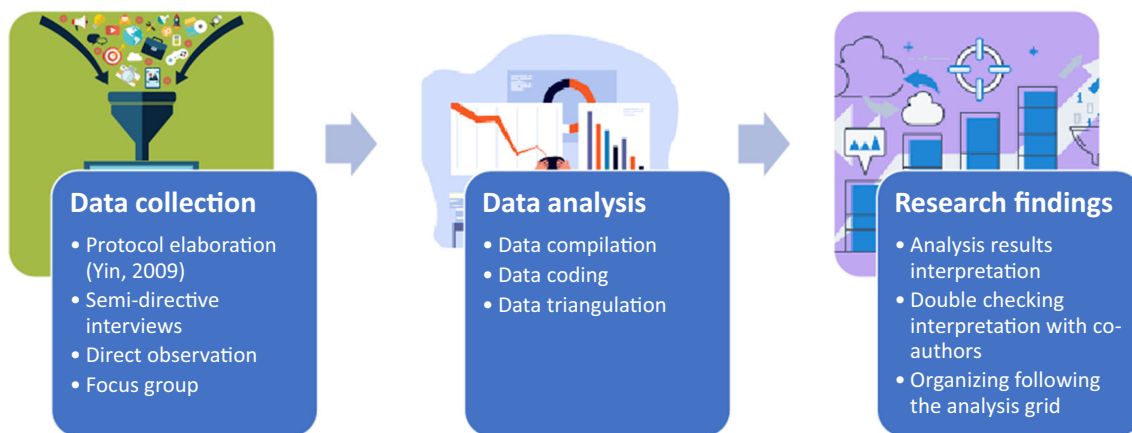
Fig. 1 Flow of research and process

also for the purchase of certain types of machines. The third is in charge of the development department and of daily purchasing, which sometimes includes machines. The operations department and the procurement department are jointly managed by all four.

This fragmented social setting illustrates the lack of mutual understanding and recognition between different departments. For instance, all departments are unaware that the trade department must frequently communicate with the government in order to optimize the business. Despite the lack of interaction between its departments, the company could generate a common vision and uniform strategy through embedded relationships between departments. Especially in rapidly developing small and medium-sized family businesses, such embedded relationships are very important. They are traditionally maintained through informal interpersonal interactions between staff and managers. These interactions occur during informal meetings and dinners.

As the company has expanded, the CEO has sought to make their services and structure more scalable and normalized by implementing an ERP to optimize resources. The implementation of Yonyou enabled Business Process Reengineering (BPR) of 4 processes: production, logistics, purchasing and sales. But Yonyou encountered resistance, and many business processes are not managed by the MES: "*the workers are really against it, we encountered immense resistance. We wanted to push it, but the workers resisted*" (CEO). This situation created a void where social media platforms such as WeChat were used for management purposes. After the partial failures of YonYou, a tailored Manufacturing Executive System (MES) was implemented in 2014 and generated positive outcomes, especially for the production department. In this context, with two different IS which only partially satisfied the requirements, WeChat emerged as a productive tool to ensure information exchange within and outside of

organizational boundaries. In order to professionalize the use of social media in the company, and ensure long-term storage of shared information, the CEO implemented the corporate social media platform DingTalk:

> One of the features of DingTalk is to make records of all messages sent. Additionally, DingTalk is developed by Jack Ma's Alibaba, they have developed a lot of technologies, all free. Some tasks, for example asking for leave, attendance, clocking in, we all do them on DingTalk. And there are many accounting plugins on DingTalk you can use for free (CEO).

DingTalk is thus promoted by the CEO with the intent to gradually replace WeChat. As a corporate tool, it enables a clear separation between private and professional life, but this transition is resisted by employees:

> If I use WeChat to communicate during office time, you wouldn't know if I am communicating or playing games or reading the news, so I don't recommend using WeChat particularly. I would recommend using DingTalk for pure work communication. But the current situation is that WeChat has a pretty large user base, and you cannot change that fact in a short time (HR1).

As a result, the three IS are now used virtually in all departments in different ways. Table 3 provides an overview of the difference in use within the company.

4.2 Trust Building and IS

Three main IS have been identified in the organization, namely WeChat, DingTalk, and the ERP. Each of these IS is associated with a specific institutional logic. This study has analyzed how eight departments use these IS to understand which institutional logic is embedded within each IS. The data suggest that each of these three logics is

Table 3 IS use difference across departments

	WeChat	DingTalk	ERP
Trade	One-to-one communication with customers. Create working groups with the quality departments of both sides for specific projects	Submit expense request to GM Working groups with internal colleagues	MES for orders to production departments. Tracking products to be delivered. Communication with warehouse
Finance	Communication among internal working groups with all department heads	Payment application	MES to calculate the variable salary. Yonyou for invoicing and tax payment
Warehouse	Communication among production, quality and sales to know why goods are not ready	Register office hours and share important info	Core system to manage the stock. If a problem arises, we meet or call
HR	Coordinate recruitment with new recruits, recruitment agencies, and governmental office	Check employees' work time (daily working hours, leave, holidays). Request expenses	No
Production	Working groups at team level (organize shifts, coordinate orders, function as a group, because MES is for individuals) and team management level	Communicate important issues and share documents while making sure everyone reads the notification	Central in the tracking and recording of the whole production process
Procurement	One-to-one communication with suppliers	Receive internal purchase request for commodities	Register the goods purchased
Quality	Ad-hoc working groups for each quality issue	Share formal report concerning quality issues	Track raw material and identify an eventual flaw in the manufacturing process
Management General	Working groups with each department. Numerous one-to-one contacts with external stakeholders	Acknowledge expense request, leave request	No

specific in terms of the eight dimensions identified in the theoretical framework. The institutional logics determine the choice of IS used within the organization. In this family business, several institutional logics are present. Consequently, several IS are simultaneously used in coherence with the type of trust embedded in the IS and the type of information valued as per the predominant institutional logic and which type of sharing is enabled by the IS. Thus, the three IS can be described as being institutionally and informationally complementary.

The present findings reveal how Chinese executives use specific IS to develop trust. The ERP has a specific inherent institutional logic, namely the logic of rational managerialism (Berente and Yoo 2012), which contributes to system trust. Social media platforms such as WeChat and Ding-Talk are embedded in their own institutional logic, which makes them more adapted to specific activities. Unlike rational managerialism, the institutional logic associated with WeChat includes a strong focus on interpersonal communication and enables specific stakeholders to gather spontaneously in ad-hoc groups:

"We create WeChat groups when we have quality issues, to discuss new projects, and groups with the sales team. If it's a quality issue, we will have four types of people, the sales and quality manager from our side, and the purchase and quality manager from

the other side. When we create a group for a new project, then four types of people will attend, the sales, the quality manager, engineers, production, and the general manager" (SL1).

WeChat thus enhances cooperation and problem-solving as people "can see from beginning to end what the issue is, what happened, what has been done, and what is the final conclusion" (SL1). WeChat is associated with the development of interpersonal trust whereas rational managerialism is rather associated with transparence and formality, thus unsuitable for the development of interpersonal trust. Chinese executives need WeChat to create an informal and dynamic social space which promotes the development of stronger social ties with each other. Indeed, thanks to WeChat, executives "can talk about something unrelated to work and develop emotional connections" (Sales focus group).

DingTalk is associated with another logic which promotes formal information sharing, reliability and internal management. Indeed, DingTalk provides more control over information delivery and thus conveys a sense of managerial efficiency:

"DingTalk is more efficient, because if you make an announcement on WeChat, only 1/3 of the people will read it, but if you send it on DingTalk, everybody will read. Because DingTalk shows which message

has been read by whom and who hasn't read it" (Production focus group).

This IS contributes to the development of another type of trust, namely competence trust. In the words of the CEO, with DingTalk, "*You have to follow the standard procedures. Everything is transparent. If you did something wrong, people will know who did it wrong*" (CEO). The two social media platforms contribute to sustaining interpersonal trust and competence-based trust which are critical in the development stage of family businesses. Findings also show that family members need to create a forum in which they are not present for employees to exchange freely, thus creating a space in which trust can thrive. Indeed, the presence of family members will impede critical thinking, necessary for group problem-solving. According to one senior family member, if he is in a group, members will never "*curse their boss. There are many workshop groups I'm not in. If I'm there they won't say anything. They kicked me out!*" (CEO). Depending on the type of trust, the type of information shared among people differs in terms of expression (tacit versus explicit) and style (formal versus informal):

> "In DingTalk, we usually use fewer bigger groups within our department and with all other departments in which we only share formal content: order, price, contracts, calculations and customer responses" (SL2).

The simultaneous use of several IS is necessary to develop the different types of trust and optimize information sharing within the company. Among the IS used in this family business, some are internal systems such as ERP, and some are external and thus not centrally controlled, such as WeChat. As a result, the complementarity of the external IS is essential for the efficiency of internal IS. It is thus illusory to believe that adding functionalities to internal IS is enough to make them self-sufficient and to make employees shift from external to internal IS. Finally, overinvestment in internal IS which forces stakeholder to use these instead of external IS is detrimental to trust building within an institutionally plural organization (Table 4).

5 Discussion

5.1 IS-Mediated Trust in Family Businesses

Family businesses are described as "high trust" organizations in which interpersonal trust is especially important (Corbetta and Salvato 2004), particularly in the early stages of development (Sundaramurthy 2008). This study

indicates how interpersonal trust is important beyond the early stages as it is key for dynamic problem-solving amongst employees. Moreover, in addition to interpersonal trust, competence trust and system trust are also equally important, as they have strong implications in terms of transparent information sharing and productivity. Prior research has underlined the importance of kinship, familiarity, shared identity, rituals and history to boost interpersonal trust in the family business (Carney 2005; Lane and Bachmann 1998; Steward 2003). This study indicates that the presence of a social media platform such as WeChat is also instrumental in the development of interpersonal trust beyond the family cluster. In this case, unlike in prior studies (McKnight et al. 2002; Wang et al. 2020), social media are not dominated by weak ties, and can thus contribute to the development of interpersonal trust. In the common case studied here, employees are continuously involved in both face-to-face, computer-mediated, and mobile communication, as they use a diversity of IS to work together. This is not taken in consideration in prior research on trust development in the computer-mediated communication literature (Cheng et al. 2013; Riegelsberger et al. 2003), even though findings incorporating this factor necessarily provide a better understanding of distributed teams (Wilson et al. 2006). Thus, even though prior research on trust in computer-mediated environments studied trust in online communities (Nolan et al. 2007) and teams (Cheng et al. 2013) according to other dimensions (risk, benefit, utility value, interest, effort, and power), these dimensions interestingly did not emerge from the data.

Competence trust is typically enhanced by bringing outsiders into the family business. These outsiders bring new expertise (Aronoff and Ward 1996), information and a new creative impulse (Lane et al. 2006), but also access to key external relationships (Borch and Huse 1993). This research contributes by showing that competence trust can also be developed by the implementation of a corporate social media platform such as DingTalk that enhances transparency and reliability within the organization. Sundaramurthy (2008) suggested that it is especially important to develop competence trust when the family business expands. Indeed, in the early stage, family businesses may not have the means to acquire high level professionals from the outside, but this study suggests that using IS for this purpose may be an inexpensive way to create the institutional basis for competence trust to develop. Figure 2 provides an overview of our theoretical model for developing trust in family firms through information systems.

Traditions together with formal and transparent rules can contribute to the development of system trust (Sydow 1998). Indeed, successful family businesses are complex organizations that require preventing conflictual issues to

Table 4 Institutional logics: IS are identified differently by users

Dimension	WeChat	DingTalk	ERP
Characteristic	Open	Closed	Closed
Memory	Short-term	Archived	Archived
Company use	Group work and problem-solving	Internal formal information sharing	Performance and productivity
Belief	We need WeChat to function as a group	Social media for organization	Process optimization
Value	Informal and dynamic	Transparency and reliability	Synchronization and just-in-time
Assumption	Trust and friendship	Management	Accountability and reliability
Identity	Most common communication tool	Legitimacy in the workplace	Production tracking
Domain	Interpersonal communication	Internal communication	Production system
Transparency	Low	High	Very high
Formality	Low	High	Very high
Trust	Interpersonal	Competence	System
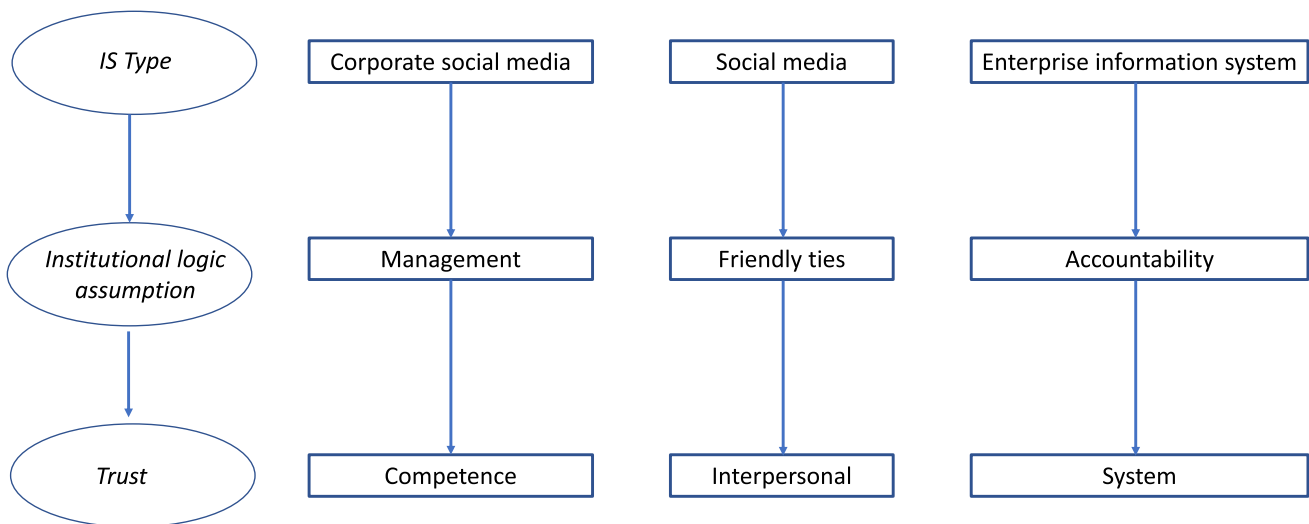
Fig. 2 Proposed theoretical model

develop (Ward 2004). Prior research has underlined the importance of "family constitutions" to reduce the power and obligations of family members (Jurinski and Zwick 2001), but this study indicates that ERP can be used to develop system trust by establishing transparent processes that include the accountability line, and clear rules which optimize productivity and reduce disputes. In the following section, we explore extent to which theory can guide design and engineering, and more specifically, how information systems can be engineered to embed a certain type of institutional logic.

5.2 Implications for Information System Design and Engineering

According to this case study, system engineers can exert some control over the type of trust the system helps to build by designing specific system properties and functionalities. For instance, the open versus closed system property and capacity for long-term data storage property are associated with the development of interpersonal trust. Therefore, this property can be integrated in the technical design of a system designed for this purpose. In the meantime, a system with these properties can be selected by organizations prior to technology implementation. Nevertheless, being highly capable in this technological analysis of system properties, system engineers can make choices concerning the type of trust required by their clients. However, this choice is constrained by the very purpose of the system. Finally, organizations simultaneously require trust in interpersonal exchanges, internal competences and the information system in order to satisfy diverse groups with specific sub-cultural needs (Lissillour and Wang 2021). Therefore, it is key for system engineers to deliver systems

that facilitate the development of each of these types of trust.

In addition to the fact that openness and long-term data storage can be added to a system to help develop interpersonal trust, another concrete implication for systems engineering concerns the requirements elicitation phase for shaping information systems design. During this phase, designers seek, uncover, acquire and elaborate requirements which are elicited and emerging, rather than merely captured and collected. The literature covers many techniques and approaches such as interviews, groupwork, brainstorming, ethnography, and prototyping, which are used for requirements elicitation (Zowghi and Coulin 2005) and address broad or specific issue areas such as security (Matulevičius et al. 2018) and trustworthiness (Amaral et al. 2021). In practice, the technique is selected by system engineers because of personal preferences or because it is prescribed by the official methodology (Hickey and Davis 2003). In both case, institutional constraints influence the selection, which is likely to be in line with the institutional logic of the system engineers. The findings of this paper invite system engineers to adopt a reflexive approach to their work and examine their potential biases in the way they collect and analyze data during the requirements elicitation phase.

In addition to the necessity for more reflexivity on the part of system engineers, institutional logic based analyses enable a deeper sociological insight into the social context within which the system will be designed. As there is a need for the development of more situational requirements elicitation methods, addressing exogenous and endogenous factors of specific application and usage situation, applying the institutional logic perspective thus contributes to prior research (Amaral et al. 2021) by providing an additional analytical lens which enables system engineers to grasp the distinctive institutional constraints imposed on the different groups of stakeholders. This paper thus responds to a call for further research on information requirements elicitation (Bichler and Bhattacharya 2011).

6 Conclusion

This study analyzed how eight departments use three different IS (ERP, WeChat, and DingTalk) to understand which institutional logic is embedded within each IS. Each IS is conceptualized as being embedded in a specific institutional logic which is not neutral in terms of trust building. This particular study provides two main insights to the literature on family businesses. First, it contributes to the existing literature on social media and trust by showing that different social media are used within the company, that each is supported by a distinct institutional logic which

has specific implications in terms of trust. The findings allow the conceptualization of family businesses as institutionally plural organizations that require different types of trust to respond to sometimes contradictory institutional logics. It also provides insight to the BISE literature in which the use of social media is more often studied outside of the organization than within it (Agarwal et al. 2012).

Secondly, it draws the attention of managers to the role of IS for trust building in family businesses. Indeed, each IS is coherent with an institutional logic and leads to the development of a specific type of trust. This study has extended the existing knowledge in the field of trust building, by providing evidence from a hybrid organization in China. Sociological insights into user groupthink can contribute to the development of effective user-centered system design, which is arguably the way forward for developing IT functions (Legner et al. 2017).

However, the present analysis has limits that are likely to guide future research. This exploratory research was designed as a single case study and therefore includes limitations, but future research may use quantitative data to measure the relationship between institutional logic and trust. Moreover, the data were all obtained from a single Chinese company. Future studies may compare this experience with social media use for trust building on a broader scale in other countries to test the generality of the findings in other national and cultural contexts. Scholars may also look at the role of strategic alignment (Lissillour et al. 2020) in trust building in an institutionally plural environment with a diversity of IS used simultaneously. Since the use of these three types of IS is not limited to family businesses, their contribution to the development of interpersonal trust, competence trust and system trust may be more general, therefore future studies may compare the results of this article with non-family businesses to explore whether this phenomenon is specific to companies owned by one family or not.

Trust building in China may be connected to the notion of Guanxi (Ou et al. 2014). Guanxi can be understood as "the existence of direct particularistic ties between two or more individuals" (Tsui and Farh 1997). It can be generated by means of an exchange of favors between people and results in mutual interdependence that is typical of Chinese managers whose cultural preferences lean toward particularism, strong collectivism and high-power preference. Future studies could look at the connection between Guanxi and social media use in organizations, both in China and abroad. The rise of social media within the organization can give rise to power struggles (Heizmann 2011). Since power is an influencing factor of computer-mediated trust development (Cheng et al. 2013), an analysis based on a practice perspective (Monod et al. 2022) may provide a sociological understanding of the sources of

influence and the stakes that lead to sustaining or altering pre-existing power relations and to the relative exclusion of stakeholders (Lissillour and Sahut 2022).

Trust in family business also has a dark side that can generate opportunism, complacency and blind faith (Eddleston and Kidwell 2012; Kidwell et al. 2012; Zahra et al. 2006). How does this dark side materialize in IS? Can IS help prevent these behaviors? What destructive consequences can trust have on IS use? Answers to these questions would contribute to and enhance our understanding of the role of IS for trust in family business settings.

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