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TO USE OR NOT TO USE: MODELLING END USER GRUMBLING AS USER RESISTANCE IN PRE-IMPLEMENTATION STAGE OF ENTERPRISE RESOURCE PLANNING SYSTEM

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Highlights

- This study extends status-quo bias theory by integrating technostress.
- Survey was conducted on 221 users in pre-implementation phase of SAP ERP system.
- Significant impact of status quo bias observed on end user grumbling.
- Technology induced stressors are strong predictors of end user grumbling.
- End-user grumbling influences symbolic adoption significantly.

TO USE OR NOT TO USE: MODELLING END-USER GRUMBLING AS USER RESISTANCE IN PRE-IMPLEMENTATION STAGE OFENTERPRISE RESOURCE PLANNING SYSTEM

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ABSTRACT

The success rate of enterprise resource planning (ERP) implementation is less than 49% around the world owing to its complex nature. The key focus of information system (IS) researchers has been to explore the ways to reduce threats to ERP implementation posed especially by user resistance. Although the reasons for user resistance have already been dealt with in previous studies, our understanding of how users assess a new ERP system in the pre-implementation phase and what prompts their decision to resist it is far from complete. In particular, an explanation for user resistance or end-user grumbling from the perspectives of status quo bias and technostress was found to be missing. In order to fill this gap in research, the model proposed in the present study integrates status quo and technostress, thus throwing light on the end-user grumbling behaviour that precedes the implementation of a new ERP system. Data was collected via a survey questionnaire distributed to 221 respondents from five different manufacturing industries in Bangladesh which are currently in the process of installing the popular SAP ERP system. Results of this tested model indicate a significant impact of the constructs of status quo bias and technostress on end-user grumbling. Additionally, end user grumbling has positive significant impact on symbolic adoption. Moreover, the paper discusses common method bias and the limitations of the study, while providing an outlook for future research.

Keywords: Common method bias, enterprise resource planning system, marker variable, status-quo bias, technostress, PLS, user resistance

INTRODUCTION

Enterprise resource planning is a functional software tool that supports the areas of logistics, planning, finance, manufacturing, procurement, human resource, project management, distribution, accounting, service maintenance, and transpiration. A recent definition of ERP by Lepistö (2015) is aligned with its previous definition. He defined ERP as a module-based software package that incorporates and coordinates the functions of different units of an organization. According to SAP (2015), the largest ERP vendors, ERP is defined as holistic enterprise management solutions that are developed to mediate and ensure flexible access to information by all the departments of an organization.

The primary benefit of an ERP system relates to the integration of data and processes, and improved business efficiency (Huang et al.,2009). ERP systems have been adopted by most enterprises across the globe because of the potential benefits they offer. According to a recent Gartner Forecast Analysis report (2014), the worldwide ERP software market is predicted to grow from $25.4 billion in 2013 to $35.2 billion in 2018. SAP AG is the leading ERP system vendor. In 2013, the company retained its market leadership by selling $6.1 billion in ERP software, marking a slight increase from $6 billion in 2012 (Forbes, 2014). At No. 2, Oracle had $3.117 billion in sales in 2013, down 0.2% from $3.124 billion a year ago. In the third place was Sage with $1.5 billion in sales in 2013. Fadlalla and Amani (2014) reported that the cost of ERP implementation might differ across organizations. For medium-sized organizations, it could be $10 million, and for large international companies the cost might go up to $300–500 million. Another report, by Hwang and Min (2015), predicted that the probable spending on ERP could grow from $47.5 billion to around $ 67.7 billion by 2017.

In spite of the potential benefits of ERP systems and their growing market, the failure rate of ERP system projects is high (Kimberling, 2013). ERP failure rates are projected not to decline very soon (Kimberling, 2013). The 2014 ERP Panorama Report by Kimberling (2014) reported that 54% of the projects exceeded projected budgets, and 72% exceeded planning durations, with 66% receiving only 50% of the measurable anticipated benefits. According to Muscatello and Parente (2006), the ERP failure rate was nearly 50%. Companies like Mobile Europe, Dell, and FoxMeyer suffered huge losses, and axed ERP projects (Bradley, 2008). The failure of ERP implementation causes huge financial losses. According to Devadoss and Pan (2007), the overall failure rate of ERP systems is more than 60%. ERP implementation failures of can ruin an entire business operation (Brown &

Vessey, 2003), and a company may go bankrupt due to huge financial losses involved (Galy & Sauceda, 2014).

Information system (IS) researchers or rejection research ignored the idea of 'user resistance' to technology adoption (Lapointe & Rivard, 2006). Laumer and Eckhardt (2012) reported that they had found only 43 articles on user resistance to technology implantation in the last 25 years.

Most of the previous researches on user resistance focused on the post-implementation phase of IS (Meissonier & Houzé 2010, Malaurent & Avison, 2015). Published papers by user resistance researchers did not work on any clear user resistance theory for the pre-implementation stage, but the 'status quo bias' model of Kim and Kankanhalli (2009) is a more comprehensive and acceptable theory to measure resistance behaviour (Klocker et al., 2014). As a result, the status quo bias theory is considered as the core theoretical tool of this research. Again, Tarafder et al. (2010) highlighted that technostress could decrease user satisfaction and performance in IT use. Technostress has a negative relation with technology-enabled innovation like the ERP (Tarafder et al.,2015; Bhuiyan& Mahmud, 2015). Furthermore, Centefelli (2004) argued for the integration of both positive and negative stimuli in IS research. To observe the phenomenon of user resistance in the pre-implementation phase, Laumer et al. (2014) introduced a new variable called 'employee grumbling', or resistance through conversation, which we conceptualized as 'end-user grumbling', in which end-users are people who are going to use an ERP system. Taken together, this work seeks to provide an inquiry into the impact of technostress and status quo on end-user grumbling in the pre-implementation phase of ERP systems. This study also extended the idea of user resistance towards symbolic adoption (outcome of this study).

Symbolic adoption is considered as the motivation behind mentally evaluating a particular technology as useful. ERP is considered a mandated technology, which means a particular company will install the system regardless of whether users like it or not. But symbolic adoption is considered as a success factor of ERP implementation (Al Jabri et al. 2015). Nah, Tan & Teh (2004) identified the necessity of symbolic adoption for users' infusion with new technology. Following these issues discussed above, the final research question asks about relationship between user resistance and symbolic adoption.

These key outcomes in the pre-implementation phase will have a critical impact on the possible success of ERP implementations. Against this backdrop, the current paper has the following research objectives:

1. To create a research framework by explaining the impact of status quo and technostress on end-user grumbling; specifically, the role of switching benefit, switching cost, perceived value, work overload, work–home conflict, and role ambiguity of user resistance behaviour which leads to symbolic adoption.
2. To empirically test the models in a cross-sectional field study by collecting data from various industries in a pre-implementation phase of ERP systems.

By using the status quo bias theory, technostress and symbolic adoption, this paper intends to answer the following research questions:

RQ1. Is end-user grumbling regarding ERP in the pre-implantation phase driven by the status quo bias theory?

RQ2. Do techno-induced stressors cause end-user grumbling behaviour?

RQ3. Does end user grumbling lead to symbolic adoption of ERP users?

To answer our research questions, the remaining part of this work is organized in the following manner. First, it presents the origins of user resistance behaviour. In this stage, an extensive literature review is presented about various user resistance theories. Second, the theoretical foundation and the proposed research model are presented. Third, the developed model is tested with the data collected by the survey questionnaire from various manufacturing organizations in the pre-implementation stage of SAP ERP. Fourth, the methodology is explained including the sample selection, data collection, and constructs measurement. Fifth, empirical evidence is presented by analysing the data. Sixth, a discussion is done on whether the status quo bias theory and technostress are suitable to measure end-user grumbling. In the end, this paper makes theoretical, practical, and methodological contributions, while also highlighting the limitations and pointing to future directions.

LITERATURE REVIEW

Prior research of user resistance behaviour

User attitudes and behaviour can be different with respect to a particular technology. It is possible that a user may cast off a technology, use it only partially, lack interest in continuing to use the system, or s/he may simply resist the use of it. The term ‘resistance’ is defined in the dictionary as an action of refusal or opposition. In case of IS research, resistance is the opposite of acceptance; it is the complete opposition to the introduction of a new technology (Saga & Zmud, 1994).

More than three decades ago, user resistance to the IT system was observed in astudy by Markus (1983). Even before that, Lewin (1947) had argued that, as people had a propensity to uphold the status quo, employees were discouraged from adopting changes in any system within the organization. Later, various other factors that could affect user resistance were identified.

Markus (1983) explained that power and politics in IS implementation were two key factors behind resistance. According to her, users would resist an IT system if they feared a loss of power as a corollary of it. Again, power struggle among users and various departments could increase resistance. Internal, external, and situation-dependant interaction characteristics influence user resistance. Markus's case study was referred to by Lapointe and Rivard (2006), who later proposed a model of user resistance by focusing on the perceived threat from a new, IS.

Joshi (1991) argued that the implementation of IS technologies was crucial for users' productivity and for achieving a competitive position in an industry. He also claimed that a new IT system might cause inequality among individual users. Hence, he proposed the equity implementation (E-I) model, which provided an understanding of user resistance. The E-I model suggests that, at an individual level, change of technologies is not always welcome. But before putting up resistance, users evaluate the impact of the change. For Marakas and Hornik (1996), the implementation of any new IS changes the work routine of users and thus results in user resistance. They developed a framework for passive resistance misuse (PRM), based on the passive-aggressive theory (P-A theory) of Fine et al. (1992). The P-A behaviour was explored first by military psychiatrist Col. Willam Menninger in World War II, when soldiers refused to follow orders and resisted going into action. Martinko et al. (1996) adapted a model of user resistance based on attributional explanations. In their model, called the attributional model of reactions to information technologies (AMRIT), they included external influences, internal influences, casual attributions, expectations, reactions to information technology, and possible outcomes.

Samuelson and Zackhauser (1988) explained that people had a natural tendency to maintain current routine rather than use a new one. This concept helped to build the theory known as status quo bias. It is obvious that a change of perception is connected with IT-enabled changes, more specifically a complex ERP system. This concept is in line with the research findings of Bhattacherjee and Hikmet (2007), where users were afraid of losing control because of the implementation of a new system. Laumer et al. (2014) experienced medium effect (f^2= 0.28) of an affective resistance to change (A-RTC) and cognitive resistance to change (C-RTC) on employee grumbling, which was conceptualized as user resistance behaviour through conversation. But they also found that the C-RTC had no significant relation with employee grumbling. Hsieh (2015) reported a case study in which users started complaining about the system, leading to deterioration in service quality and revenue loss. This opposition of employees to the introduction of a new technology can create an atmosphere of user resistance within an organization, identified by Laumer et al. (2014) as the employee grumbling behaviour. User resistance can occur before, during, and/or after the implementation (Klocker, 2015).

User resistance behaviour occurs when the use of the ERP system is mandatory, meaning employees must use the system even if they do not like it. It was proposed that, in case of mandatory technology usage, organizations should take into account the negative attitude of using technology and take necessary action for the system success (Laumer et al., 2014). Most user resistance researchers focused on the post-implementation stage of ERP; only a few of them dealt with the pre-implementation stage (Johansson & Heide 2008, Laumer et al. 2014).Besides, it needsto be considered that the bulk of research in this field is based on qualitative data. Only some of the studies mentioned above—in particular Bhattacherjee and Hikmet (2007), Kim and Kankanhalli (2009), Laumer et al. 2014, Klocker et al. (2014), and Klocker (2015)—have used quantitative data indeveloping and testing user resistance models.

Hence, this paper seeks to develop a research model that aids managers in measuring user resistance in the pre-implementation phase of ERP based on the available literature.

Status Quo Bias Perspective and Theory

The status quo bias theory aims to explain people's preference for maintaining their current status or situation. When it comes to enterprise system research, Kim and Kankanhalli (2009) clubbed the triad of SQB, the E-I model, and the theory of planned behaviour (TPB) in their framework to measure user resistance. They formulated a construct, called'Perceived Value', instead of perceived net benefits for using a new IS. The final research model of Kim and Kankanhalli(2009) sought to measure user resistance before the implementation of a system. They found that switching cost and switching benefit wererespectively negatively and positively associated with perceived value. Switching costs and perceived value are also directly negatively connected with user resistance. Positive colleague opinion is also positively associated with switching benefit and negatively with switching cost, but not directly with user resistance significantly.

Later, Klocker et al. (2015) extended this model by integrating institutional pressure with the SQB and found a significant relationship in the context of 'eGK'and health-related ERP within health professionals in Germany.Based on the status quo bias theory, the definitions of core constructs, considered the predictors of user resistance, are given in Table 1

Table 1. Constructs of Status Quo Bias Theory

Constructs	**Description**
Switching Cost	Switching cost denotes a negative nature linked with switching (Chen & Hitt, 2002). Transaction cost, uncertainty cost, increase in user inputs, and decrease in

	user outcomes are positively related to switching cost. Again, emotional cost, learning cost, and lost performance cost are also included as antecedents of switching cost by Perera and Kim (2002).
Switching Benefit	Switching benefit reflects the quality of work and the utility of switching. User perception of less effort in input and more outcomes are positively connected with switching benefit.
Perceived Value	Perceived value is derived from the construct 'attitude' of the theory of planned behaviour, which implies an overall evaluation of an individual's perception by comparing cost and benefit. Loss aversion and net benefits are positively related to perceived value.
Colleague opinion	Social norm is positively associated with colleague opinion and is a part of the subjective norm in the workplace (Lewis et al. 2003).
Self-Efficacy for change	Self-efficacy is defined as an individual's belief in his or her own ability. According to Kim and Kankanhalli (2009), it is related toan individual's internal control.
Organizational support to change	Organizational support is an external control to support a changed situation (Ajzen, 2002).

For our research model, we considered switching cost, switching benefit, and perceived value as core predictors for user resistance behaviour. The other three predictors, namely colleague opinion, self-efficacy for change, and organizational support to change, are not part of the discussion in this paper due to their non-significant relations and minuscule impact on user resistance behaviour in the model originally developed by Kim and Kankanhalli (2009).

Technostress Perspective

Stressors are defined as factors that create stress,while strain is an outcome of it. Stressors, therefore, pose a difficulty in adaptation where users are unable to cope with the requirements related to their use of ICT (Tarafdar et al., 2007). According to Ragu-Nathan et al. (2008), technostress causes a negative feeling about IT. This means that if any user believes that an IT-induced change is negative, it can cause a high perception of technostress. There are three features of technostress (Ayyagari, 2011). Ayyagari et al. (2011) suggested five stressors that can cause strain. Those are explained in Table 2 below:

Table 2: IT-induced stressors

Type	Details
Work Overload	Meeting deadlines, pressure from authority, and time pressure create work overload. A new system facilitates quick report generation and decision-making, but users might feel a pressure regarding time and accuracy of data input.
Work–Home Conflict	Work– home conflict focuses on tension over learning and using a new system that can blur the boundaries between workspace and home.
Role Ambiguity	It refers to thedilemma about whether users should handle IT problems or focus on the work in hand. It is considered a possible stressful stimulus.
Job Insecurity	Change of technology might cause fear among employees about job loss (Slem, 1986). This feature becomes a barrier to learning new skills on the part of users (Korunka et al. 1996).
Invasion of Privacy	Privacy is an important concern in the use of technology,as suggested by Best et al.(2006). Consequently, Ayyagari et al. (2011) considered it to be a stressor.

Later, Lei and Ngai (2014) proposed a research agenda in which they used the same stressors to measure the technostress challenge, threat appraisal, and performance with satisfaction and strain as outcomes. Lei and Ngai (2014) also reported that technostress literature mainly focused on the negative effects of technostress. But two different studies by Hung et al. (2011) and Tu et al. (2005) found evidence supporting the suggestion of a positive impact of technostress. More specifically, techno overload had a positive correlation with employee work performance. However, the researchers failed to provide any reason for the positive impact of technostress.

Shu et al. (2011) explained that lack of self-efficacy and too much dependence on ICT cause technostress. Again, Yun et al. (2012) did a study on smart phone users at the workplace. The authors identified stress and user resistance as job-related outcomes, and found a significant impact of work overload and work–home conflict on user resistance. Fuglseth and Sorebo (2014) argued that technostress had an effect on user satisfaction, and may have a negative impact on the adoption of ICT. Maier et al. (2015b) explained that technostress and switching stress could lead to a discontinuation of system use.

A new ERP implementation can create stress to the users (Davenport, 2000). As a reflection of this phenomenon, extensive ERP use might cause technostress (Ragu-Nathan et al., 2008; Tarafdar et al. 2010). Tarafdar et al. (2015) argued that minimizing technostress would lead to a higher level of technology-enabled performance. Ayyagari et al. (2011) suggested five stressors,out of which work–home conflict, work overload, and role ambiguity were considered to have a significant relation with the exhaustion of ERP settings (Maier et al. 2015). Earlier, Tarafdar et al. (2007) had also reported that the impact of technostress decreased user productivity when it came to using ERP systems. Similar findings were also obtained in the research of Walz (2012). It was found that too much use of technology caused technostress, which led to headache, back pain, memory loss, increased heart rate, and difficulties in sleeping. Ibrahim and Yousoff (2015) conducted a qualitative research where the respondents said that they had a feeling of panic and stress in retrieving data. They revealed that their understanding of the introduction of the human resource management information system (HRMIS) was stressful.

In a study by Maier et al. (2015b), based on Ayyagari's (2011) research model, evidence indicated that a higher level of work overload, higher work–home conflict, and higher role ambiguity caused a higher level of strain. The impact of stress and strain, or exhaustion related to ERP, is also explored in recent research (Sykes 2015).

From the literature, we identified only a few studies on negative stimuli. Traditional IS adoption models like TAM, IS success, ECT-IS continuance, and UTAUT are not suitable for this research, as they focus on positive stimuli and the post-implementation phase. Again,only a handful of studies used technostress to measure user resistance, particularly in the pre-implementation phase. Maier and Laumer (2014) suggested that users' negative emotional state while overusing technology could inhibit them from perceiving the value of a new system. As a result, it is necessary to check the impact of technostress on user resistance.

Symbolic Adoption

As this study focused on pre-implementation stage of ERP system in mandatory context, as a result symbolic adoption is chosen as success criteria of ERP system and an outcome of user resistance. Previous researchers paid less attention on user resistance behavior as dependent variable but outcome of user resistance behavior is still not clear.

Nah et al. (2004) proposed that models that use behavioural intention as a measure of acceptance of mandatory technologies such as ERP systems should be revised. Since user behaviour cannot be measured without taking into consideration behavioural intention, this factor is also deemed unsuitable as a measure of ERP acceptance. Symbolic adoption has been proposed as a more superior dependent variable when measuring end users' acceptance of ERP systems, by Karahanna, Straub & Chervany (1999), Nah et al. (2004), and Rawstorne, Jayasuriya & Caputi (1998). Symbolic adoption was first suggested as a means of measuring acceptance of new technologies by Klonglan and Coward (1970), and is described as an end-user's "mental acceptance" of a new system (Nah et al., 2004). Rawstorne et al. (1998) believe that end users in a mandatory setting undergo symbolic adoption before actual system acceptance takes place; and that end users in a mandatory environment will demonstrate differences in symbolic adoption.

RESEARCH MODEL DEVELOPMENT

When presented with a new technology, users' attitude and behaviour could change. The user might discard the technology, use it partially, lack interest in continuing the system, or resist the use of it. An ERP system is a mandatory technology (Chae & Poole, 2005). In a mandated environment, where employees must use a technology as dictated by management, attitude towards using the system is not associated with user behaviour (Brown et al. 2002). If management forces employees to use an ERP system, they will certainly use itdespite their negative attitude towards it. For ERP adoption, the major problem occurs in the implementation phase where users experience changes in their regular routine (Sykes et al., 2014). Therefore, researchers have argued that there is a need to measure user resistance before implementation (Laumer et al., 2014). So, we considered the constructs of the statusquo bias theory by following Kim and Kankanhalli (2009), and Klocker et al. (2015).

Constructs identification

Dependent Variable: End-user grumbling

To observe the phenomenon of user resistance in the pre-implementation phase, Laumer et al. (2014) introduced a new variable called 'employee grumbling', which is resistance through conversation. Laumer et al. (2014) argued that the pre-implementation phase was completely different from the post-implementation phase, where users were aware of the system but the impression of the new system was still not clear to the management. When an organization announces its intention to introduce a new IS, there is a critical question about user satisfaction, symbolic adoption, or their nervousness, which could affect the implementation at a later stage.

A limited number of researches were undertaken to measure an individual's tendency to resist new technology (Johansson & Heide, 2008). Laumer et al. (2014) conceptualized employee grumbling (EG) behaviour as a structured occurrence through conversations at work. In other words, employee grumbling can be defined as users' protest through conversations with management or co-workers (Piderit, 2000). As a result, we adopted employee grumblingand conceptualized it as 'end-user grumbling', the dependent variable of our model. Potential factors that can cause end-user grumbling are described in the next section.

Constructs from StatusQuo

Switching Cost

We understand that, because of the effort and time taken to familiarize oneself with a new system, users absorb a high switching cost. Hence, they tend to perceive the system to be of a lower value, despite it being beneficial. Polites and Karahanna (2012) suggested that despite rewards or incentives offered for adopting a new system, users may shy away from it due toinertia. Klocker et al. (2014) and Hsieh (2015) also found a similar phenomenon of technology resistance in the healthcare sector. They found that, despite the benefits of changing the system, users resist new technologies. Therefore, our hypothesis is as follows:

H1: Switching cost (SC) is negatively associated with perceived value (PV).

Switching Benefit

Switching benefit refers to users' perceptions ofthe advantages of using a new ERP system. Switching to a new system might support the user in improving his/her performance. There may also be possibilities of a reward or promotion for using the system. Kim and Kankanhalli (2009) also suggested that the higher the switching benefit, the higher the perceived value would be. The same result was obtained by Klocker et al. (2014) and Klocker (2015). Therefore, we formulated the next hypothesis:

H2: Switching benefit (SB) is positively associated with perceived value (PV)

Perceived value

Perceived value is a variable that influences the decision of a user regarding using or rejecting a new system. In case of the ERP system, researchers recommended ERP-related tech-talk with the user to give an overall picture and explain the process flow to make users comfortable about an ERP system. Hsieh (2015), Klocker (2015), and Klocker et al. (2014) also found evidence that low perceived value meant a possibility of higher resistance. This is aligned with the research findings of Kim and Kankanhalli (2009). Therefore, when perceived value decreases, employee grumbling increases.

H3: Perceived value (PV) is negatively associated with end-user grumbling (EUG).

Constructs from Technostress

According to Ragu-Nathan et al. (2008), technostress stems from a negative feeling about IT-induced change. New ERP system implementation can cause stress to the users (Devenport, 2000). As a reflection of this phenomenon, extensive ERP use might cause technostress (Ragu-Nathan et al., 2008; Tarafdar et al., 2010; Tarafdar et al., 2015). Ayyagari et al. (2011) suggested five stressors. Among them work–home conflict, work overload, and role ambiguity have a significant relation with exhaustion (Maier et al. 2015a). The impact of stress and strain/exhaustion caused by ERP has also been explored in recent studies (Yun et al. 2012; Maier el al. 2015b; Sykes 2015).

Work overload

Since information technology is already an integral part of work, the inclusion of additional software like new ERP could cause users to perceive it as work overload (Moore, 2000, Yun et al. 2012). Work overload can lead to a higher degree of exhaustion or strain in the user (Maier et al. 2015b). Hence, we hypothesize:

H4: Work overload (WO) is positively associated with exhaustion (EX)

Work–Home Conflict

Work–home conflict focuses on tension over learning and using a new system, which can blur the boundaries between workplace and home. Yun et al. (2012) suggested renaming work–home conflict as work–life (non-work) conflict. Ayyagari et al. (2011), Maier et al. (2015b), and Yun et al. (2012) formulated work–life conflict as a determinant of exhaustion. Hence, our hypothesis is:

H5: Work–life conflict (WL) is positively associated with exhaustion (EX)

Role ambiguity

Evidence of a positive relation between role ambiguity and technology-induced exhaustion was found in the research of Maier et al. (2015b), and Lei and Ngai (2014). So we propose:

H6: Role ambiguity (RA) is positively associated with exhaustion (EX)

Tarafdar et al. (2015) state that these technology stressors have a negative impact on technological innovation and cause users' dissatisfaction with new IT use (Fuglseth & Sorebro, 2014). Maier and Laumer (2014) explained that strain causes an individual to be in a negative emotional state and that users get negative notions of a new system. Hence, our next hypothesis is:

H7: Exhaustion (EX) is positively associated with end-user grumbling (EUG)

Relation between end user grumbling and symbolic adoption

Symbolic adoption better indicates end user acceptance of mandatory technologies (Nah et al., 2004; Saymour et al., 2007). Recently symbolic adoption has been measured in various researches in ERP settings (Mouakket, 2012; AlHirz & Sajeev, 2013; Al-Jabri & Roztocki, 2015). Less user resistance (in this case, employee grumbling) will lead to higher level of symbolic adoption in mandatory complex information system (Wang & Hsieh, 2006). In mandatory context, user resistance would help predict the degree of symbolic adoption of new ERP system (AlHirz & Sajeev, 2013). As a result, the hypothesis is:

H8: End user grumbling (EUG) has negative impact on symbolic adoption (SA) of user.

Our proposed integrated framework is shown in Figure 1.

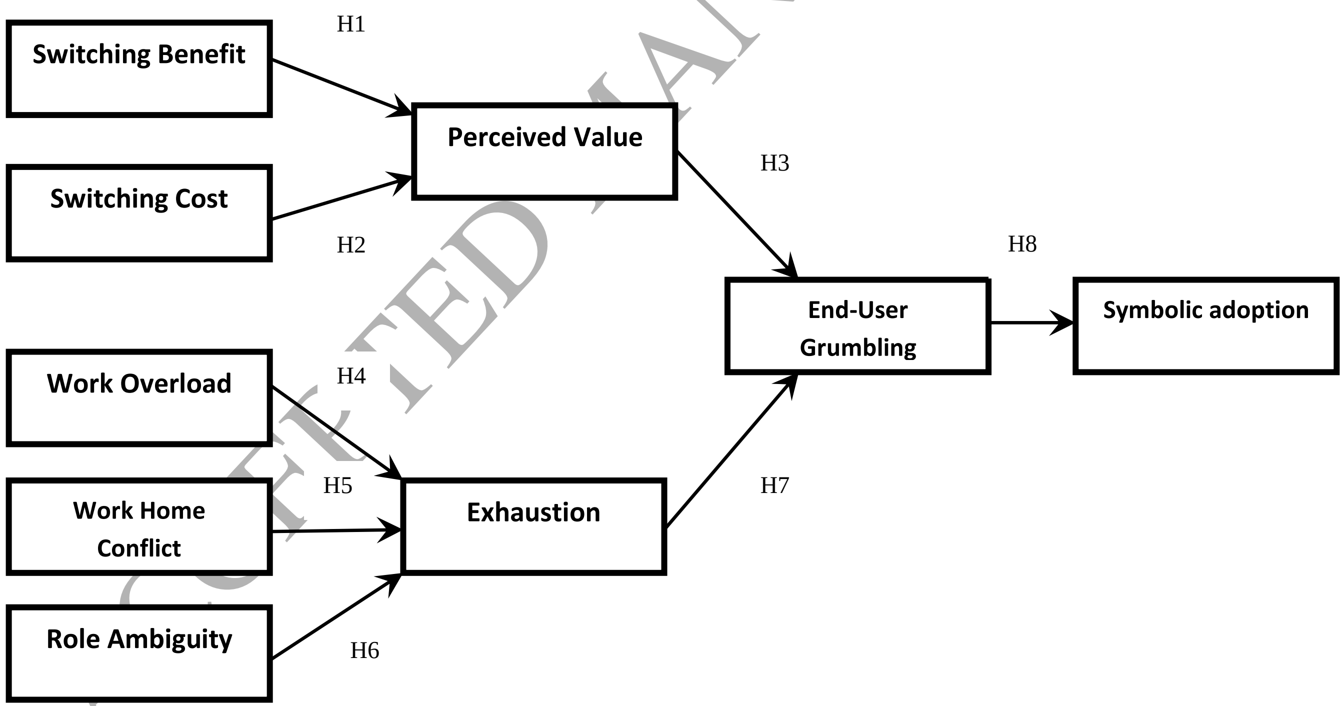

Fig 1. Proposed research model

RESEARCH METHODOLOGY

Study Design, Participants, and Demographics

Bangladesh is a lower middle-income country in South Asia. Manufacturing industries contributed significantly in the past two decades. According to an article by Hossain (2014), the readymade garment (RMG) industries earned $24.49 billion between 2013 and 2014. Global management consultancy firm McKinsey reported that the growth in the export value of the RMG sector would be 7–9% annually and will be double by 2015 and triple by 2020. To compete in the global market, many of the manufacturing industries are going to adopt the ERP system (Wong et al. 2016). The research of Wong et al.(2016) found that the usability of SAP ERP failed to support users, and data suggested a 59.8% usability score (efficiency, effectiveness, and satisfaction), which is below the acceptable range. This evidence was aligned with the findings of Veneziano et al. (2014), where they found the average usability score to be below the satisfactory range. These pieces of evidence imply that users from the manufacturing sectors of Bangladesh find it difficult to adopt the ERP system; in other words, the implementation is not successful yet. As a result, ERP system research in the context of Bangladesh is very crucial.

This research is part of a larger two-year study. Participants in the main study were individuals working in IS across several manufacturing industries in Bangladesh. Gpower software was used to calculate the minimum sample size with a predictive power 0.95 by following the research of Gefen et al. (2011) and Alzahrani et al.(2017). Calculations suggested that, with a maximum of three predictors, the required sample size was 119 (effect size is 0.15). A total of 500 individuals were accessed by the survey questionnaire (printed version). As many as 221 valid responses (at 44.2% response rate) passed the screening questions about the sample frame requirements. The demographic profile of our respondents is given in Table 3.

Table 3: Demographic information

Variables	Category	Frequency	Percentage
Gender			
	Male	197	89.1
	Female	24	10.9
Age			
	20–30	132	59.73
	31–40	79	35.75
	41–50	5	2.26
	51–60	5	2.26
Education			
	Bachelor	107	48.42
	Master’s	81	36.65
	Others	33	14.93
Working hour per day			
	1–8 hours	122	55.20
	More than 8 hours	99	44.80
Years working in current company			
	Less than 1 year	9	4.07
	1 to 5 years	141	63.80
	6 to 10 years	55	24.89
	More than 10 years	16	7.24
Overall job experience			
	Less than 1 Year	1	0.45
	1 to 5 Years	108	48.87
	6 to 10 Years	78	35.29
	11 to 15 years	24	10.86
	More than 15 years	10	4.52
Experience of using ERP			
	Yes	100	45.2
	No	121	54.8

Table 3 shows that, among the 221 valid respondents, 89.1% were male and 10.9% were female. The average age of the respondents was 31, with the lowest age being 20 and the highest 60. Splitting the aspect of age into more categories, Table 3 shows that 59.73% were of 20–30 years old, 35.75% 31–40, and both the age groups of 41–50 and 51–60 had 5% each. In the education category, 48.42% had a bachelor degree, 36.65% had done their master’s, and the rest 14.93% held diplomas. In our sample, 55.20% work 1 to 8 hours and the rest more than 8 hours. Of the respondents, 4.07% were working in the company for less than 1 year, 63.80% were working 1 to 5 years, 24.89% of total sample were working in their company for 5 to 10 years, and the rest 7.24% sample for more than 10 years. Our sample consisted of 45.2% who had used ERP before, but 54.8% of the respondents did not have experience of ERP. As for the use of ICT per day, data suggested that respondents spent an average 6.99 hours per day on ICT use. By splitting the data into more categories, we found that 30.32% of the total sample use ICT for 1 to 5 hours, 61.99% 5 to 10 hours, and the rest 7.69% use ICT for more than 10 hours. Finally, the average experience of our respondents in ICT use was 7.86 years. Of the 221 respondents, 79.19% had ICT experience of 1 to 10 years, 19% of 11 to 20 years, and the rest 1.81% were using it for more than 20 years.

Measures

Our survey questionnaire had three sections: a demographic questionnaire, a list of the ICTs they use at the workplace or home, a measurement questionnaire for the status quo bias, technostress, grumbling, and marker variables. A seven-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’ formed the basis of the measurement items. While our research model is based on previous literature, we have been encouraged to collect all items of the variables from existing literature in the field of user resistance, technostress, and status quo bias.

As a result, user resistance, which is transformed to ‘end-user grumbling’ (EUG1–EUG5) in our research, was measured by the items suggested by Laumer et al. (2014) and Klocker (2015) (**See Appendix 2**). The three variables of status quo bias (switching cost, switching benefit, and perceived value) were measured by the items proposed by Kim and Kankanhalli (2009). Kim and Kankanhalli (2009) adapted the items of switching benefit (SB1–SB4) from the ‘relative advantage’ construct of Moore and Benbasat (1991). Later, Klocker et al. (2014) adapted the similar items for measuring the switching benefit of ERP systems. The items of switching cost (SC1–SC4) were adapted from the work of Kim and Kankanhalli (2009), which were, in turn, taken from the original research of Jones et al.(2000). The switching cost is basically theorized from sunk cost (SC1), transition cost (SC2 and SC4), and uncertainty cost (SC3). To measure the perceived value, the scale (PV1–PV3) was adapted from Kim and Kankanhalli (2009) and Klocker et al. (2014).

Regarding the measurement of technostress, Appendix 2mentions in detail the constructs and measures used, as well as the scholarly basis of technostress. This questionnaire is focused on ICT-induced stress such as work–life conflict, work overload, and role ambiguity. The information provided below explains what is meant by ICT in this research (**See Appendix 2**).

Ayyagari et al. (2011) adapted the items strain (EX1–EX4) from the work exhaustion research by Moore (2000). The items of work overload explain users' perception of high job demand from employers (WO1–WO3), which was also derived from the research of Moore (2000). The items of work–home conflict, adopted from the research of Kreiner (2006), reflect a person's inability to meet the demands created by technology at the work and home domains. The items of role ambiguity (RA1–RA4) show that users have a hard time due to ICT-induced demands and burdensof interruptions (Ayyagari et al. 2011). All the items related to technostress were adapted directly from Ayyagari et al. (2011) and Maier et al. (2015) (**See Appendix 2**).

To measure symbolic adoption, Wang et al. (2014) explained individuals within the organization with high symbolic adoption are more likely to invest time and effort to engage in system learning. Nah et al. 2004 and Seymour et al. (2007) adapted the scale of symbolic adoption based on enthusiasm (SA1), eagerness (SA2) and desire to see full implementation of ERP (SA3) which was originated from the research of Karahanna et al. (1999). Later

Alhirz and Sajeev (2013) used similar items for to measure symbolic adoption of ERP. These items were directly adopted from the previous literature (**See Appendix 2**).

Common Method Bias

While the effects of the common method variance can be minimized at multiple levels, starting from the study design to data collection, our paper focused on both procedural and statistical remedies before (**See Appendix 3**) and after data collection. We employed the procedural method by including fun facts with the questionnaire (**See Appendix 3**). Harman's single-factor test and marker variable technique were used to test the common method bias (CMB). Herman's single-factor test results showed the maximum co-variance, explained by one factor with 19.53% variance, indicating that the data did not have any CMB problem. We also executed a second statistical approach to test the CMB problem by following the research of Ronkko and Ylitalo (2011). The marker variables were constructed with the items by following the research of Lin et al. (2015). After using the marker indicators as an exogenous variable predicting every endogenous construct within the model, we found that all the significant effects of the model without marker variables remained significant in the new model with marker variables(Hock et al. 2016), hence our conclusion that the CMB was not a serious issue here.

Data analysis strategy

In this study, we are going to use SEM to measure the relationship among the variables of our proposed research model. There are several reasons to use SEM in our research. First, SEM allows researchers to comprehensively and simultaneously analyse a complex model with multiple independent and dependent variables. As a result,IS, business management, and social science researchers use this technique for their research (Kline 2005; Gefen et al. 2000). Second, for exploratory research, SEM helps researchers in testing the specifications of research models developed by the status quo bias theory of Kim and Kankanhalli (2009) and the technostress research of Ayyagari et al. (2011). Fourth, well-established IS journals, such as Management Information Systems Quarterly, Information System Research, Journal of Management Information System, and Industrial Management and Data System, use SEM technique. According to Armstrong and Grover (2009), from 1998 to 2007, 33.3% of journals in the ISR, 34.5% in the JMIS, and 32.2% papers used SEM techniques.

The partial least squares (PLS) approach has been viewed as the most comprehensive and a broad technique by McDonald and Ho (2002). PLS was described as a ‘silver bullet’ by Hair et al. (2011) because of its ability to handle non-normal data. Research related to IS are focused seriously on the PLS for data analysis and top journals of IS research have published a large number of papers on the PLS (Ringle et al. 2012).

RESEARCH MODEL VALIDATION

Measurement Model

Hair et al. (2014) suggested that researchers must test the outer model after the research model was formed. We evaluated the outer model by measuring the average variance extracted (AVE), composite reliability (CR), and discriminate validity.

Average Variance Extracted and Composite Reliability

The AVE for each construct should be greater than 0.50, which suggests that the construct explains more than 50% of the variance of its items (Bhattacherjee & Premkumar, 2004). This criterion is met by the data (see Table 4).

Table 4. Cronbach’s Alpha, Composite reliability, and AVE

	Cronbach's Alpha	Composite Reliability(CR)	Average Variance Extracted (AVE)
EX	0.927	0.948	0.821
GRU	0.924	0.944	0.771
PV	0.880	0.926	0.806

RA	0.910	0.937	0.787
SA	0.817	0.891	0.732
SB	0.890	0.924	0.752
SC	0.840	0.885	0.663
WL	0.911	0.944	0.849
WO	0.881	0.927	0.808

This explains that the construct and CR must be greater than 0.7 (Hair et al., 2014).Both criteria are fulfilled for our variables.

Discriminant Validity

An evaluation of the discriminant validity of the measurement model followed next. Table 5 shows that the square root of the AVE of each variable (diagonal values) is higher than the correlation between the variable and other variables (offdiagonal values). Therefore, discriminant validity is established in our model. Discriminant validity can also be assessed using the cross-loading table (see Table 6).The cross-loading table (highlighted values) also does not show any issue with discriminant validity (Alzahrani et al. 2017).

Table 5. Fornell and Lacker criteria

	EX	GRU	PV	RA	SA	SB	SC	WL	WO
EX	**0.906**								
GRU	0.214	**0.878**							
PV	-0.022	-0.527	**0.898**						
RA	0.766	0.194	-0.001	**0.887**					
SA	-0.156	-0.576	0.492	-0.117	**0.856**				
SB	-0.052	-0.443	0.645	0.017	0.578	**0.867**			
SC	-0.012	0.060	-0.254	-0.050	-0.214	-0.165	**0.814**		
WL	0.729	0.096	0.084	0.773	-0.012	0.075	-0.079	**0.921**	
WO	0.721	0.015	0.161	0.694	-0.043	0.099	0.053	0.686	**0.899**

Diagonal represents the square root of average variance extracted (AVE), while the other entries represent squared correlations.

Table 6. Cross-loadings

	EX	PV	GRU	RA	SA	SB	SC	WL	WO
EX1	**0.875**	0.018	0.154	0.649	-0.106	-0.020	0.009	0.632	0.579
EX2	**0.917**	-0.018	0.239	0.769	-0.109	-0.020	-0.045	0.701	0.678
EX3	**0.930**	-0.031	0.195	0.690	-0.200	-0.072	0.000	0.657	0.688

EX4	**0.901**	-0.048	0.182	0.660	-0.152	-0.079	-0.002	0.649	0.663
PV1	-0.027	**0.879**	-0.409	-0.028	0.373	0.543	-0.279	0.069	0.161
PV2	0.015	**0.910**	-0.505	0.002	0.444	0.566	-0.190	0.107	0.164
PV3	-0.047	**0.904**	-0.499	0.020	0.501	0.623	-0.221	0.051	0.113
R1	0.113	-0.474	**0.762**	0.018	-0.470	-0.503	0.125	0.008	-0.044
R2	0.207	-0.476	**0.899**	0.189	-0.487	-0.340	0.015	0.082	0.014
R3	0.142	-0.397	**0.896**	0.124	-0.482	-0.331	0.032	0.015	-0.026
R4	0.254	-0.476	**0.927**	0.265	-0.539	-0.356	0.066	0.167	0.050
R5	0.210	-0.481	**0.896**	0.234	-0.543	-0.415	0.026	0.130	0.058
RA1	0.600	0.053	0.125	**0.891**	-0.056	0.074	-0.052	0.734	0.615
RA2	0.694	-0.055	0.253	**0.900**	-0.191	-0.013	-0.050	0.728	0.617
RA3	0.698	-0.008	0.170	**0.897**	-0.125	-0.021	-0.062	0.617	0.631
RA4	0.713	0.015	0.136	**0.860**	-0.038	0.029	-0.017	0.670	0.600
SA1	-0.094	0.521	-0.476	-0.053	**0.878**	0.609	-0.215	0.036	0.019
SA2	-0.112	0.445	-0.523	-0.116	**0.870**	0.438	-0.183	-0.009	0.018
SA3	-0.197	0.296	-0.478	-0.130	**0.818**	0.442	-0.153	-0.057	-0.153
SB1	-0.074	0.614	-0.408	0.017	0.519	**0.886**	-0.190	-0.005	0.091
SB2	-0.054	0.544	-0.343	-0.038	0.495	**0.877**	-0.095	0.051	0.085
SB3	0.057	0.507	-0.318	0.112	0.424	**0.864**	-0.137	0.166	0.150
SB4	-0.099	0.561	-0.458	-0.023	0.557	**0.841**	-0.142	0.063	0.022
SC1	-0.041	-0.261	0.000	-0.112	-0.159	-0.177	**0.880**	-0.099	0.010
SC2	-0.042	-0.256	0.095	-0.050	-0.233	-0.121	**0.902**	-0.101	0.032
SC3	0.051	-0.130	0.071	0.041	-0.166	-0.130	**0.829**	-0.030	0.089
SC4	0.101	-0.073	0.042	0.078	-0.122	-0.094	**0.614**	0.094	0.140
WL1	0.635	0.105	0.023	0.626	0.064	0.081	-0.073	**0.905**	0.595
WL2	0.697	0.063	0.137	0.749	-0.028	0.064	-0.070	**0.945**	0.626
WL3	0.682	0.066	0.100	0.756	-0.064	0.063	-0.076	**0.913**	0.673
WO1	0.590	0.132	0.011	0.591	-0.009	0.116	0.077	0.593	**0.886**
WO2	0.658	0.197	0.010	0.626	-0.064	0.129	0.033	0.630	**0.919**
WO3	0.690	0.107	0.018	0.652	-0.040	0.027	0.037	0.625	**0.892**

Structural Model

According to Chin (1988), the explanatory power of a structural model can be determined by the squared multiple correlations (R^2) and the significance levels of the path coefficients. For the study of the path coefficients in the research model, the t-values were evaluated using the bootstrap routine with 5,000 resamples (Laumer et al. 2014, Henseler et al. 2009).

Coefficient of determination (R^2)

Table 7. Coefficient of determination

Endogenous variables	R Square
EUG	0.319
EX	0.675
PV	0.438
SA	0.332

Table 7 indicates that there were no weak or substantial predictive accuracy within our model. The predictors SB and SC explained 43.8% variance on PV. In case of EX, 67.5% variance is explained by WO, WL, and RA. Finally, constructs EX and PV explain 32.0% variance on EUG and EUG explains 33.2% variance on SA.

Result of the proposed hypotheses

The research model was tested using the bootstrap procedure (5,000 resample) on SmartPLS3 software.

Table 8. Path coefficient and hypotheses test result

Hypotheses	Relationship	Path Coefficient	Standard Deviation	T Statistics	Result
H1	**SB -> PV**	0.620	0.060	10.329	Supported
H2	**SC -> PV**	-0.152	0.046	3.320	Supported
H3	**PV -> EUG**	-0.523	0.057	9.263	Supported
H4	**WO -> EX**	0.299	0.067	4.453	Supported
H5	**WL -> EX**	0.230	0.095	2.426	Supported
H6	**RA -> EX**	0.381	0.093	4.078	Supported
H7	**EX -> EUG**	0.203	0.058	3.494	Supported
H8	**EUG->SA**	-0.576	0.050	11.491	Supported

Table 8 indicates that the impact of switching cost (β= -0.152, p<0.001) and switching benefit (β= 0.620, p<0.001) on PV was significantly negative and positive, respectively. PV (β= -0.366, p<0.001) had a significantly negative influence on end-user grumbling behaviour (EUG).

In terms of the integration of the theory of technostress, the result indicates that IT-induced work overload (β= 0.299, $p<0.001$), work–life conflict (β= 0.230, $p<0.05$), and role ambiguity (β= 0.381, $p<0.05$) positively influence exhaustion (EX). EX (β=0.157, $p<0.05$) and have a significantly positive impact on the EUG. The final hypothesis H8, indicates EUG (β= -0.576, $p<0.001$) has negative impact on symbolic adoption (SA) and it was strongly significant.

Strength of effect

Next, we also assessed effect sizes (f^2). Besides the squared multiple correlations (R^2) and path coefficient, the effect size can also be evaluated to control for the respective impact of different variables in one model. Regarding the status quo bias theory, SC (f^2= 0.040) has a small effect on PV than SB (f^2= 0.665), which has the largest effect. Within the theory of technostress, both WO (f^2= 0.128) and WL (f^2= 0.058) have small effect on EX, but RA (f^2= 0.157) has a medium effect. With respect to the dependent variable EUG, PV (f^2= 0.403) has a large effect and EX (f^2= 0.061) has a small effect. Finally, large effect was observed from EUG (f^2= 0.498) on the outcome SA (see Table 9).

Table 9. Effect size result

	f^2 value	**Effect size**
Predictors of status quo		
SB->PV	0.665	Large
SC->PV	0.040	Small
Predictors of technostress		
WL->EX	0.058	Small
WO->EX	0.128	Small
RA->EX	0.157	Medium
Effect on EUG		
PV-> EUG	0.403	Large
EX-> EUG	0.061	Small
Effect on symbolic adoption		
EUG-> SA	0.498	Large

Final research model

The result of our test is presented in the final research model in Figure 2.

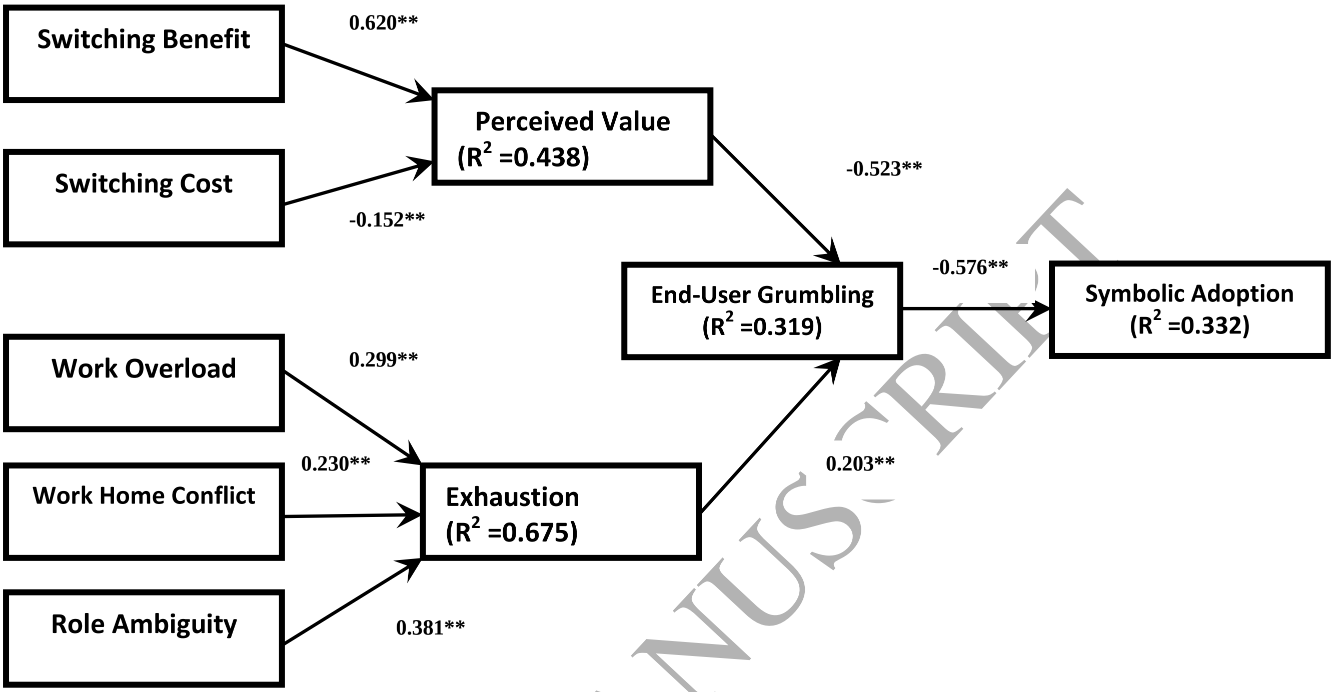

Figure 2. Testing result of the final model

Note: **p <0.05 significant at the 0.05 level

DISCUSSION

This study was aimed at developing a set of tangible variables in the context of companies in the manufacturing sector and at measuring the impact these variables have on user resistance to new ERP technologies. Based on the relevant literature, seven hypotheses were developed and data suggested that all were strongly significant.

Predictors of perceived value

As per H1 and H2, switching cost has a negative impact on perceived value and switching benefits has a positive impact on perceived value. As per our analysis in Table 10, based on H1 and H2, switching benefit (β= 0.620, p<0.001)had a positive and switching cost had a negative (β= -0.152, p<0.001) impact on perceived value (PV).These results are consistent with the previous results of Kim and Kankanhalli (2009), and Klocker et al. (2014). Kim and Kankanhalli (2009) tested this model in the context of a new enterprise system called 'New Office Plus' and Klocker et al.(2014) had empirical evidence on e-health-related ERP called 'eGK'. Our context was also similar, as we examined these relations in the context of the SAP ERP system.

SB and SC explain 43.8% variance on the perceived value, which had morevariance than the research models of Kim and Kankanhalli (2009), and Klocker et al. 2014.The effect size calculation result shows SC (f^2= 0.040) has a smaller effect on PV than SB (f^2= 0.665), which has the largest effect.

As is obvious, switching costs will also affect the perceived value. Higher switching costs will decrease the net benefit of a change to a new IS, thereby negatively affecting its perceived value (Kim & Kankanhalli, 2009; Klocker et al., 2014). Likewise, switching benefits will include, for instance, enhanced workplace performance or incentives directly associated with the switch to a new ERP technology, increasing, in effect, the value of switching. It can be concluded from these findings that SB and SC are very strong predictors for PV of the ERP system.

Relationship between perceived value and end-user grumbling

Based on the studies of Kim and Kankanhalli (2009), Laumer et al. (2014), Klocker et al. (2014), and Klocker (2015), we formulated H3, indicating PV hada negative impact on end-user grumbling. The construct 'end-user grumbling' was adopted from user resistance behaviour by Laumer et al. (2014). The result of H3 was supported significantly, implying that a lower level of PV will lead to a higher level of user resistance (in our case EUG). From Table 9, we found that PV (β= -0.366, p<0.001) has a significantly negativeinfluence on EUG behaviour.A similar result was found in the research of Kim and Kankanhalli(2009), Klocker et al. (2014),Klocker (2015), and Hsieh (2015). PV (f^2= 0.167) has a medium effect on EUG.

The concept of perceived value thus suggests that users will invariably evaluate the benefits of adopting a new technology vis-à-vis their relative costs. In other words, if the perceived value of the new technology is considered low, users are more likely to resist it, because they tend to prioritize their personal value in the decision-making process. Perceived value takes into account whether the benefits derived are worth the costs of the switchover from the status quo to a new ERP technology. End-users are likely to show a greater resistance to the implementation of a new ERP system if they find the perceived value of the change to be low. Conversely, if the perceived value is high, end-users are likely to have a lower resistance to the change. These findings and the presented data set help us to draw the conclusion that PV is a particularly apt predictor of EUG in the case of a SAP ERP technology implementation project.

Predictors of techno-induced exhaustion

Based on Maier et al.'s (2014) model on the influence of technostress on ERP research, we also included the stressors as predictors of exhaustion such as work overload, work–home conflict, and role ambiguity.

Our data indicates that, in case of integration of the theory of technostress, IT-induced work overload (β= 0.299, $p<0.001$), work–life conflict (β= 0.230, $p<0.05$), and role ambiguity (β= 0.381, $p<0.05$) positively influence exhaustion (EX), meaning that H4, H5, and H6 are significantly supported. This result is consistent with the earlier findings of Maier et al. (2015), Ayyagari et al. (2011), and Ayyagari et al. (2007).

To determine the effect strength, we calculated f^2 values and found that both WO(f^2= 0.128) and WL(f^2= 0.058) have a minor effect on EX but RA(f^2= 0.157) had a medium effect.

The present study suggests that technostress is real and that it deserves attention in today's technology-intensive world. The results indicate that approximately 67.5% of the variance in exhaustion is explained by the proposed stressors (work overload, work–lifeconflict, and role ambiguity), which is also bigger than the model proposed by Ayyagari et al. (2011) (R^2=35%) and by Maier et al. (2015) (R^2= 46.7%). This implies that IT-induced stressors have a high influence on IT-related exhaustion in the manufacturing sector in Bangladesh.

Relation between technostress and end-user grumbling

According to Maier and Laumer (2014), strain leads individuals into a negative emotional state, which, in turn, results in users developing a negative belief about a new system. This issue allowed us to generate H7, which indicates that a higher level of IS exhaustion will lead to a higher level of end-user grumbling. According to our data set, H7 is strongly supported, where EX (β= 0.157, $p<0.001$) positively influences EUG. The result also indicates that EX has a small effect on EUG, where f^2= 0.035. This result is consistent with the results of previous researchers, the ICT exhaustion research of Fuglseth and Sorebro(2014), and the SNS exhaustion research of Maier et al. (2015a), who also identified the dark impact of technostress on technology usage.

Prior research in the field of technostress focused on identifying the antecedents of exhaustion (Ayyagari et al., 2011; Maier et al., 2014b), but it left the investigation into user reactions to exhaustion to future research (Ayyagari et al., 2011). The present research contributes to this stream of research by showing that the perception of exhaustion results in the development of user resistance, which is subsequently translated into end-user grumbling behaviour.

Relation between end-user grumbling and symbolic adoption

Symbolic adoption is important for the diffusion between technology and people in the organization. Nah et al. (2004) explained that for mandated technology, the term symbolic adoption is more suitable, since it reflects mental acceptance of new ERP (Seymour et al., 2007). If the original system is absent in the industry, symbolic adoption can reflect the observer's willingness to adopt (Fiss and Zajec, 2006).

Noting that, this research proposed in hypothesis H8 that end user grumbling negatively influences symbolic adoption of the new ERP system. Results indicate that EUG ($\beta = -0.576$, $p<0.001$) has significant negative impact on symbolic adoption (SA). This result is consistent with the result of Alhirz and Sanjeev (2013). End user grumbling explains 33.2% variance and has very large effect ($f^2 = 0.665$) on symbolic adoption.

Symbolic adoption is a substitute measure of actual acceptance, where the system is not available (Al-Jabri & Roztocki, 2015). In the context of this study, SAP ERP is not installed yet in the respondent organizations and their potential end users. To examine the end users motivation in mandated technology environment, it is necessary to measure the effect of user's resistance. Higher degree of resistance might lead to lower degree of symbolic adoption, which might lead directly to possible ERP implementation failure.

CONTRIBUTIONS AND IMPLICATIONS

Theoretical Contribution

This paper contributes to the body of work dedicated to helping us better understand end-user resistance in the pre-implementation phase of anERP system. It complements the primarily macro-level examinations of EUG (Laumer et al., 2014; Kim & Kankanhalli, 2009) by building on our understanding of the phenomenon at the individual level**.** Specifically, this paper examined EUG in organizations investing to help their employees cope with the shock that a new ERP implementation brings, especially in the pre-implementation phase.

This research, which deals specifically with ERP technology, also draws on both theoretical contributions to the field of IS and variables brought to the fore by exploratory quantitative data. Not only does it contribute to this current academic agenda by means of a new theoretical model, but it also empirically validates this model. It has, therefore, identified a set of tangible variables concerning status quo and technostress that influence how end-users respond to the roll-out of a new ERP system.

The findings of the final quantitative study highlight that switching benefit and switching cost to the perceived value shape end-users' resistance behaviour. Similarly, IT-induced stressors, which lead to exhaustion, positively influence user resistance.

The second major contribution of this research is to user resistance theory. Although user resistance to IS was dealt with by Markus (1983) as early as the 1980s, it received a rather ambiguous treatment as part of the more widely examined theories on user acceptance (Dwivedi et al., 2011). Despite the recent increase in attention, very few studies have empirically tested the antecedents to user resistance in the pre-implementation stage. Thus, this study provides a strong validation of the theory of user resistance. By extending the models of Kim and Kankanhalli (2009), and Laumer et al. (2014), it goes beyond established research by systematically accounting for techno-stressors while also testing for their effects on user resistance or end-user grumbling behaviour.

The third major contribution of our study lies in creating the union between status quo bias theory and technostress. A recent meta-analysis by Ali et al. (2016) reveals several theories and variables to measure user resistance based on system, people, and interaction. This meta-analysis also shows, however, that no research was conducted by exclusively using technostress, or integrating technostress with any other theory to explain user resistance. By merging technostress with status quo, this study contributes to the validity of this concept. Furthermore, stressors–strain relation and its impact on end-user grumbling are empirically tested and are found to be strong predictors. This sheds light on users' exhaustion. Work–overload, work–life conflict, and role ambiguity could be unwanted consequences of exhaustion, which might be catalysts for end-user grumbling.

Finally, this study extends strong support to the impact of EUG on symbolic adoption of the system. It also provides empirical information about the relationships among the selected dimensions of IS success. EUG is considered as an inhibitor, and SA is considered as enabler of ERP adaption.

Practical Contributions

From a practical perspective, this research sheds light on some of the challenges implementers might face when rolling out large-scale IS infrastructures, especially in the manufacturing sector. Therefore, the research offers insights into the strategy managements might want to follow in order to implement SAP ERP.

Status quo had a major impact on user resistance. High switching cost, low switching benefits, and low perceived values lead to a higher level of user resistance. The results of this study offer suggestions to managements about how to alleviate user resistance in IS implementation.

First, management should be aware of the critical effect of switching costs on user resistance. It can try to reduce switching costs by enhancing employees' favourable opinions about a new IS-related change and increasing users' self-efficacy for change.

Second, managements should add to the perceived value of change and ensure organizational support to reduce user resistance. The perceived value could be increased by highlighting the advantages of a new IS, which is why the end-users should be made aware of the switching benefits prior to the introduction of a new system. Furthermore, managements could enhance the switching benefits by enriching colleagues' favourable opinions about IS-related changes.

Finally, with respect to technostress, our proposed model could serve as a tool to diagnose the stressful impacts of technologies and their causes in organizations. Moreover, it provides guidance on the interventions meant to offset the cost of stressed individuals to organizations. In order to reduce stressors like work–home conflict and work overload, managements should also focus on end-users' expectations from jobs. Managers should also consult the end-users about the need for ERP and seek their support to reduce confusion (role ambiguity) about a new ERP system.

Findings of this study suggest that practitioners should focus on the level of technological innovation within the organization before implementing ERP. This implies that end users with low EUG and high SA are more likely to invest their time on learning ERP knowledge, are more ready to adopt ERP system. Higher level of symbolic adoption is an indicator to managers of the readiness of the end users to use ERP.

Methodological contributions

The main methodological contribution of our paper is a PLS marker variable approach to control problems caused by a common method variance in estimating the structural paths of a PLS model. The results clearly show that the PLS marker variable approach is a useful tool for controlling a common method variance.

LIMITATION AND FUTURE DIRECTIONS

This work has a few limitations that should be acknowledged so that the results can be interpreted with necessary caution. ERP implementations are complex and take time to complete (Markus and Tanis 2001; Volkoff et al. 2007). However, this study was restricted to the shakedown phase of the implementation, which is widely acknowledged to be the most critical in terms of continuation or abandonment of an ERP system (Morris and Venkatesh

2010). These findings might change over time, with some support structures gaining or losing influence on the outcomes of interest.

Second, this research was conducted on the implementation of ERP technology in the context of Bangladesh. Bangladesh is very new in the realm of technology; as a result, its lack of IT skills creates technostress. Again, Rahman (2007) noted that, after the emergence of Bangladesh as an independent nation, English suffered a serious setback. One of the reasons for this was a strong nationalistic sentiment for the vernacular (Bengali). As SAP ERP functionalities are in the English language, many native users find it difficult to understand the functions. Countries where ERP projects are implemented by different players and means might have no need for such structures.

Finally, even though we surveyed users in six different organizations, we focused on one particular ERP system developed by SAP. This limits the results as employees working in an organization using another ERP system (e.g. one that is developed in-house) might perceive resistance or status quo differently.

CONCLUSION

This research is part of the limited number of studies on user resistance behaviour or end-user grumbling behaviour in the ERP settings within industries. We attempted to explain the factors that explain end-users' resistance in the pre-implementation stage. Moving beyond previous research, this study developed a model by combining the status quo bias and technostress perspectives. The highlights of this research spotted switching benefit and switching cost as strong predictors of perceived value. A low perception of value of a new system leads to user grumbling. Furthermore, this study also highlights that the excessive use of ICT in an industry causes work overload, work–life conflict, and role ambiguity among employees, or leads to ICT-induced exhaustion. A high level of exhaustion can produce a high level of grumbling behaviour. The strong relation between end user grumbling and symbolic adoption shows the importance of measuring user resistance, which leads to users' mental readiness that is crucial for ERP success. Our data empirically supports this extended model and offers IT experts or industry managers the necessary variables to aim at minimizing end-user grumbling for successful ERP implementation. For our target variable EUG, result shows that PV has more influence than technostress. To increase the perceived value, the advantages of a new ERP should be highlight from the viewpoint of the end-user. Switching benefits, therefore, need to be communicated clearly to users before the new ERP system release as it has large effect on perceived value. Management can further attempt to increase switching benefits by enhancing colleagues' favourable opinions toward new ERP related change. Further, a good understanding of users' heightened enthusiasm (symbolic adoption) of ERP learning is vital to gain the overall potential benefits that can be derived from the system. Furthermore, symbolic adoption implies the degree of voluntary mental acceptance of the idea component of technological innovation—may well be a more appropriate construct to explain IT adoption when usage is mandated. Our result suggests that it is reasonable to expect that if managers don't attempt to reduce resistance of users than it would dampen expected performance benefits from their use in these processes. This paper extends the current user resistance literature on ERP settings and contributes to the up-coming areas on pre-implementation stage and negative consequences of too much technology usage.

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APPENDIX 1: Inclusion criteria, and list of ICT

Are you aware of an upcoming ERP implementation in your organization?	**Yes/ No (Inclusion criteria)**
If ERP installed in your company, will be considered as end user of that system	Yes/ No (Inclusion criteria)
Do you use any of this technology below? (Please underline)	Lists are given below

Do you use any of the technology listed below? If yes, please underline

- **Mobile technologies:** Cell phone, IPAD
- **Desktop or Laptop**
- **Network technologies**: Internet, Intranet, Virtual Satellite, Virtual Private Network
- **Manufacturing Technologies:** Computer Aided Design (CAD), Computer Aided Manufacturing (CAM)
- **Communication technologies**: email, Skype, Viber, video conference
- **Database technologies**: MS-Access, Oracle, MySQL, SQL server
- **General software:** Word processing software, spreadsheet, notepad
- **Graphics software:** Photoshop, Illustrator,

- **Other work specific technologies:** attendance software, payroll software
- **Other work specific websites:** Alibaba.com, Bikroy.com, Online website for stock lot etc.
- **Other ____ (Please write if any other)**

Appendix 2: Model measurement questionnaire

Item	Questionnaire	Adapted/Adopted Sources	Original sources
EUG1	I will protest against the ERP implementation.	Laumer et al. (2014)	Laumer et al. (2014)
EUG2	I will complain about the ERP implementation to my colleagues.		
EUG3	I will present my objections regarding the ERP implementation to the management.		
EUG4	I do not agree with the change to the new way of working with the ERP	Kim and Kankanhalli (2009); Klocker (2015)	Kim and Kankanhalli (2009)
EUG5	I will not cooperate with the change to the new way of working with the ERP		
Switching Cost			
SC1	I have already put a lot of time and effort into mastering the current way of working	Kim and Kankanhalli (2009); Klocker (2015)	Jones et al. (2000)
SC2	It would take a lot of time and effort to switch to the new way of working with the 'ERP'		
SC3	Switching to the new way of working with the 'ERP' could result in unexpected hassles		
SC4	I would lose a lot in my work if I were to switch to the new way of working with the ERP		
Switching Benefit			
SB1	Changing to the new way of working with the 'ERP' would enhance my effectiveness on the job than working in the current way	Kim and Kankanhalli (2009); Klocker (2015)	Moore and Benbasat (1991)
SB2	Changing to the new way of working with the 'ERP' would enable me to accomplish relevant tasks more quickly than working in the current way		
SB3	Changing to the new way of working with the 'ERP' would increase my productivity than working in the current way		
SB4	Changing to the new way of working with the 'ERP' would improve the quality of the work I do than working in the current way		
Perceived Value			
PV1	Considering the time and effort that I have to devote, the change to the new way of working with the 'ERP' is worthwhile	Kim and Kankanhalli (2009); Klocker (2015)	Sirdeshmukh et al. (2002)
PV2	Considering the loss that I have experienced, the change to the new way of working with the 'ERP' is of good value		
PV3	Considering the hassle that I have to experience, the change to the new way of working with the 'ERP' system is beneficial to me		

Work Overload			
WO1	ICT creates many more requests, problems, or complaints in my job than I would otherwise experience	Ayyagari et al. (2011)	Moore (2000)
WO2	I feel busy or rushed due to using lots of ICT.		
WO3	I feel pressured due to using lots of ICT.		
Work-Life Conflict			
WL1	Using too much ICT blurs boundaries between my job and my home life.	Ayyagari et al. (2011)	Netemeyer et al. (1996)
WL2	Using too much ICT for work-related responsibilities creates conflicts with my home-life responsibilities		
WL3	I am unable to get everything done at home because I find myself completing job-related work due to using ICT		
Role Ambiguity			
RA1	I am unsure whether I have to deal with ICT problems or with my work activities	Ayyagari et al. (2011)	Moore (2000)
RA2	I am unsure what to prioritize: dealing with ICT problems or my work activities.		
RA3	I cannot allocate time properly for my work activities because my time spent on ICT-related activities varies.		
RA4	Time spent resolving ICT problems takes time away from fulfilling my work responsibilities		
Exhaustion			
EX1	I feel drained from activities that require me to use ICT.	Ayyagari et al. (2011)	Moore (2000)
EX2	I feel tired due to my ICT activities.		
EX3	Working all day with ICT is a strain for me.		
EX4	I feel burnt out due to my ICT activities		
Symbolic Adoption			
SA1	I am enthusiastic about using ERP	AlHirz and Sajeev (2013)	Nah et al. 2004
SA2	I am excited about using ERP system		
SA3	It is my desire to see full implementation of ERP system		

Appendix 3: Common method bias analysis

Procedural Technique

- Respondents were assured anonymity
- Respondents were told that there was no right or wrong answers.
- Assistants of this research project were kept at a distance while respondents were answering the questionsto ensure privacy.
- Fun facts were introduced for separation of the theories as procedural remedies (See Table 13).

Fun Facts	Remark
Do you know? ‘Rhythm’ is the longest English word without a vowel	Placed after demographic questionnaire
Did you know? Identical twins do not have identical fingerprints	Placed after end user grumbling items
Did you know? In France, it is legal to marry a dead person	Placed after all the items of switching benefit, switching cost, and perceived value

Did you know? The number of words posted in twitter each day would fill a 10 million page book	Placed after all the items of work overload, work-life conflict, role ambiguity and exhaustion
You completed 50%, thank you for your understanding. **100% done, Thank you a lot for the support.**	Some encouraging words were also put in the questionnaire to motivate respondents

Statistical Technique

1. Harman's single factor

Harman's single factor test implies that if all the variables of the research model are considered as a single factor and if that single factor elucidates significant covariance among variables, then there is a presence of common method bias.

The commonly accepted standard for significant covariance explained to be considered a potential problem is at least 25 percent (Ayyagari et al., 2011). Herman's single factor test result showed the most co-variance explained by one factor was 19.53% of the variance which indicates data did not have CMV problem.

2. Marker variable

Ronkko and Ylitalo (2012) introduced the PLS marker variable technique, which proposed a method factor be included as a predictor (marker variable) for all endogenous constructs in the research model. After that, the relationship among the variables of the main model and relationship among the variables of the model with the marker variable will be compared. If the significance of the relationships of the model with the marker remains the same as in the original model, then it can be concluded that no common method problem.

Our marker variable called 'Marker' and the items are shown in the Table 14 below.

Table 14. Items of marker variable from Lin et al. (2015)

Item No	Description
Mark_1	Once I've come to a conclusion, I'm not likely to change my mind
Mark_2	I don't change my mind easily
Mark_3	My views are very consistent over time

Marker variable test result is given in Table 15

Table 15 Comparison between baseline model and marker included model

	Without Marker variable			With Marker variable		
Relations	**Path**	**P**	**Remark**	**Path**	**P**	**Remark**

	Coefficient	Values		Coefficient	Values	
SC -> PV	-0.152	0.001	Supported	-0.154	0.001	Supported
SB -> PV	0.620	0.000	Supported	0.584	0.000	Supported
PV -> EUG	-0.366	0.000	Supported	-0.366	0.000	Supported
WO -> EX	0.299	0.000	Supported	0.301	0.000	Supported
WL -> EX	0.230	0.016	Supported	0.235	0.016	Supported
RA -> EX	0.381	0.000	Supported	0.369	0.000	Supported
EX -> EUG	0.157	0.012	Supported	0.156	0.011	Supported
EUG->SA	-0.576	0.000	Supported	-0.567	0.000	Supported
		R^2			**R^2**	
PV		0.438			0.465	
EX		0.675			0.677	
EUG		0.320			0.329	
SA		0.332			0.333	

As all significant effects remained significant and small R^2 change 2.7% in PV, we conclude that CMB is not a serious issue here (Hock et al., 2016).