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## Digital work in a digitally challenged organization

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### ABSTRACT

Digitally literate employees are accustomed to having free access to digital media technologies. However, some organizations enact information technology (IT) governance structures that explicitly proscribe access to these technologies, resulting in considerable tension between employees and the organization. We explore these tensions in an exploratory investigation into the Chinese operations of a global hotel chain. We examine how employees creatively act as bricoleurs as they violate IT policies to ensure access to the digital media of their choice. We discuss the broader implications of our findings for practicing managers, as well as future research opportunities, before concluding the paper.

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### 1. Introduction

In the past decade, we have seen the ascendance of digital organizations, transforming their infrastructure and processes by leveraging digital technologies in order to deliver high-quality digital services to employees and customers alike [7,56,66]. These newly digital organizations empower employees who are already digitally literate, engaging with digital technologies on a regular basis in their working lives [66]. However, not all digitally literate employees work in a digitally liberated environment. Instead, they may experience significant barriers that hinder their digital engagement. One key barrier, which is largely invisible to those unaffected by it, is the information technology (IT) governance structure that constitutes the organization's formal position toward technology. While some organizations have devised IT governance structures that appear to welcome digital technologies with open arms [7], others are more reticent [28] or even reactionary. As Arvidsson et al. [3] suggest, if organizations are mired in, yet blind to the existence of, a quag of outdated patterns of work and control, they are unlikely to realize how they can take advantage of available opportunities within the sociotechnical system. In these kinds of organizations, characterized by control-based information system (IS) legacy structures and inflexible cognitive schemes, there is heightened potential for tensions with the irreconcilable demands of a digitally literate workforce [10,66].

Prior research into the implementation of IT has largely focused on voluntary adoption by individuals in organizations [58], including the extent to which the technology supports specific work tasks [34,40]. This operational application of IT is mirrored by a focus on an IT strategy that is functionally aligned with but 'essentially subordinate to business strategy' [7]; cf. [36]. Consistent with Arvidsson et al. [3] and Zuboff [66], the context of many previous studies has involved organizations wedded to work routines that barely acknowledge the transformative potential of digital technologies. However, little research has been conducted into the tensions created when organizational IT policy proscribes digitally literate employees from adopting the social technologies that they need to work. In principle, these tensions can be resolved if organizations are prepared to dump their strategic blindness [3] and change their IT governance structures. In the absence of such change, digitally literate employees are likely to develop their own solutions, working around policies [2,27] by adaptively structuring whatever resources are available DeSanctis and Poole, 1995 in an environment rich in both social and technical opportunities [9,39], in the spirit of bricolage [46].

Prompted by the absence of literature in the interplay between digitally literate employees and conservative IT governance structures, our research question is: How do digitally literate employees cope with the tensions that arise when they work in an organization characterized by a conservative IT governance structure? One such digitally challenged organization is Dingle, a European hotel management company. Although Dingle's brand is positively recognized by travellers globally, it is a conservative organization in terms of the deployment of technology. For instance, email is the organizationally sanctioned tool for both

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internal and external communication. Access to social media applications is not permitted. All Internet traffic is routed via a proxy server that functions as a filter, blocking access to selected websites deemed inappropriate by the architects of the IT policy. Further, the Internet bandwidth provided to the hotel back offices, where employees' work is very limited, seldom exceeds 2 mbps. The conservatism is thus consistent with the strategic blindness to which Arvidsson et al. [3] refer.

There is an abundance of theoretical perspectives on how organizations can successfully 'go digital' (e.g., [50,56]). However, there is a lacuna of theory when it comes to explaining how employees cope with the tensions that result when organizations refuse to 'go digital'. Interpreting Zuboff [66], Burton-Jones [10] suggests that digitally literate employees may become more knowledgeable than their managers about the role of technology in organizational processes. This shift in knowledge also has the potential to shift power away from managers. Consequently, managers may feel vulnerable or threatened by this new technology and take steps to reinforce their authority by restricting digitally literate employees from accessing the technology's informing potential. However, even if employees are successfully barred from accessing the technology through legitimate, internal channels, they may simply work around corporate barriers and use illegitimate, external channels to ensure access to the technology [2,43].

New, bold theoretical perspectives are needed to enhance our understanding of these phenomena (cf. [35]). Several existing theories, notably sociotechnical theory (STT) and adaptive structuration theory (AST), are relevant to this endeavour, given that digitally literate employees must reconcile social and technical constraints and affordances in order to engage in an adaptive structuration of the system as they meet both social and workplace demands. In this study, we address both the theoretical gaps in the literature and the practical solutions that employees devise as they work around corporate obstructions to digital work.

Following this introduction, we succinctly review digital work, digital literacy and digital organizations, as well as the literature on organizational culture. Next, we develop a theoretical perspective to explain how digitally literate employees may encounter and cope with tensions present in the social (organizational) environment. Following a presentation of our research methods, we present a detailed case description, informed by the prior theoretical work, in which we highlight specific instances of tensions that we observed between the various digital actors. Following the case, we discuss the implications of our findings for research and practice and identify future research directions before concluding.

## 2. Literature review

### 2.1. Digital work and literacy

Digital work is a very broad term that covers a variety of technology-centric work practices. Fuchs and Sevignani ([30], p. 255) suggest that digital work requires organizing 'human experiences with the help of the human brain, digital media and speech in such a way that new products are created'. These new products vary widely in scope and include information in online repositories, new social relationships, services provided to customers and even new social systems. Engaging in digital work requires employees to be digitally literate. Eshet-Alkalai [25] developed a conceptual framework of digital literacy that encompassed multiple complementary skills. He further observed that 'Digital literacy involves more than the mere ability to use software or operate a digital device; it includes a large variety of complex cognitive, motor, sociological and emotional skills' (ibid.,

p.93). People who are digitally literate and perform digital work may work in a variety of organizational settings. The process of strategic digitization is inexorably, if slowly, continuing [7]. However, many organizations appear to be stuck in a predigital torpor. They fail to accept that the digital era has arrived, remain rooted in predigital organizational strategies and practices and consequently prioritize maintenance of the orthodoxy at any cost, thereby eliminating the possibility of digitally inspired change [3,10,66]. Although this predigital status quo may appear reactionary, it is a dominant organizational narrative. Shifting it requires paradigm change both among senior managers and among the community of researchers who study organizations.

### 2.2. Digital organizations and strategies

Since the turn of the century, the technical infrastructure of organizations has increasingly taken on a digital hue, even though the managerial thinking often has yet to catch up. There are increasingly more connections between people, products, processes, daily routines and services, all of which are immersed in digital technology to the extent that they are inseparable [7,50]. Further, digital technologies are increasingly embedded into products and services, which are very hard to 'disentangle . . . from their underlying IT infrastructures' [7]. Thus, a fundamental transformation of organizations is slowly taking place, with a complete overhaul of thinking about how business is done and value is created [23]. Even though strategic thinking in organizations may be mired in a predigital mindset, with IT relegated to playing a subordinate role, there is the opportunity for change, with IT contributing the strategic potential to lead organizations [7].

A new job title has been created for the senior executive charged with leveraging the digital opportunities in organizations: the chief digital officer (CDO), also known as the 'Transformer in Chief, given the need for transformation across the organization' [54]. Given the central role of digital technologies in digital organizations, the CDO must be actively involved in corporate strategic planning, exploring how digital technology can create value [62]. Much of this value creation will emanate from the cross-functional nature of digital technology applications, although new sociotechnical infrastructures cannot simply emerge *ab initio*; instead, they must 'wrestle with the inertia of the installed base' including the dominant silo-oriented thinking [15].

For instance, in the context of hotels, digital technologies may provide the opportunity to engage with guests through new social media channels, ensuring that they participate in a compelling experience, contributing content that drives future innovations. It is not just a matter of the hotel 'remembering' what kind of pillow guests like, but actively engaging with them on all aspects of the guest experience. This experience is cross-functional and will potentially incorporate aspects of marketing, customer service, logistics and operations. Further, the experience can also exist across hardware and software platforms: guests may prefer to interact via a personal computer (PC), tablet or mobile device and using email, instant messenger (e.g., Skype, WeChat, or Twitter) or other social media (e.g. Facebook, Kaixin, Weibo, Instagram, Tsu, or VK) [23].

However, a critical antecedent of these digital opportunities and the associated newly created value is the investment of both sufficient resources in a digital infrastructure [62] and the adoption of a new style of managerial thinking [3]. Only when both the digital mindset and the digital infrastructure are in place will the organization be competent to analyse the substantial data generated from customer transactions and leverage findings to create and manage new products and services. McKinsey's [8] research suggests that significant increases in customer

satisfaction and decreases in costs can be achieved when customer care is digitized through social media. However, an effective digital customer care service strategy is required. This needs both to be linked to broader digital initiatives at the corporate level and to incorporate elements of localized customization, that is, responding to local customers in a local context [56].

### 2.3. Organizational culture

Digital workers are inevitably constrained or empowered by the norms of the organizational culture within which they work, particularly as it relates to IT governance, and the affordances of the IT resources that they can access (cf. [3]). Cui and Hu [16] usefully classify organizational culture into five dimensions, two of which are particularly relevant in our context, that is, shared values (e.g., [11]) and behavioural norms (e.g. [45]). These echo Denison's [20] recognition that organizational effectiveness in part depends on a consistent or clearly defined culture. [41] also appreciated the link between performance and a strong culture that fits the organizational environment, yet which is also open to change, enabling the organization to adapt to circumstances. Truex et al. [57] also suggest that technological change is exerting considerable pressure on organizations that can no longer remain in a stable state for long periods of time, instead needing to adapt continuously to environments that are themselves in a state of flux.

Organizational culture is also recognized as helping shape the success of IS-related outcomes, notably the way social groups interact with IT [44]. For instance, Choi et al. [12] describe how Samsung implemented a knowledge management system (KMS) that incorporated both formal and informal elements, with opportunities for employees to engage in knowledge sharing through social media channels. In a similar vein, Davison et al. [19] noted the strong employee preference for informal social media tools when engaging in knowledge sharing in Chinese public relations (PR) firms; formal channels were barely utilized at all. In both of these cases, the organizational cultural values supported the adoption of social media as a communication channel that would facilitate employee interactivity (cf. [37]).

The interplay between IT and organizational culture can exert significant impacts on organizational performance. However, translating these impacts at the level of the individual employee is challenging, as employees may not subscribe or conform to the values and norms espoused by the architects of corporate policy [3]. This situation is exacerbated in global firms that try to impose a single set of transnational norms on a multitude of local practices, thus ignoring the imperative to localize [56]. Indeed, Vodanovich et al. [59] note that there is a tendency for the more conservative organizations simply to block access to the digital media most favoured by digitally literate employees. This decision appears to be motivated both by cultural norms and by entirely legitimate security fears, as social media are known to be a loophole for phishing attacks [38]. However, simply blocking access to specific social media is likely to be both ineffective and counterproductive: it removes the opportunity to innovate and collaborate [59]. It also subverts a key aspect of what it is to be human [30]: to play a social role, to create value for society. Telling digitally literate employees to abandon their social media and revert to email or telephones is akin to telling a 21st-century farmer to abandon his mechanized harrows and rake the fields by hand.

### 3. Theoretical development

AST [21], itself derived from the structuration theory [32,33], focuses on the production and reproduction of social systems through members' use of rules and resources in interaction. Eschewing a technocentric view of technology usage, AST

highlights the social aspects of technologies and the role of technology in changing organizing structures. AST provides two vantage points to examine organizational change: it enables the examination of both the technology structure and the structure that emerges from the interaction between users and technology. The autopoietic interaction between the two types of structure is referred to as the structuration process. A central element in AST is the 'spirit' of the technology. Spirit should be understood as 'the general intent with regards to values and goals underlying a given set of structural features' [21]; p.126). Spirit is important because it is a property of the technology, as presented to users. For this reason, spirit may 'contribute to processes of domination . . . [and so] privilege some users . . . over others' (ibid.). We suggest that AST is complementary with STT [9] given the mutual influence and fit between the technical system and the social system. In STT, the technical systems include the devices, tools, tasks and techniques that are used to process data and information in order to enhance organizational performance. Conversely, the social systems comprise the employees, the organization and its culture, structure and environment, as well as the rules and regulations that govern the organization in society. The spirit of the technology will influence the relations between the social and technical systems. However, if this spirit is too deeply rooted in a managerial orthodoxy that opposes technology-driven change, then there is a risk that employees will directly oppose that spirit and act in ways that undermine it.

Bearing in mind the principles of AST and STT, we note that digitally literate employees inhabit a complex organizational environment. This environment, which contains both social and technological elements, will incorporate attitudes toward technology and change that are more or less supportive or repressive. Technology may thus have a spirit that either supports digitization of the enterprise or is more control oriented, allowing employees little discretion in the way they act. Technology here is no more than one aspect of the organizational culture, which itself may reflect both local and global norms. Hence, a multinational organization may attempt to impose a single global culture on workplace operations in all locations, even though the tenets of this culture are inappropriate in some locations. Unsurprisingly, both the general working environment and the IT governance structure can vary considerably across organizations.

Tensions may develop given the socially normative expectations of digitally literate employees if they experience limited access to technology in the workplace. If the distance between employee expectations and organizational policy is too large, then these tensions may be irreconcilable, and as a result some employees may seek to find ways to work around any organizational restrictions [2,27]. This is likely to involve adaptive structuration [21] in a spirit of bricolage [26,46], rather than a spirit of conformance to the norms of IT governance. The precise mechanisms that digitally literate employees develop will vary according to the infinite variety of circumstances that they may encounter [22]. However, they can be expected to explore whatever technology options are available in a problem-driven fashion [24], creating flexible if temporary solutions to ensure they can complete their work, and additional critical ancillary activities, effectively [55]. If the IT governance structure prohibits these activities, then they will have to be undertaken covertly. The repeated need to engage in the adaptive structuration of technology is likely to enhance the resilience of digitally literate employees (Duymedjian and Rüling, 2010). It will also confirm the coherence of their identities, validating their capability to overcome crisis situations by creating personal ISs feral to yet compatible with the organizationally approved ecosystem. These technologies in use [51] are explicitly designed for local contexts, reflecting the bricoleur's resistance against unreasonable external

pressure, incorporating intimate knowledge about what works and when, with self-efficacy [4] that ensures sustained success as the ultimate objective. In the longer term, these personal but feral work arrangements may always remain as shadow systems [13], unless they can demonstrate real value, and so come to influence organizational routines more permanently [53].

For the purpose of the current research, which focuses on how digitally literate employees cope with an organizational IT governance arrangement that conflicts with their expectations for technology use, the key components of the organizational environment are the digitally literate employees themselves, the work tasks that they need to perform and the IT governance structure that the organization imposes on work. Following AST and STT, we contend that optimal organizational performance can be most effectively achieved by harmonizing the technical and social systems, although this depends on the spirit of the technology being amenable to this goal. In the absence of such a harmonized system, employees must adaptively structure whatever informational and technological resources are available to complete work if they are to deliver products and services to internal and external clients. Following our exposition of the research methods and context, we apply the theoretical lenses of AST and STT to guide our scrutiny of the Dingle case, before building a high-level research model.

#### 4. Methods and context

The research was undertaken as an exploratory series of field investigations at hotel properties managed by the Dingle Group across China. It is important to emphasize that Dingle typically does not own the hotel properties, but it provides hotel management services including technology solutions for back-office functions such as reservations, room allocations and general-purpose Internet access. Our unit of analysis is the individual employee who engages in digital work: in this paper,

we report on interviews that we conducted from late 2011 to early 2013, with 27 employees in 12 hotel properties, as well as two senior executives (see Table 1). We also conducted follow-up interviews with three of these employees in early 2015. By studying a small number of digital workers in each location, we planned to compare the problems faced and solutions created by similar people in similar circumstances. Our interview protocols (see Appendix A) were informed by our interest in digital work, and they covered a wide range of topics including problem-solving, digital communication, corporate culture and policy and the solutions that employees devise as they deal with corporate policy. We were not permitted to record interviews due to employee sensitivity. Instead, both interviewers (the first author and a research assistant) made extensive notes during and after the interviews, which here substitute for formal records. We independently typed up these notes into more formal transcripts immediately after the interview (cf. [5]). An unexpected advantage of this arrangement was the attention both interviewers paid to the interview process. Unable to rely on a verbatim transcript, we jointly asked questions and recorded answers, often following up with more detailed questions to clarify points. We also returned to interviewees by email after the interview for further details. This additional step benefitted our subsequent analysis and interpretation of the data.

Next, each of the authors independently analysed the interview data. Inspired by the coding process used by Young et al. [65], we analysed the interview data for tentative concepts by identifying any transcript segments relevant to the research focus. After three rounds of an iterative coding process, that is, coding independently, comparing the coding results, discussion and negotiation and adjusting the identified themes, we reached a consensus on three overarching themes and eight sub-themes. We then wrote our case analysis from this thematically analysed data, illustrated with detailed quotations from the interviewees.

**Table 1**  
Hotels, Prevailing IT Policy and Interviewees.

Hotel Location & Code	Organizational Culture IT Governance Policy (Restricted or Unrestricted)	Interviewees' Job Titles/Abbreviations
Beijing (A)	Unrestricted	Director of Revenue, DoR Human Resources Director, HRD
Shanghai (B)	Unrestricted	Revenue & Sales Manager, RSM
Shanghai (C)	Unrestricted	Front Office Manager, FOM Sales Director, SD
Shenzhen (D)	Unrestricted	Food and Beverage Manager, FBM Front Office Manager, FOM Procurement Manager, PM Public Relations Manager, PRM
Chengdu (E)	Unrestricted	Front Office Manager, FOM General Manager, GM Revenue & Sales Manager, RSM
Chongqing (F)	Unrestricted	General Manager, GM
Guangzhou (G)	Restricted	Front Office Manager, FOM General Manager, GM IT Manager, ITM Marketing & Communications Manager, MCM
Macau (H)	Restricted	Sales Manager, SM Exec Assistant to the General Manager, EAGM
Wuhan (I)	Restricted	Human Resource Manager, HRM
Beijing (J)	Restricted	Public Relations Manager, PRM Director of Revenue, DoR Front Office Manager, FOM General Manager, GM
Beijing (K)	Restricted	Marketing & Communications Manager, MCM
Suzhou (L)	Restricted	Marketing & Communications Manager, MCM
Headquarters	Restricted	General Manager, GM VP-Southern China, VP-IT

## 5. Case analysis

### 5.1. An overview

The Dingle case provides us with substantial data to investigate the challenges and opportunities created by the situation of an IT governance structure that both matches and does not match with the digital literacy levels of its employees. In Dingle, we observed two types of IT governance structure: restricted and unrestricted. Although this dichotomy is convenient, we found that for the 12 hotel properties where we conducted interviews, it was also accurate: individual hotel properties exhibited evidence of being either restricted or unrestricted insofar as their IT governance structure was concerned.

In six of the hotels (G, H, I, J, K and L in Table 1), Dingle had already completed the implementation of a highly centralized hotel management system (HMS) that had been developed at Dingle's European headquarters. The HMS covered a wide range of employee-centric functions, including reservations, communications, revenue management, housekeeping and procurements. The HMS also enacted a strict IT governance structure that explicitly blocked access to social media applications and certain websites, and that provided very limited Internet bandwidth to the hotel back offices where employees worked.

At the other extreme, six of the hotel properties (A, B, C, D, E and F) had yet to implement the new HMS at the time of our investigations. These hotels, and their employees, still enjoyed the freedom of an unrestricted IT governance structure. The clear dichotomy between the two styles of IT governance structure, as indicated by the presence or absence of the new HMS, offered us the opportunity to compare the two different situations experienced by digitally literate employees in a single organization. While the theoretical focus of this article is organized around digitally literate employees interacting with a restricted IT governance policy, we suggest that it is useful to describe the baseline, pre-HMS situation. All employees who, at the time of this study, were working under the restricted environment had previously experienced the unrestricted environment and had therefore engaged in working practices that were no longer in force.

Three types of employees can be identified in our interview data: the digitally literate who expect to be able to avail themselves of the opportunities enabled through social media and fast Internet; the digitally familiar, who appreciate the situation faced by the digitally literate and who are moderately digitally literate themselves, finding value in digital applications and social media; and the digitally suspicious, who see no value in digital literacy and harm in digital applications, seeking to restrict or block access to selected digital applications across the organization.

As a preface to our case study, we first present the baseline situation: hotel properties where the new HMS has not been implemented and so where the former, more open IT governance policy still prevails. Here, we draw on our interview data from employees in hotels A through F, aiming to demonstrate how they leverage IT applications as they complete their work. Following this preface, we present three further subsections where we illustrate in greater detail the nature of the IT governance structure, the work tasks that employees undertake and the bricolage that employees engage in as they attempt to ensure access to the technology applications that they need.

### 5.2. Baseline (pre-HMS) situation

A recurrent theme in our conversations with employees in hotels where an open IT governance structure prevails was the need for employees to access social media applications in order to

build and maintain *guanxi* (relationships). *Guanxi* is widely recognized as being both ubiquitous and critical to personal success in Chinese society [29], including work contexts. The importance of *guanxi* stems from the cultural propensity in China not to trust unknown others [52]. *Guanxi* can be characterized as interpersonal, often dyadic, relationships that are equally premised on mutual respect and an obligation to help one's *guanxi* partners. In China, employees develop, maintain and leverage their *guanxi* with others during the course of their work [64]. If an employee did not have *guanxi*, it would be extremely difficult to engage in work projects where collaboration and cooperation with other people were needed. Although *guanxi* is traditionally developed in face-to-face contexts [64], employees rarely experience the luxury of face-to-face meetings and so have learned to develop *guanxi* online [19]. The preferred tools for *guanxi* formation and maintenance are microblogs, such as Weibo, and instant messengers such as QQ<sup>1</sup> and WeChat.

Many of the employees we interviewed, notably those engaged in marketing, sales and corporate communication, noted the importance of social media applications for *guanxi* development and application. A purchasing manager at Hotel D noted how he 'leveraged his *guanxi* with suppliers to gain favourable prices and discounts'. Meanwhile, a revenue manager in Hotel B commented that her *guanxi* with external experts in the fields of gifts, media and printing enabled her to complete work at a higher level of quality and more efficiently. The PR manager in Hotel D commented: 'I have close *guanxi* with twenty people. If any of these twenty people have problems, I must help them. . . . I use *guanxi* a lot in my work, keeping in touch with the media, as well as the hotel owners'. Through the use of social media, new and innovative ideas to solve work-related problems can be identified by the members of one individual's *guanxi* network. Thus, these information-sharing and knowledge creation activities are not restricted by internal organizational boundaries.

Hotels characterized by an unrestricted IT governance structure saw enhanced business efficiency as well as good work relationships across organizational boundaries. The sales director of Hotel C remarked 'I have several hundred work-related contacts on MSN,<sup>2</sup> especially corporate clients, travel agents and ticketing consolidators. It is particularly useful that I can quickly identify if a person is online or not and hence available to talk'. Marketing and communication managers (MCMs) are also heavy users of IT for communication with external business partners. They may use email, but they also rely on social media applications as their contacts are digitally literate like themselves and they need to consider the communication preferences of their interlocutors.

### 5.3. HMS and the new (Restricted) IT governance structure

As we explain earlier, Dingle was in the process of a global roll-out of its new HMS at the time we undertook this research. Our conversations with hotel general managers suggest that Dingle intends that the new system should centralize many functions, at the same time standardizing software application deployments, enhancing security and controlling employee behaviour with respect to unauthorized use of IT for personal purposes. The spirit of this kind of technology environment [21] is thus one that favours the orthodoxy and mitigates against digital innovation [3,66]. From the dominant corporate perspective, these are legitimate objectives and are believed to enhance the quality and consistency of

<sup>1</sup> QQ is an instant messaging software service developed by the Chinese company Tencent Holdings Limited: [http://en.wikipedia.org/wiki/Tencent\\_QQ](http://en.wikipedia.org/wiki/Tencent_QQ).

<sup>2</sup> MSN ceased operations in China on 31 October 2014: [http://en.wikipedia.org/wiki/Windows\\_Live\\_Messenger](http://en.wikipedia.org/wiki/Windows_Live_Messenger).

work in individual hotels. Nevertheless, large-scale changes to systems are never entirely about technology. They also touch on the way in which people work and thus affect the corporate culture, which creates new risks for the organization [63].

We interviewed Dingle's global vice president (VP) for IT to ask why the new HMS does not permit employees to access social media applications. He asserted, 'Security is paramount. No hotel back-office has direct connectivity to the Internet. All hotel communications are routed via a firewall that is located in corporate headquarters. All Dingle hotels operate standard software, globally. There is zero tolerance for malware and the risks that malware would bring'. This restrictive IT governance structure was echoed and amplified by a regional senior executive in China who remarked, 'There is no value in chatting. Web 2.0 applications have no role to play in Dingle's corporate culture'. The IT manager of Hotel G expressed no sympathy for his local colleagues and instead complained about their behaviour: 'The Sales Manager sends 10–15 emails, each with a 2MB attachment, every afternoon. It slows down the whole network because we only have a 2Mbps line to the Shanghai office for all emails'. Nevertheless, we note that Dingle was only able to enforce compliance with this restrictive IT governance structure at hotel properties (G–L) where the new HMS was in place. Hotels (A–F) that had not yet implemented the new HMS were not subject to these restrictions.

#### 5.4. Work requirements and the HMS

The archetypal situation is faced by a hotel's MCM who has the responsibility of promoting a hotel and its facilities, for example, meeting rooms, conference facilities, spa and restaurants, to corporate clients. MCMs need to be active communicators with access to both high-bandwidth Internet connections and a wide variety of digital communication tools if they are to complete their work effectively. They regularly upload high-quality promotional materials (pictures, videos, etc.) to both internal and external websites in order to promote hotel facilities. They also engage in interactive communications with large numbers of corporate clients. However, the strict IT governance structure blocks MCMs from accessing the IT applications that they need. An MCM in Hotel G was particularly frustrated with the HMS on two counts. Firstly, he noted that 'My job is to communicate, but there are no tools to achieve this'. Secondly, he fretted about the severe impact of the slow Internet speed on his productivity: 'A two minute task can take two hours. I simply cannot afford to waste so much time for so little work done. There has to be a better way'. This MCM's dilemma is shared on a daily basis by most employees who would prefer to use social networking tools for business communication. As the executive assistant to the general manager (EAGM) in Hotel H remarked, 'I would like to be able to use MSN for information and communication as it would be faster and more natural but it is not allowed'. This restrictiveness has negative consequences for both personal work efficiency and maintenance of guanxi networks. The director of revenue (DoR) of Hotel J commented: 'I need free access to the Internet for work but I don't have it. I have to reduce the frequency of contact to my guanxi partners. I am less efficient at work'. Meanwhile, the PR manager in Hotel I reported: 'I need to use QQ to contact external parties who refuse to use email . . . or the telephone'.

#### 5.5. Bricolage at work

The digitally literate employees in hotels G–L were certainly frustrated by the constraints imposed by the HMS, and therefore by the spirit of the HMS, which was oriented toward control, not emancipation, of employees. However, this frustration was

resolved in unorthodox ways, as employees do not hesitate to act as bricoleurs and thus access the IT applications they need through 'alternative' channels. The most common solution involves the network nominally reserved for hotel guests, which typically has a much faster bandwidth (up to 1 Gbps) than the back-office network available via the HMS, is accessible wirelessly throughout the hotel and is neither provided nor controlled by Dingle. The guest network thus has a very different spirit to that of the HMS: it is designed to enable free communication, a property much appreciated by employees. It is the responsibility of the owner of the hotel property to provide this guest network. Although using the guest network violates Dingle's internal rules, employees insisted on their right to access the digital media of their choice in order to ensure that their work performance was effective. As the human resources (HR) manager at Hotel H observed, 'It is easy to tap into the guest network with a notebook, tablet or smart phone'.

Hotel managers, digitally familiar themselves, often agreed and turned a blind eye to this violation of corporate norms, considering that the spirit of bricolage that digitally literate employees embodied was appropriate in the circumstances. For instance, the MCM of Hotel K leveraged the guest network in order to access the microblogging platform Weibo. She used Weibo extensively to communicate with the hotel's previous and future guests, offering them digital discounts on restaurant bookings, integrating her work with that of the hotel's sales and general managers. A sales manager in Hotel G, acting under direct instruction of the hotel's general manager who expressed a personal interest in the outcome, gained access to WeChat, a microblogging tool, in order to disseminate hotel offers to >10,000 followers. In a more radical step, the MCM of Hotel G set up a private microsite where he uploaded promotional materials for the hotel, ignoring the corporate systems altogether. In late 2013, microsities were approved by Dingle more generally, with several hotels setting them up officially, so it may be said that microsities have gained a degree of acceptance, entering established organizational routines [53]. Employee bricolage has resulted in a transformation of the IT governance structure of Hotel G, enabling it to deal with the tensions that are manifested among the guanxi-based Chinese social culture that promotes relationships, the headquarters' rationalistic and orthodox culture that promotes control, the digitally restrictive IT policy and the digitally literate employees. Although this local transformation has yet to exert any influence on the global IT governance policy, acts of bricolage are nevertheless commonplace on a day-to-day basis in Hotel G where digitally literate employees focus on the day-to-day struggle of accomplishing tasks.

## 6. Discussion

Our analysis of the Dingle case demonstrates how organizational employees engage in acts of bricolage as they reject the organizational hegemony on power and control and insist on a new spirit of innovation in order to get work done and ensure access to guanxi-based resources. They adaptively structure whatever technical resources are accessible and thus balance social and technical systems as they work. The feral solutions that they develop run counter to organizational norms and expectations, yet are essential to the successful completion of work. Drawing on our case material, as well as AST and STT, we conceptualize this new style of work into a theoretical model (Fig. 1). We discuss this theoretical model from both conceptual and case perspectives.

From an IT governance perspective, Dingle defends itself against security hazards by embedding a strict IT policy into a standardized HMS, which effectively shields the organization and its corporate ecosystem from external threats. However, the HMS also cocoons

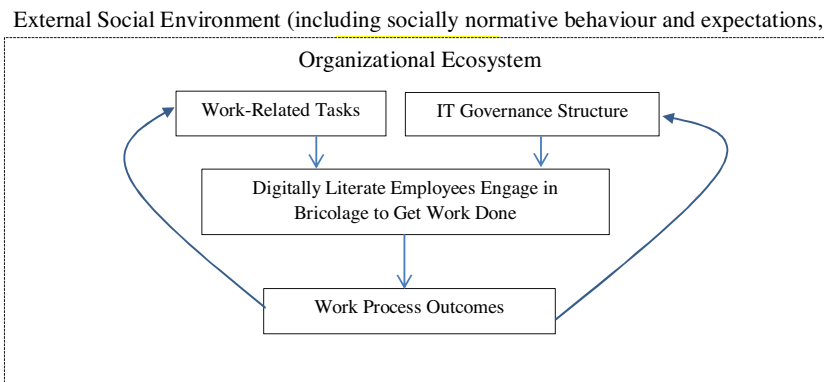


Fig. 1. High-level conceptual model to illustrate how digitally literate employees interact with their environment.

the organization from the local social environment and socially normative expectations with regard to technology use, controlling how employees can behave and enforcing a technological orthodoxy that hinders innovation [3,66]. Meanwhile, digitally literate employees insist on accessing the technology applications they need, both for immediate work needs and for guanxi maintenance and application. To this end, they act as bricoleurs, adapting whatever tools they can access. They create a new technological spirit that champions innovation, rejects technological control and thus subverts the corporate management's power by denying it the exclusive right to establish an enforceable IT governance structure. These radical changes are nevertheless consistent with both AST [21] and sociotechnical systems theory [9], illustrating the interaction among digitally literate employees and their adaptive structuration of technology, technology-based work and IT governance structures. Pragmatically, by engaging in technological bricolage, employees are able to achieve positive work outcomes, accomplishing work tasks more effectively and efficiently. These positive outcomes result in the development of a new social structure that offers a viable alternative to the closed and secure structure envisaged by Dingle's corporate headquarters.

It is important to note that the employees' acts of bricolage are not at all covert: indeed, they are overtly supported by their colleagues and managers. Managers themselves are not immune to the need for digital technology nor lack the wherewithal to access it. Although it is common to dichotomize managers and employees into diametrically opposed camps, the opposite is true in Dingle: both are equally the victims of the corporate IT governance structure. Given the absence of any direct communication between hotel-based employees and corporate policymakers, the positive effects of bricolage appear destined to remain in the shadows as feral, personal ISs that stand little chance of being accepted formally. While microsites are now adopted across Dingle, this seems coincidental rather than a genuine formalization of a feral practice as a standard routine. Until a more digitally literate global chief information officer (CIO) or GDO is appointed, it seems likely that Dingle will remain a technology laggard, not a leader.

If IT security policy is unassailable, then there is a genuine risk that the organization will be so secure that no innovative application of IT is possible. In reality, technology solutions are abundant, easy to deploy and even free of charge. Further, there is an increasing trend for Chinese organizations, which are accustomed to the guanxi-based social environment, to adopt Western-oriented ISs, even though these are often premised on a controlling and rationalistic culture. The resulting tensions are unsurprisingly common in many multinational companies in China. While

digitally literate employees are aware of the broad situation, the cultural conflicts and the potential workarounds, they do not accept the restrictiveness of control, correctly assessing that IT policy is ironically both immutable and unenforceable, given the presence of secure alternative networks. Consequently, they innovate digitally, adapting new technologies as they emerge and ensuring that they can always work in the way that is most appropriate bearing in mind their interlocutors' preferences. As Newell [49] all too appositely remarks, 'managers need to let go of any notion that they can control the communication' undertaken by employees.

Throughout history, corporate cultures have needed to be open to change if they wish to survive. Machiavelli's [47] principles for change agents and the beneficiaries of new working practices are as relevant today as half a millennium ago. The current pressure for change is primarily digital: digital technologies create new innovation opportunities for the swarms of digital literates now entering the workforce. Many previous studies have focused on resistance to the implementation of new technology [6]. In the future, we suspect that the opposite will be the case, as digitally literate employees will insist on the right to access new technology, whether the corporate organization approves or not. In a digital era, this should not surprise us, because digitally literate employees know exactly which IT applications are suited to which tasks and with which interlocutors.

Our analysis of Dingle also demonstrates that an organization evolves towards a state of harmony with the social environment at large. The evolution may be slow, even tortuous, with significant pushback from the guardians of the status quo. One or more punctuations [31] may be needed to provide additional impetus to the change process. The change must ultimately incorporate the whole organization, including people, work processes, organizational culture, the mindset of corporate management and the associated IT governance structures. Although communications between the digitally literate employees and corporate management at Dingle appear to have reached an impasse, we foresee that the inexorable change towards a digital organizational ecosystem will continue and that the current feral systems will gain increased legitimacy among employees and their managers, ultimately ushering in a new technological environment that accommodates IT security with a digital strategy.

## 7. Future research and conclusions

Through this investigation of a digitally literate population of hotel employees in an organization that is deeply suspicious of digital technologies and certainly has not attempted to digitize its

working processes, we have explored some of the tensions in the sociotechnical systems, as well as the adaptations that employees create in response. The tensions among the organization's centralized IT policy and systems, the dynamic social environment (i.e., the guanxi-based Chinese culture in our case) and the increasing levels of digital literacy leads to employees engaging in acts of bricolage. We propose a high-level model to explain how employees interact with their environment, and we suggest that this needs both further elaboration and testing in other organizational contexts. Although the trend of digitization may seem secure, we should expect considerable resistance from organizations, especially where there is an entrenched old guard whose interests are firmly aligned with the status quo. Since Zuboff [66], we have known that the shift to smart organizations will be hesitant: organizational cultures are slow to change. However, we suggest that it is futile for organizations to expect to restrain the digital inclinations of their employees indefinitely. Technology change can be evolutionary, but the results can be revolutionary. Although many organizations today have failed to adopt the new technology and adapt their managerial systems to the new social-technical environment, others are embracing the opportunities brought by technology and are championing new forms of competitiveness. The pressure from the digitally literate to digitize the organization will continue to grow. A planned and phased approach to digitization may be more sensible, allowing the organization some degree of control over the change process.

The tensions that we document in this article constitute a significant opportunity for research. Our high-level model is but one initial step. The IS discipline desperately needs more research at the edges [35], where organizational cultures and policies collide with the normative expectations of their employees, where the current theory is not helpful, and where the constructs are unfamiliar. We encourage researchers to be bolder in seeking to identify and address the current pressing problems so as to ensure that their research does make a difference. Such problems may require an interdisciplinary approach, bringing together people from various disciplines. Extending the ideas in the current study, future research in this domain may benefit from the involvement of researchers not only in IS but also in technology and strategic management, public policy and cross-cultural psychology. The IS discipline is often critiqued for the lack of indigenous theories, but we find that IS is linked to people, organizations and society, so our theories must go beyond IS to include the surrounding context. As researchers, we should be bold in the theorization process by combining different perspectives and methods from different schools of thought so as to reflect cross-boundary thinking. However, the lack of interdisciplinary communication implies that very little cross-boundary research has been undertaken and few results are available for publication.

Even when the research is undertaken, a key barrier to publication is the review process itself, with often-outdated notions of scholarship and a myopic view of the world. Journals, editors and reviewers must all be far more accepting of research that pushes the limits [17]. A more constructive and inclusive attitude towards the whole review process is also needed [18]. The eventual outcome should be research that makes a difference, making the world a better place [60], considering the interests and perspectives of all legitimate stakeholders, not just the economic perspective of top management [14]. Collectively, we have the knowledge and the skills to transform IS research from a pedestrian, inward-looking discipline that focuses on the middle range to a dynamic, outward-looking discipline that seeks to build new theories with IS at the heart of a broad sociotechnical process. We just have to do it!

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## Appendix A. : Interview protocol

This semi-structured interview guide is organized into four sections. Each section has a number of questions. However, depending on the answers given by interviewees, it may be appropriate to ask other questions that are related.

### *Technology for communication*

1. Which information technologies (IT) do you use for which communication purposes at work?
2. How does IT contribute to making your work more effective and efficient?
3. What is the role of social media IT in work-related communications?

### *Guanxi*

1. What is the role of guanxi in work-related communication?
2. How important is guanxi in your work?
3. Can you build guanxi online? How?
4. If you do not have access to social media IT at work, does this have a negative impact on your work-related guanxi? What can you do about this?

### *IT Policy*

1. What constraints on IT usage are created by the organization's IT policy?
2. What is the impact of corporate IT policy on work-related communication?
3. What do you think are the barriers to a more open IT access policy? Are they political, cultural, institutional or philosophical?
4. What is the role of the GM and ITM in IT policy creation and enforcement?
5. What is the impact of IT policy restrictions on guanxi network development and maintenance?

### *Workarounds*

1. How do you cope with IT policy constraints that limit the way you work, the technology you use or the amount of bandwidth available?
2. How do your colleagues (peers, subordinates and superiors) feel about the workarounds that you create?
3. How effective are the workarounds? Do you see them as temporary arrangements until the situation changes or as permanent arrangements?
4. Are you aware of any attempt to persuade the organization to change its IT policies?



References

[2] S. Alter, Theory of workarounds, *Commun. Assoc. Inf. Syst.* 34 (55) (2014) 1041–1066.

[3] V. Arvidsson, J. Holmström, K. Lyytinen, Information systems use as strategy practice: a multi-dimensional view of strategic information system implementation and use, *J. Strategic Inf. Syst.* 23 (1) (2014) 45–61.

[4] A. Bandura, Self-Efficacy: toward a unifying theory of behavioral change, *Psychol. Rev.* 84 (2) (1977) 191–215.

[5] S.R. Barley, Images of imaging: notes on doing longitudinal field work, *Org. Sci.* 1 (3) (1990) 220–247.

[6] M. Bauer, *Resistance to New Technology*, Cambridge University Press, UK, 1995.

[7] A. Bharadwaj, O.A. El Sawy, P.A. Pavlou, N. Venkatraman, Digital business strategy: toward a next generation of insights, *MIS Q.* 37 (2) (2013) 471–482.

[8] R. Bianchi, G. Gacsal, D. Svoboda, Overcoming obstacles to digital customer care, *McKinsey Q.* (2015). [http://www.mckinsey.com/insights/marketing\\_sales/overcoming\\_obstacles\\_to\\_digital\\_customer\\_care](http://www.mckinsey.com/insights/marketing_sales/overcoming_obstacles_to_digital_customer_care).

[9] R.P. Bostrom, J.S. Heinen, MIS problems and failures: a socio-Technical perspective, *MIS Q.* 1 (3) (1977) 17–32.

[10] A. Burton-Jones, What have we learned from the smart machine? *Inf. Org.* 24 (2) (2014) 71–105.

[11] R. Calori, P. Sarnin, Corporate culture & economic performance: a french study, *Org. Stud.* 12 (1) (1991) 49–74.

[12] S.Y. Choi, H.S. Lee, Y.J. Yoo, The impact of information technology and transactive memory systems on knowledge sharing application and team performance: a field study, *MIS Q.* 34 (4) (2010) 855–870.

[13] C.E.H. Chua, V.C. Storey, L.T. Chen, Central IT or shadow IT? factors shaping users' decision to go rogue with IT, 35th International Conference on Information Systems, Auckland, 2014.

[14] R. Clarke, Not only horses wear blinkers: the missing perspectives in IS research, Keynote Address Delivered at the 26th Australasian Conference on Information Systems, Adelaide, Australia, Nov 29–Dec 4, 2015.

[15] C.U. Ciborra, De profundis? deconstructing the concept of strategic alignment, *Scand. J. Inf. Syst.* 9 (1) (1997) 67–82.

[16] X.M. Cui, J.C. Hu, A literature review on organization culture and corporate performance, *Int. J. Bus. Admin.* 3 (2) (2012) 28–37.

[17] R.M. Davison, Editorial: cultural bias in reviews and mitigation options, *Inf. Syst. J.* 24 (6) (2014) 475–477.

[18] R.M. Davison, Editorial: the art of constructive reviewing, *Inf. Syst. J.* 25 (5) (2015) 429–432.

[19] R.M. Davison, C.X.J. Ou, M.G. Martinsons, Information technology to support knowledge sharing, *Inf. Syst. J.* 23 (1) (2013) 89–109.

[20] D.R. Denison, *Corporate Culture and Organizational Effectiveness*, John Wiley & Sons, Oxford, England, 1990.

[21] G.L. DeSanctis, M.S. Poole, Capturing the complexity in advanced technology use: adaptive structuration theory, *Org. Sci.* 5 (2) (1994) 121–147.

[22] P. Descola, *The Spears of Twilight (Les Lances Du Crépuscule)*, The Free Press, New York, 1996.

[23] K. Dörner, D. Edelman, What 'Digital' really means, *McKinsey Q.* (2015). [http://www.mckinsey.com/insights/high\\_tech\\_telecoms\\_internet/what\\_digital\\_really\\_means](http://www.mckinsey.com/insights/high_tech_telecoms_internet/what_digital_really_means).

[24] R. Duymedjian, C.C. Rüling, Towards a foundation of bricolage in organization and management theory, *Org. Stud.* 31 (2010) 133–151.

[25] Y. Eshet-Alkalai, Digital literacy: a conceptual framework for survival skills in the digital era, *J. Educ. Multim. Hyperm.* 13 (1) (2004) 93–106.

[26] E.H. Ferneley, F. Bell, Using bricolage to integrate business and information technology innovation in SMEs, *Technovation* 26 (2) (2006) 232–241.

[27] E.H. Ferneley, P. Sobreperez, Resist comply or workaround? An examination of different facets of user engagement with information systems, *Eur. J. Inf. Syst.* 15 (4) (2006) 345–356.

[28] A. Friedlein, The importance of a digital culture, *Bus. Week* (2013). (Oct 30th) <http://www.businessweek.com/articles/2013-10-30/the-importance-of-a-digital-culture>.

[29] P.P. Fu, A.S. Tsui, G. Dess, Dynamics of guanxi in chinese high-tech firms: implications for knowledge management and decision making, *Manage. Int. Rev.* 46 (3) (2006) 277–305.

[30] C. Fuchs, S. Sevignani, What is digital labour? What is digital work? What's their difference? and why do these questions matter for understanding social media?, *TripleC* 11 (2) (2013) 237–293.

[31] C.J.G. Gersick, Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm, *Acad. Manage. Rev.* 16 (1) (1991) 10–36.

[32] A. Giddens, *The Constitution of Society: Outline of the Theory of Structuration*, University of California Press, Berkeley, CA, USA, 1984.

[33] A. Giddens, *New Rules of Sociological Method: A Positive Critique of Interpretive Sociologies*, 2nd ed., Polity Press, Cambridge, UK, 1993.

[34] D.L. Goodhue, R.L. Thompson, Task-technology fit and individual performance, *MIS Q.* 19 (2) (1995) 213–236.

[35] V. Grover, K. Lyytinen, New state of play in information systems: the push to the edges, *MIS Q.* 39 (2) (2015) 271–296.

[36] J.C. Henderson, N. Venkatraman, Strategic alignment: leveraging information technology for transforming organizations, *IBM Syst. J.* 32 (1) (1993) 4–16.

[37] J. Huang, J. Baptista, R.D. Galliers, Reconceptualizing rhetorical practices in organizations: the impact of social media on internal communications, *Inf. Manage.* 50 (2–3) (2013) 112–124.

[38] T.N. Jagatic, N.A. Johnson, M. Jakobsson, F. Menczer, Social phishing, *Commun. ACM* 50 (10) (2007) 94–100.

[39] I. Junglas, L. Goel, C. Abraham, B. Ives, The social component of information systems: how sociability contributes to technology acceptance, *J. AIS* 14 (10) (2013) 585–616.

[40] A. Kankanhalli, B.C.Y. Tan, K.K. Wei, Understanding seeking from electronic knowledge repositories: an empirical study, *J. Am. Soc. Inf. Sci. Technol.* 56 (11) (2005) 1156–1166.

[41] J.P. Kotter, J.L. Heskett, *Corporate Culture and Performance*, Macmillan, New York, 1992.

[42] L. Lapointe, S. Rivard, A multilevel model of resistance to information technology implementation, *MIS Q.* 29 (3) (2005) 461–491.

[43] D.E. Leidner, T. Kayworth, A review of culture in information systems research: toward a theory of information technology culture conflict, *MIS Q.* 30 (2) (2006) 357–399.

[44] D.P. Lepak, R. Takeuchi, N.L. Erhardt, S. Colakoglu, Emerging perspectives on the relationship between human resource management and performance, in: R. Burke, C. Cooper (Eds.), *The Human Resources Revolution: Research and Practice*, Elsevier, Oxford, 2006, pp. 31–54.

[45] C. Levi-Strauss, *The Savage Mind*, University of Chicago Press, Chicago, 1966.

[46] N. Machiavelli, *Il Principe – The Prince*, Penguin, UK, 1532 (1532/2004).

[47] S. Newell, Managing knowledge and managing knowledge work: what we know and what the future holds, *J. Inf. Technol.* 30 (1) (2015) 1–17.

[48] G. Oestreicher-Singer, L. Zalmanson, Content or community? A digital business strategy for content providers in the social age, *MIS Q.* 37 (2) (2013) 591–616.

[49] W.J. Orlikowski, Using technology and constituting structures: a practice lens for studying technology in organizations, *Org. Sci.* 11 (4) (2000) 404–428.

[50] C.X.J. Ou, C.L. Sia, P.K. Banerjee, What is hampering online shopping in China? *J. Inf. Technol. Manage.* 18 (1) (2007) 16–32.

[51] B.T. Pentland, M.S. Feldman, Designing routines: on the folly of designing artifacts, while hoping for patterns of action, *Inf. Org.* 18 (4) (2008) 235–250.

[52] T. Rickards, K. Smaje, V. Sohoni, Transformer in chief: the new chief digital officer, *McKinsey Q.* (2015). [http://www.mckinsey.com/insights/organization/transformer\\_in\\_chief\\_the\\_new\\_chief\\_digital\\_officer](http://www.mckinsey.com/insights/organization/transformer_in_chief_the_new_chief_digital_officer).

[53] J. Senyard, T. Baker, P. Steffens, P. Davidsson, Bricolage as a path to innovativeness for resource-Constrained new firms, *J. Prod. Innov. Manage.* 31 (2) (2014) 211–230.

[54] P. Setia, V. Venkatesh, S. Jogelkar, Leveraging digital technologies: how information quality leads to localized capabilities and customer service performance, *MIS Q.* 37 (2) (2013) 565–590.

[55] D.P. Truex, R.L. Baskerville, H. Klein, Growing systems in emergent organizations, *Commun. ACM* 42 (8) (1999) 117–123.

[56] V. Venkatesh, M.G. Morris, G.B. Davis, F.D. Davis, User acceptance of information technology: toward a unified view, *MIS Q.* 27 (3) (2003) 425–478.

[57] S. Vodanovich, D. Sundaram, M.D. Myers, Research commentary – digital natives and ubiquitous information systems, *Inf. Syst. Res.* 21 (4) (2010) 711–723.

[58] G. Walsham, Are we making a better world with ICTs? Reflections on a future agenda for the IS field, *J. Inf. Technol.* 27 (2) (2012) 87–93.

[59] P. Willmott, Digital strategy, *McKinsey Q.* (2014). [http://www.mckinsey.com/insights/business\\_technology/digital\\_strategy](http://www.mckinsey.com/insights/business_technology/digital_strategy).

[60] B. Worthen, Nestlé's enterprise resource planning (ERP) odyssey, *CIO Mag.* (2002). <http://www.cio.com/article/2440821/enterprise-resource-planning/nestle-s-enterprise-resource-planning-erp-odyssey.html>.

[61] M.M.H. Yang, *Gifts, Favors and Banquets: The Art of Social Relationships in China*, Cornell University Press, New York, 1994.

[62] M.L. Young, F.Y. Kuo, M.D. Myers, To share or not to share: a critical research perspective on knowledge management systems, *Eur. J. Inf. Syst.* 21 (5) (2012) 496–511.

[63] S. Zuboff, *In the Age of the Smart Machine: The Future of Work and Power*, Basic Books, New York, 1988.

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