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Beneficial Non-Compliance with Inadequate Information Systems

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Beneficial Non-Compliance with Inadequate Information Systems

Short Paper

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Abstract

Organisational employees who are inadequately supported by corporate information systems nevertheless need to complete work satisfactorily. We hypothesise that the inadequacy of corporate information systems will influence employees to create workarounds that are non-compliant with respect to organisational policy requirements yet are nevertheless beneficial. We motivate and outline the theoretical basis for such beneficial but non-compliant work. We develop a moderated-mediated theoretical model that links inadequate information systems to employee workaround behaviour and explain how we will test it. We expect to present initial validating data during the conference.

Keywords: Inadequate Information Systems, Beneficial Non-Compliance, Workarounds

Introduction

Organisations deploy information systems (IS) for many reasons. Key among them is the desire to standardise the way work is undertaken by employees, since it is generally agreed that standardisation can enhance performance (Röder et al. 2014). Ideally, employees, and the work that they perform, are effectively supported by the corporate IS. However, sometimes the corporate IS are inadequate: they fail to support the work processes that employees (including managers) are required to undertake. As a result, those employees may need to develop workarounds to complete their assigned work tasks (Alter 2014). For instance, spreadsheets and other locally developed ‘solutions’ that significantly enhance capability may be encountered (Soh and Sia 2004; Davison et al. 2019). These workarounds, which we treat as a form of non-compliant behaviour, may create both data management and security risks for the organisation (Lapointe

and Rivard 2005). Nevertheless, they may also be beneficial if they ensure the completion of work and satisfaction of customers (Spierings et al. 2017).

While previous research has examined the phenomenon of non-compliance with the corporate expectation to use a specific IS (Weill and Ross 2005), the employee perspective is less well understood or appreciated. We suggest that the phenomenon of non-compliant workaround behaviours is important because it provides the basis for employees to complete their work tasks satisfactorily even when the IT provided by the organisation is inadequate. Some scholars champion the corporate prerogative to determine how employees should work, chastising any deviance as a form of subversion to executive authority (Weatherbee 2010). Other scholars recognise that IS may fail to support employees (Markus 1983; Choudrie and Zamani 2016). In the latter situation, employees who lack the power to negotiate a redesign or reconfiguration of the IS may have little choice but to find alternative ways of working. Some scholars have examined the extent to which this non-compliance with corporate expectations is tolerated (Röder et al. 2014). However, scarcely any research has explored the forces that drive employees and their supervisors to engage in non-compliant behaviour, such as the workarounds that employees may create as they deal with challenges associated with inadequate corporate information systems. A relevant and emerging area of research concerns ‘shadow IT’, i.e. IT applications developed outside the oversight of the CIO (Haag & Eckhardt 2017; Haag et al. 2019), though we contend that workarounds are not always created in the shadows. For instance, in our own recent work (Davison et al. 2019), we undertook a qualitative case study to explore how both employees and their supervisors routinely and openly ignored the corporate ERP software that inadequately supported their work. These employees relied on a mix of corporate-provided software, such as Microsoft Excel to replace the ERP functions and email to lubricate communications, as well as personal social media applications like WhatsApp and Facebook to replicate the network functions.

We acknowledge that there is a dark side to non-compliant behaviour: there are certainly risks to data management, system integrity and network security as well as intellectual property. There is also the danger that employees may deliberately seek to damage the organisation (Ferneley and Sobreperez 2006). Nevertheless, we suggest that non-compliant behaviour may also be beneficial to the organisation (Davison and Ou 2017;). Therefore, it is essential to study the phenomenon more carefully and our guiding research question is: *How do employees react to inadequate systems, and how does that reaction lead to them enacting beneficial but non-compliant workaround behaviours?* In this short paper, we build on earlier work and develop a moderated-mediated theoretical model to explain this phenomenon. We intend to open up the phenomenon to wider attention by IS researchers, contributing to scholarly knowledge by demonstrating how non-compliant employee behaviour can be beneficial.

Following this introduction, we review the relevant literature that pertains to inadequate IS and the behaviours that employees enact when facing such systems. Next, we develop a theoretical model that draws on this literature and formally state our hypotheses. Following the theoretical development, we outline the development of the associated survey instrument. We are currently making arrangements for data collection and aim to provide the initial results during the presentation at the conference. We conclude the paper with a discussion of the potential implications.

Literature Review

There is a huge literature dealing with the adoption and diffusion of IS in organisations. Much of this literature documents how IS adoption has a positive impact on work (Laumer and Eckhardt 2012). In the last few years, increasing attention has been paid to the dark side of technology use (Tarafdar et al. 2015a). Resistance to IT, which McAfee (2003) suggests is widespread, has emerged as a respectable research topic with serious investigations of situations where employees choose not to obey corporate requirements. The object of resistance is normally the technology itself, but resistance can equally be directed at the people who mandate technology use, or at the work processes and procedures where the technology is applied (Laumer et al. 2016). It is recognised that understanding employees’ resistance to IT is important given management’s expectation that IT should bring about beneficial effects (Marakas and Hornik 1996).

Attitudes towards resistance vary from the deeply critical assessment that it subverts managerial authority (Weatherbee 2010) to the sympathetic understanding that it may be the only option available if IS are not fit for purpose and inadequately support employees (Mumford et al. 1978; Markus 1983; Choudrie and Zamani 2016). Markus (1983, p.441) notes that: “[r]esistance is not a problem to be solved so that a system

can be installed as intended: it is a useful clue to what went wrong and how the situation can be righted". In a similar vein, Beerepoort et al. (2019) observe that the workarounds often associated with resistance can provide organisations with a useful perspective on problems with business processes and thus facilitate process improvements.

Employees may choose to work around corporate systems for a variety of reasons. The inadequacy of the system that is intended to support their work is likely to be particularly salient for employees who engage in IS-based tasks (Markus 1983; Choudrie and Zamani 2016). Thus, when employees are faced with functional work requirements that are fundamentally incompatible with the software that they are required to use, they may feel that they have no choice but to devise workarounds (Beerepoort et al. 2019; Davison and Ou 2018). The techniques used in workaround development owe much to the spirit of bricolage (Lévi-Strauss 1966) with employees leveraging the affordances (Chen et al. 2020) of whatever technology is at hand to complete work satisfactorily. In organisations, ERP systems lie at the heart of business management activities. Their introduction and maintenance are associated with a great deal of financial and time investment. For employees, however, these ERP systems can be a great challenge (Sykes et al. 2014). Microsoft Excel (or similar software) is often the application of choice to bypass Enterprise Resource Planning (ERP) software (Soh and Sia 2004; Davison et al. 2019), though social media applications are also likely to play prominent roles where employee communications are concerned. While such behaviour is likely to be non-compliant with corporate expectations regarding software use, it may paradoxically be compliant with the expectation that they complete their work tasks. The workarounds themselves may not be static: they can evolve as feedback is received, as working requirements are modified, as new barriers are erected, or as new technologies become available (Safadi and Faraj 2010). Eventually, these workarounds may be institutionalised as organisational routines (Pentland and Feldman 2008) where it can be demonstrated that they are not harmful to the organisation or even bring about benefits not present in the earlier corporate software. However, if the corporate position (software or process) is not amenable to change then workarounds may persist in the shadows (Haag and Eckhardt 2017).

Theoretical Development

Our theoretical approach is broadly deductive: we draw on the literatures that pertain to inadequate software, compliance and workarounds, as well as on our own previous qualitative case study work. Our theoretical narrative starts with the idea of inadequate IS. We then trace the impacts of inadequate IS on both the way in which employees work and the psychological consequences for employees, in terms of their anxiety related to their completion of work. We thus ground our theoretical model in the broader notion of resistance to change. Consistent with the literature, we suggest that when employees are worried about their inability to complete work, they are likely to create workarounds. We also suggest the potential influence of two moderators: the restrictions associated with corporate governance; and the inclination to engage in discretionary work (sometimes referred to as organisational citizenship behaviour) that goes beyond normative job-role requirements.

Organisations typically provide their employees with IS to support their work. Ideally, the IS will be designed so as to support work activities; alternatively, it may be flexibly adapted by employees so as to meet requirements. Employees in this situation are able to control how they work and indeed complete work satisfactorily. This work may include such disparate activities as data analysis, decision making, report generation, knowledge sharing, internal or external communication and problem solving. Independent control over work is an important attribute for employees in the contemporary organisation where not all work tasks are standardised. However, there may be situations where employees do not have access to the IS that they need. The provided IS may be inadequate in terms of functionality, flexibility or fit for work purposes. The provided IS may also form part of a wider standardisation initiative, yet fail to meet employee requirements. Employees in this situation may experience a loss of control over how they work. They may not be able to work according to the natural work process but must instead follow the dictates of the software. For instance, in our earlier work (Davison et al. 2019), we documented a situation where employees needed to ensure that goods were delivered to customers. This had to be arranged through third-party delivery agents. The mandated ERP software lacked this specific functionality, since the ERP architects had been informed by business analysts that customers would collect their own goods. Accordingly, employees found that this functional inadequacy in the software caused them to lose control over their work to the extent that they could not complete it at all. (Davison et al. 2019; Elie-Dit-Cosaque et al. 2011). Hence, we argue that:

H1: Inadequate IS is positively associated with employees' loss of work control.

From a psychological perspective, if employees are required to use a corporate software that inadequately fits their needs then not only will they find it more challenging to complete assigned work tasks, but also they may experience anxiety about their job. Bala and Bhagwatwar (2018, p.654), following Srivastava (1977), define job anxiety as “a feeling of fear and/or an apprehensive mental state of an employee regarding certain components of work”. The fear of failure can be very real and we suggest may induce anxiety with respect to one’s future work prospects (Lee and Keil 2018). Job anxiety is often associated with newly implemented systems, which “introduce significant changes in how employees perform various tasks and how business processes operate” (Bala and Bhagwatwar 2018, p. 654). Similarly, Lyytinen and Newman (2015) described how “users consistently affirmed to us that they were not properly consulted, and the system did not reflect their needs and interests”, which led to “high levels of ... anxiety”. Davison et al. (2019) documented how employees received customer complaints because the mandated IS did not fully support their work processes, with the result that work was delayed. As a result, they experienced anxiety about how their performance would be assessed, as well as their future employment in the organisation. Thus, we argue that:

H2: Inadequate IS leads to job anxiety.

When employees are unable to control how they work, it is likely that they will feel frustrated because they will worry about completing their work (Tarafdar et al. 2015b). This frustration can easily lead to anxiety associated with their job, because satisfactory completion of work tasks is the fundamental basis for employee evaluations and the associated decisions such as termination of employment (Tarafdar et al. 2015b). Benlian et al. (2020) note that “individuals live in an equilibrium relationship with their technological environment”, but that if the equilibrium is disturbed, for instance when employees lose control over their work, then anxiety is one of the possible consequences. Thus, we argue that:

H3: Loss of work control leads to job anxiety.

If employees are unable to control how they perform their work, they may need to investigate new ways of working in order to complete their work as specified (Alvarez 2008). These new ways of working may include workarounds that are not compliant with corporate expectations yet that are simultaneously essential to the satisfactory completion of work. Workarounds may involve the adaptation of existing procedures or systems, or may require the identification and adoption of new resources or procedures. Spierings et al. (2017) document how employees relied on Excel-based workarounds to validate forecasts and replenishment orders because the data from the corporate system was unreliable. Davison et al. (2019) noted that employees developed workarounds that did not comply with the corporate IT policy in order to support a variety of functions. These functions included: undertaking inventory cycle counting in the warehouse; engaging in intra-team member communication; ensuring orders were delivered to customers correctly; managing order cancellations and rescheduling. These workarounds were directly related to employees regaining control over their working environment. However, these non-compliant workarounds also benefitted the company (cf. Alter, 2015). Hence, we argue that:

H4a: Loss of work control contributes to employees' engagement in non-compliant workaround behaviours.

Corporate policies, including regulations regarding how work is to be undertaken and which IT applications are permitted to be used, are enacted in order to protect organisational interests (Curreri and Lyytinen 2017). These interests include: compliance with legal obligations, for instance of data protection; protection of intellectual property and trade secrets; and monitoring of employee behaviour to ensure remunerated time is spent on office work. Compliance with these policies is expected of employees, yet these same policies may also restrict the ways in which employees can undertake work. Hence a restrictive technology environment (IT restrictiveness) may impede employee attempts to create workarounds (Davison and Ou 2017), even though these may be essential to the effective and efficient completion of work tasks. We thus propose that:

H4b: IT restrictiveness will negatively moderate the link from loss of work control to non-compliant workaround behaviours.

Work task completion is a common concern for employees since failure to complete work satisfactorily can lead to penalties or even curtailment of employment (Tarafdar et al. 2015b). If employees experience job anxiety, they are likely to want to be certain that they can complete work tasks. Therefore, if the mandated IS does not adequately support that work then they are likely to explore alternative ways of working

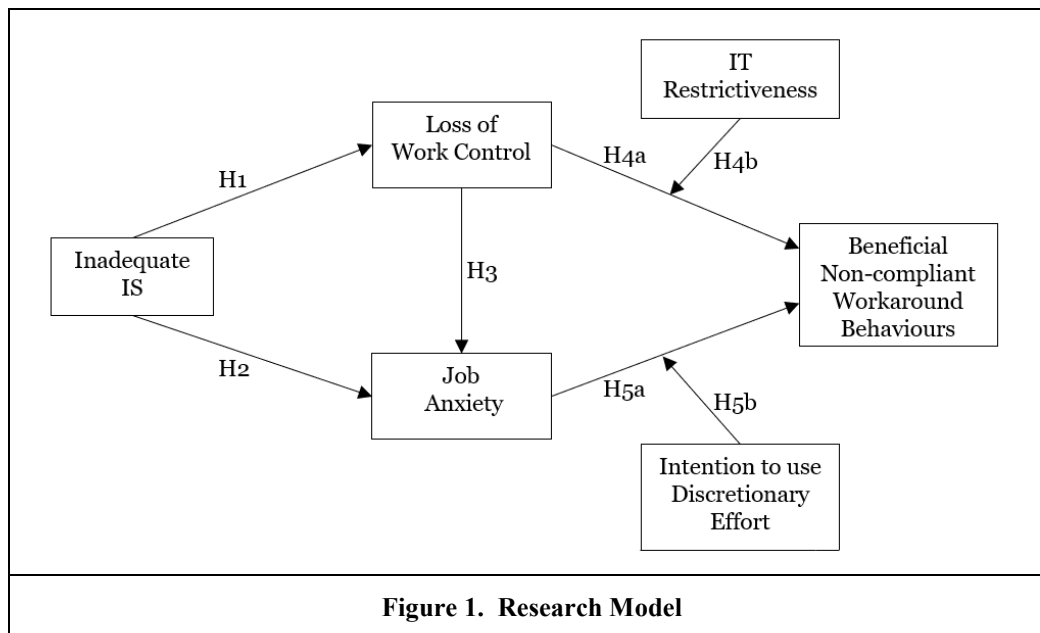
(Davison and Ou 2017), such as non-compliant workaround behaviours (Alter 2015), to mitigate the possibility of losing their jobs. Hence, we argue that:

H5a: Job anxiety is positively associated with employees' engagement in non-compliant workaround behaviours.

Even when employees are anxious about their job, the extent to which an employee will take action to remedy the situation may vary. As Davison et al. (2019) report, while some employees took relatively mild actions (e.g., alter some procedures) others were more extreme (e.g., all work involves workarounds). Zigarmi et al. (2012) identify other examples, including taking work home, proposing innovative solutions, and volunteering for unpaid overtime, and classify these types of action as discretionary effort. Individual initiative, often undertaken on a discretionary basis, constitutes another type of organisational citizenship behaviour (Organ et al. 2006). Employees who have a weak sense of ethical responsibility (Davison et al. 2020) towards the organisation and lack the intention to take individual initiatives on a discretionary basis are unlikely to engage in work-focused workaround behaviours. Conversely, employees with a strong intention to use discretionary effort to take initiatives will have a stronger tendency to engage in such behaviors (Davison et al. 2020). Thus, we argue:

H5b: Intention to take individual initiatives on a discretionary basis will positively moderate the relationship between job anxiety and non-compliant workaround behaviours.

The research model shown in Figure 1 summarises the above hypotheses.



Methods

Instrument Development

We plan to use the survey method to validate the proposed theoretical model. To this end, we have developed a survey instrument to collect the survey data. We plan to collect data in multiple cultural contexts and will work with collaborators who will assist with instrument translation and validation in those contexts. We will pre-test the instrument in each location where we collect data. We anticipate collecting data from 200 respondents (employees and their supervisors) in each context. The instrument is not focused on a particular industry and thus we expect to collect data in such diverse sectors as logistics, manufacturing and services.

All instrument items are adapted from previous research. Specifically, we establish the measure for the inadequacy of corporate IS based on the qualitative research results from Davison et al. (2019) and operationalise them as formative measures. We will ask respondents to evaluate the extent to which the

corporate mandated IS is adequate for a list of common work tasks which employees frequently perform such as 1) Data analysis, 2) Decision making, 3) Planning of resources, 4) Generating reports, 5) Undertaking routine daily work, 6) Sharing information with colleagues, 7) Communication with colleagues inside the organisation and 8) Communication with people outside the organisation (e.g. partners, customers).

The measures for individual work control, individual anxiety and IT restrictiveness are adapted from Elie-Dit-Cosaque et al. (2011), Lee and Keil (2018) and Curreri and Lyytinen (2017) respectively. Non-compliant workaround behaviours are measured by compiling and modifying a list of items from Alter (2014), Klaus et al. (2010) and Rivard and Lapointe (2012). We measure intention to use discretionary effort by using the scales of Zigarmi et al. (2012). All measurements involve 7-point Likert scales anchored on the agree-disagree continuum. We will also collect demographic data such as industry type and company size, as well as gender, age and experience in the company for individual respondents.

The next part of our research will involve data collection, which we plan to undertake in multiple cultural contexts, so as to validate the theoretical model. We are fully cognizant that the questions we are asking are sensitive: employees may be reluctant to disclose that they feel anxious about the software that they are required to use, sense a loss of control, or go so far as to engage in non-compliant workaround behaviour, even if it is beneficial for the organisation. Therefore, in order to collect data that is both accurate and reliable, we will need to reassure our respondents both as to our academic credentials and to their anonymity. The research design has been approved by our Human Research Ethics committees. We expect to complete data collection before the conference and thus to report it at that time.

Discussion

We suggest that it is important to investigate the situation where employees do not have access to adequate IS because we cannot assume that IS will always have positive impacts. Our interest goes beyond simple resistance to technology because resistance is often an end in itself. We are interested in the post-adoption behaviours of employees who are usually not consulted about the software that is foisted on them. It should be no surprise that this software may not fit their needs very well, especially in multi-site software implementation projects where global standardisation is the objective.

Another aspect of the research relates to our focus on the individual. Clarke and Davison (2020) have already detected a tendency for research designs, at least implicitly, to favour the perspective of the organisation. Employee or customer/citizen perspectives are accorded much less attention. However, organisations are unlikely to be successful if their employees are not productive and their customers are not satisfied. Thus, research that privileges the interests of employees not only enhances our understanding of the employees and their behaviour, but also indirectly contributes to improving the organisation itself. As Beerepoort et al. (2019) noted, workarounds can provide the organisation with the opportunity to improve.

Through this study, we expect to reveal some of the drivers of inadequate IS as experienced by employees. We aim to provide a richer understanding of why it is insufficient merely to study technology adoption: we need more studies of what happens post-adoption. We should not assume that adoption is equivalent to success or even use. Adoption may be followed by non-use, mis-use or oblivion. We also aim to increase the tolerance (of managers and researchers) for employees who engage in what we term beneficial but non-compliant behaviour. We do not deny the prerogative of either the chief security officer to establish security and governance protocols for the organisation, or the chief information officer to select IS applications, but we do urge that they be sensitive to the legitimate needs of employees and certainly not obstruct the completion of essential work. When employees are unable to complete their work, not only they but the organisation and its customers will suffer. If some degree of employee creativity can be tolerated, even encouraged, then the organisation and its customers are likely to benefit. As much previous research has demonstrated, organisational citizenship behaviour, which we model as discretionary effort, is a powerful drive of organisational competitiveness and success.

We see this study of inadequate corporate IS as a starting point. While it builds on some recent work, notably that of Alter (2014, 2015) and Davison et al. (2017; 2018; 2019), it also sets the scene for a renewed focus into the consequences of IS that are simply not fit for purpose, that do not adequately support employees in the workplace. Nevertheless, 'inadequate IS' is a very broad term and a more detailed investigation into different aspects of inadequacy would be valuable, for instance system and service quality (Laumer et al. 2017) and information quality (Struijk et al. 2020). We may also consider the relationships

between different constructs in the research model. For instance, instead of acting as a moderator, IT restrictiveness may play a mediating role, affecting both the loss of work control and job anxiety. We acknowledge that the design of the current study is limited by the extent to which we can collect data from a broad population of employees. While we may be able to draw conclusions that are informed by analyses of data from certain industries in particular cultural contexts, additional studies will be needed to demonstrate a broader validity. Beyond the current research design, we suggest that researchers should attempt action research investigations, i.e. working with the affected organisations and their employees, in order to demonstrate, for instance, how beneficial non-compliant workarounds can be institutionalised in the work place. Such studies will bring fresh insights and at the same time help to ameliorate the challenging circumstances experienced by employees.

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