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MODELLING END USERS' CONTINUANCE INTENTION TO USE INFORMATION SYSTEMS IN ACADEMIC SETTINGS: EXPECTATION-CONFIRMATION AND STRESS PERSPECTIVE

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ABSTRACT

Aim/Purpose	The main aim of this study is to identify the factors that influence the continuance intention of use of innovative systems by non-academic employees of a private university and associated academic institutions in Bangladesh.
Background	The targeted academic institutions have introduced many new online services aimed at improving students' access to information and services, including a new online library, ERP or online forum, and the jobs-tracking system (JTS). This research is focused only on the JTS for two reasons. First, it is one of the most crucial systems for the Daffodil Family, as it enables efficient working across many institutes spread across the country and abroad. Second, it is employed in a wide variety of organisational institutes, not just the university. This study aims to discover negative factors that lead to a decrease in users' intentions to continue using the system. The ultimate goal is to improve the motivation among administrative staff to use technology-related innovation by reducing or eliminating the problems.
Methodology	G* power analysis was employed to determine the expected sample size. A questionnaire survey was conducted of 211 users of a new job tracking system from a private university in Bangladesh, to collect data for testing the suggested

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	research model. The data was analysed using the structural equation technique, which is a powerful multivariate analysis mechanism.
Contribution	This research contributes to the body of literature and helps better understand users' continuance intention in the post-implementation phase of the JTS. It complements the micro-level examinations of continuance intention of using IT, by building on our understanding of the phenomenon at the individual level. Specifically, this study examines the role of technostress where organisations invest in IT to make their users more comfortable with innovative and new technologies like the JTS.
Findings	This research develops a theoretical advancement of the expectation-confirmation theory, with implications for IT managers and senior management dealing with IT-related behaviour. All proposed hypotheses were supported. Specifically, the predictors of exhaustion – work overload, work–life balance, and role ambiguity – are significant. The core factors for satisfaction, perceived usefulness, and confirmation, are also found to be significant. Finally, satisfaction and exhaustion significantly influence continuance intention, in both positive and negative ways.
Recommendations for Practitioners	This study gives an idea about some of the difficulties that people face when implementing new and innovative IT, particularly in academia in Bangladesh. It offers insights into strategies the management may want to follow when implementing new technology like the JTS. This study suggests strategies to increase satisfaction and reduce technostress among new users to enhance organisational support for change.
Recommendations for Researchers	Methodologically, the study provides researchers about the technique that reduces the threat of the common method bias. First, it created a psychological separation between criterion and predictor variables. Second, the threat of common method variance was actively controlled by modelling a latent method factor and by using marker variables that researchers can use in their work. This study complements the micro-level examinations of continuance intention of using IT by building on our understanding of the phenomenon at the individual level. Researchers can extend this model by integrating other theories.
Impact on Society	The findings of the study indicate that work overload, work–life conflict, and role ambiguity create tiredness, leading to lower user satisfaction with the system. Perceived usefulness and confirmation have an increasingly similar effect on users' satisfaction with the system and their subsequent continuance intention. These findings tell university administrators what measures they should take to improve continuance intention of using innovative technology.
Future Research	Future studies could conceptualise a five-factor personality model from the personal perspective of users. This model can also be extended by including the dimensions of absorptive capacity, i.e., the dynamic capabilities of users. Absorptive capacity of understanding, assimilating, and applying might influence the user's perception of usefulness and confirmation of using JTS.

| Keywords | continuance intention, technostress, business intelligence, Bangladesh |

INTRODUCTION

The frenetic pace of development in the field of information and communication technology (ICT), coupled with the increasing demand from a knowledge-prone society, have put significant pressure

on higher education institutions regarding new technological initiatives and diffusion (Dennison, 2014). The speed at which technology is getting transferred from one place to the other, along with the ever-increasing demand of technology for teaching and learning in research, pedagogy, and academic administration, ensure that universities focus ever more single-mindedly on techno-innovation and diffusion efforts. Failure is a common phenomenon when it comes to project development. Bignell and Fortune (1984) defined failure broadly as the shortfall between performance and standards. In the context of IS/IT, Ewusi-Mensah (2003, p. 7) defined failure as "either the implemented system not meeting the user expectations or inability of creating, working, or functioning".

In 2013, a survey by cloud portfolio management provider Innotas (now Innotas by Planview) revealed that 50% of businesses they surveyed had experienced an IT project failure within the previous 12 months. Three years later, those numbers had actually increased. The 2016 edition of the Innotas Project and Portfolio Management Survey, which polled 126 IT professionals between January and March 2015, revealed that as many as 55% of respondents had experienced project failure, up from 32% in 2014.

According to Alenezi et al. (2015), the Ministry of Higher Education invested a significant amount in projects of the higher learning institutions, but the success rate was still low. The 2018 PMI Pulse of the Profession Report, for example, notes that 10% of every dollar that is used for a new project, fails to be of use due to the fact that most projects often cannot meet their targeted aim in terms of factors, such as time and quality. This ultimately leads to a lot of projects failing.

The Standish Group further segmented these results into large, medium, and small companies. A large company was any company with greater than $500 million in revenue per year; a medium company was defined as having $200 million to $500 million in yearly revenue; and a small company made $100 million to $200 million in annual revenue. The figures of failure were equally disheartening for companies of all sizes. Only 9% of projects in large companies were successful. At 16.2% and 28%, respectively, medium and small companies were somewhat more successful. A whopping 61.5% of all large company projects were challenged (Resolution Type 2) compared to 46.7% for medium companies, and 50.4% for small companies. There were 37.1% projects impaired and subsequently cancelled (Resolution Type 3) in medium companies, compared to 29.5% in large companies and 21.6% in small companies.

According to Kubilus (2016), a study by McKinsey & Company in collaboration with the University of Oxford, on average, 45% of most of the IT projects that are large in scale end up crossing its budget, while 7% misses the deadline. Ultimately, the value seems to be 56% less. When it comes to higher education, these numbers are optimistic.

The most important aim of the research was discovering why projects fail. To this end, the Standish Group surveyed IT executive managers for their opinions about why projects succeed. The three major reasons for the success of a project were found to be user involvement, executive management support, and a clear statement of requirements. There are other success criteria, but with these three elements in place, the chances of success were found to be much greater. Without them, chances of failure increased dramatically.

Table 1 shows that four of the ten factors for failure are focused on users. The literature suggests that there are serious negative corollaries of advancements in IT and their implementation in higher education institutions, but these have not received much attention to date. An example could be the cost of ensuring continuous internet connectivity (in the form of smartphones and laptops). This means that, while most students benefit from increased access to information, those without the means to pay for hi-tech devices are left behind (Hawkins, 2002). This is especially the case in a low-middle-income economy like Bangladesh, where many students struggle to make ends meet while pursuing higher studies.

Table 1. Cause of project failure (Standish Group, 2014)

	Factors	% of responses
1	User involvement	15.9%
2	Executive management support	13.9%
3	Clear statement of requirements	13.0%
4	Proper planning	9.6%
5	Realistic expectations	8.2%
6	Smaller project milestones	7.7%
7	Competent staff	7.2%
8	Ownership	5.3%
9	Clear vision and objectives	2.9%
10	Hard- working, focus staff	2.4%
	Other	13.9%

Other drawbacks range from a lack of preparedness in students' IT education for sophisticated use of new technologies, whether in developed nations (Moore et al., 2010) or developing ones (Nyamupangedengu, 2017), to IT illiteracy among administrative staff and faculty in higher education institutions (Elmes, 2017). Technology-related stress among employees is one such challenge that universities and other tertiary education institutions need to consider in assessing their preparedness for IT-based solutions to greater access to information.

Technology-related stress among employees might occur due to the fast spread of information technology (IT), the pressure to adapt to new ways of working, along with additional procedures at work (Alzahrani et al., 2021).

Technostress has been described as a stress related to IT use (Ayyagari et al., 2011). This might have a deleterious impact on employee performance and the implementation of new ways of working with data. In this digital age, prolonged periods of stress in the workplace might lead to decrease in productivity and high turnover among employees (Tennant, 2001). About 80% of the respondents to a 2011 survey in this area indicated that workplace requirements for increased use of technology had made their work more stressful (Tarafdar et al., 2011).

Despite, or perhaps because of, ever-increasing technological innovation, it is important to identify, measure, and assess the impact of obstacles in the path of techno-innovation (TI). As Mahmud et al. (2017) claimed, IT-related tasks are stressful for those employees who are not skilled in technology. However, according to Ragu-Nathan et al. (2008), strategies implemented by organisations can reduce the impact of technostress.

Like many other employers, universities are investing substantial amounts of time and money in personnel development in order to implement various innovative technologies to support both academic and non-academic staff (Sung & Choi, 2014).

These might involve improvements in technology already extant and include benefits such as faster processing, more effective networking, and better learning for students in a higher education setting. Yet, when introducing innovation in academic institutions, it is important to verify the elements that influence adoption behaviour. As efforts to implement IT-related innovation mature, there is a growing realisation of the lack of evaluation mechanisms incorporating efficient and scalable methods to

characterise its uptake and adoption, its impact on the administrative staff's ways of working, and on institutional performance (Bhuiyan & Mahmud, 2015).

The study took place at a large and well-known university in Bangladesh, which installed several IT packages, namely, an online forum, an enterprise resource planning system (ERP), an online library, and a jobs-tracking system (JTS).

While Daffodil Family institutions have introduced many new online services aimed at improving students' access to information and services, at gathering and acting on data about student employment, and at allowing easier interaction between them, including the new online library, ERP or online forum, and the JTS, this research focused only on the JTS for two reasons. First, it is one of the most crucial and innovative systems for Daffodil Family, as it enables efficient working across many institutes spread across the country and abroad. Second, it is employed in a wide variety of organisational institutes, not just the university.

This study aimed to discover negative factors that lead to a decrease in users' intentions to continue using the system. The final goal is to improve the motivation among administrative staff to use technology-related innovation by eliminating or reducing those factors.

In this study, the researcher examined the factors influencing the continuance intention of using a new and innovative system by non-academic employees at Daffodil International University (DIU) and associated academic institutions. Their search examined technostress by asking the following question:

RQ: Does technostress negatively influence the non-academic staff's continuance intention of using the new information system?

The remaining content of the paper is organised in the following manner. In the literature review section, we examine the research relating to technostress and its impact on continuance intention. The related hypotheses and research model are provided in the methodology section. Data analysis is provided after methodology. Based on the findings, discussion, implications, conclusions and recommendations are provided in this paper.

LITERATURE REVIEW AND MODEL DEVELOPMENT

This section presents the theoretical basis of this study. The Expectation-Confirmation theory (ECT) proposed by Bhattacherjee (2001) and the theory of Technostress proposed by Ayyagari et al. (2011) are explained together with the relevant literature, to explore and obtain a broader understanding of the role of technology, IT usage, and user intention. The different variables from these theories are discussed according to previous studies. Empirical studies on Technostress, ECT, and the continuance intention to use technology (expectation, satisfaction, and confirmation) are also summarised.

PRIOR RESEARCH ON EXPECTATION-CONFIRMATION THEORY

The foundation of the proposed research model is based on the expectation-confirmation theory formulated by Oliver (1977). Oliver's original model focuses on the level of satisfaction a customer has and its impact on repurchase intention. The theory states that the key factor influencing customer behaviour toward products and services is customer satisfaction. In the case of IT usage, Bhattacharjee (2001) has claimed that ECT can be used to measure post-usage behaviour, aligned with this concept. In ECT (see Figure 1), satisfaction focuses the attention of users on a system. The author also suggests that if a system can maintain satisfaction, it remains attractive to users. We found that Carillo et al. (2017) tested the relationship between dependency and the perceived ease of use of media systems, based on the meta-analysis of Ambalov (2018), the concept matrix of the expectation-confirmation theory, and found a significant relationship with the ECT theory. From an organisational point of view, the influence of firm size, scope, and competitive pressure has been

tested with ECT theory by Jia et al. (2017). The focus of these two works lay on mandated technology where the system must be continued whether it is liked or not. In the context of voluntary usage, the ECT theory was tested in various mobile and social media-based systems.

Joo and Choi (2016) tested resource quality for library systems. Oghuma et al. (2016) and Baker-Eveleth and Stone (2015) focused on usability issues concerning users' continuance intention. Cheng (2014) and H. M. Lee and Chen (2014) investigated the influence of information quality, system quality, and service support quality on the ECT theory. Several studies also revealed a significant impact of subjective norm or social influence on the ECT theory (Bhattacherjee and Lin, 2015; Yoon & Roland, 2015).

Addressing the Research Gap

Previous literature showed that most research dealing with the ECT theory focused on voluntary usage settings like e-learning, social network services, and m-commerce, where users can choose to use or not use the system. However, in mandatory IS settings, users' behaviour could be different. In mandatory settings, measuring continuance intention is crucial because, if users reject the system, it would lead to failure and damage the development cost and time.

From the meta-analysis-based research by Ambalov (2018), among 16 papers published in the last five years, we identified two gaps in research which are: 93% of studies were conducted in voluntary information system usage settings, and limited research was conducted using negative stimulus (Table 2).

Table 2. Addressing research gap

Gaps	Description of gap	Addressing gap in this study
1	93% of studies were conducted in voluntary information system settings.	In this study, authors conducted research on JTS whose use is mandatory for employees.
2	Limited investigations were conducted using negative stimulus.	This study added new variables from technostress theory. These are work overload, work–life conflict, role ambiguity, and exhaustion.

Based on the literature review, it can be said that not much research has been done on negative stimuli. This study also categorized all the variables based on positive and negative stimuli. A clear research gap is seen regarding the impact of negative stimulus on information system continuance intention.

Technostress Theory

Stress at and outside work, different assignments assigned at organisations, and turnover rates are related to stress created by IT usage (Ayyagari et al., 2011). A career-focused employee can work in the office as well as at home, using IT devices to increase their productivity. Continuation of access to technology at home and work leads to their being no distinction between the two timings and causes more stress (Mann & Holdsworth, 2003). In terms of stressors, Ayyagari et al. (2011) have proposed five in the context of IT usage. First, work overload includes users' perception of IT as beyond their ability. Second, owing to the availability of internet at home, work–life conflict occurs, as users need to work with IT after office hours to meet professional deadlines. Third, role ambiguity occurs if the work of users does not relate to IT, but users still need to deal with IT-induced problems. Fourth, the introduction of new ICT tools might make older or technically less capable users feel insecure about their jobs. Finally, users might perceive new IT tools as an invasion of their privacy.

Another factor in the implementation of the JTS at Daffodil Family Concerns could be the degree of preparedness that administrative personnel feel after training. If IT is seen as belonging to a different culture or the purpose of tracking one's own progress toward task completion – something that has traditionally been the role of a supervisor – and comes into conflict with institutional hierarchies, we need to investigate and reflect on whether the training provided was sufficient to tackle these obstacles. A case in point might be the finance department that simply used JTS to show salary payments each month but did not use it to look at the development of new systems. The only difference, therefore, was that now JTS was being used as a log of staff remuneration in addition to the old one. Hence, it was seen as an add-on that needed to be taken care of, rather than an analytical tool used in planning.

A final element might be the appropriateness of the JTS that Daffodil Family Concerns introduced. One might question whether employees felt they had been sufficiently consulted about the nature of their roles in the design of the JTS. If it were felt that the system was being imposed on administrative staff without their views being considered, there might be resistance to its continuance.

Related Work on Technostress

When it comes to social network services, Maier et al. (2015) applied the theory of technostress to explain the negative effects of technology and its psychological impact on human behaviour. Their research showed that technostress encourages users to discontinue using SNSs and that this happens because of techno-exhaustion.

Fuglseth and Sørebø (2014) have tried to identify the effects of technostress on employee intentions implementing IT in the working area. They defined those factors responsible for technostress affecting user satisfaction with ICT and the stress levels of users, including their impact on organisational performance.

Hayashi (2011) uses the technostress theory to explain the user effect caused by management influence while implementing ERP systems in the healthcare industry. He claims that elements of technostress affect the adoption of ERP systems in the pre-implementation phase.

In explaining the adaptation to the transactional theory of stress (TTS) in a technostress context, Lei and Ngai (2014) have extended the technostress theory itself. They define technostress as positive and negative appreciation and the outcome of that approach to work performance. They also delineated several types of technostress that can be appraised. This study helps the manager of an organisation to build strategies and policies to minimise the effect of these factors.

Technostress is observed when users adopt a new system (Ragu-Nathan et al., 2008). The authors also claim that this phenomenon leads to dissatisfaction among new users with their job roles and reduces their productivity, besides negatively affecting commitment to the organisation. The authors also identify some demographic factors, like age, gender, and experience of using IT, affecting technostress. Interestingly, they maintain that older employees tend to suffer less stress than their younger counterparts, perhaps because they are more experienced in dealing with stress in general. Nevertheless, this finding runs counter to the findings of earlier studies which suggest that age is not a factor in the onset of technostress. In contrast, gender is a determinant of stress according to Ragu-Nathan et al. (2008), with men being more adept at managing it than women.

In a study related to ERP systems, Mahmud et al. (2017) tested the relationship between technology-induced work overload, work–life conflict and role ambiguity on exhaustion. They concluded that a higher level of exhaustion will lead to a higher level of user resistance behaviour in pre-implementation settings. The impact of stress, strain and exhaustion related to information systems is also explored in the recent research of Pflügner et al. (2020).

In summary, previous technostress-related research showed the impact of techno-induced stress in various contexts. Mostly, research was done on technology adoption or rejection. There has been limited research on the influence of technostress on continuance intention. Our attempt is to extend the ECT theory with technostress by building on these findings. The next section deals with building the research model by linking technostress with ECT theory.

Research Model Development

Expectation-confirmation perspective

Bhattacharjee (2001) claimed that perceived usefulness (PU), which they adapted from the TAM model of Davis (1989), is a key determinant of user satisfaction as it reflects a long-term belief in the expected benefit of the system. In the literature, the theory of ECT-IS continuance was used to measure continuance intention of different technologies such as virtual community (Chen & Qi, 2015), mobile messaging (Gan & Li, 2015), and online review of restaurants (J. Lee & Kim, 2020).

Bhattacherjee's (2001) paper can be considered to be the first in a long series of studies on IT usage work mostly concerning the differences between acceptance and continuance behaviour. After Bhattacherjee, many papers were published on the ECT perspective from the existing IT research community. Many changes, including those through extensions and modifications, have been suggested to develop the model's capabilities to describe user behaviour in different contexts. These contexts vary in many ways, including various platforms such as social network websites, e-commerce pages and e-learning technologies, along with other technologies such as mobile and web-based services.

When it comes to considering factors such as hedonism and ease of use or trust, some studies further compared the original ECT and the extended models side by side, and found that adding theoretical extensions led to an increase in the effect sizes (Bhattacherjee & Lin, 2015); others reported the opposite results (Lin, 2017), and still others found that adding extensions renders some ECT effect paths insignificant (Kim, 2012).

Hypotheses

A link between IT product performance confirmation and user satisfaction can be defined based on the theoretical basis in ECT/ECT. Next, ECT proposes a link between IT-use performance confirmation and user satisfaction for examining intention of continued IT-use, such as ERP use.

In the JTS context, a similar idea was put forward on e-library usage (Baker-Eveleth & Stone, 2015; Cheng, 2014), for online shopping (Wu et al., 2020), and about online food delivery platform (Belarmino et al., 2021). Thus, the formulated hypothesis is as follows:

H1: Perceived usefulness has a positive effect on satisfaction with the JTS.

After the implementation of the system, user confirmation (CON) is defined as a junction of expectation and actual action. CON is also a determinant of PU and satisfaction with the system in an educational setting (Cao et al., 2018; Cheng, 2014; Huang, 2019; Tam et al., 2018). Thus, the hypotheses are:

H2: Confirmation has a positive effect on the perceived usefulness of the JTS.

H3: Confirmation has a positive effect on the satisfaction with the JTS.

In fact, when it comes to analysing how a consumer decides to use an IT system, the level of satisfaction they gain through the system is important. Bhattacharjee (2001) reported that users only decide to continue to use a system if they have a firm belief on the usefulness of it and then comes the confirmation of it. The research on use of e-library resources (Baker-Eveleth & Stone, 2015; Carillo et al., 2017; Cheng, 2014) produced similar results. Similar results were also reported by Belarmino et al.

(2021), Cao et al. (2018), Huang (2019), Tam et al. (2018), and Wu et al. (2020). Therefore, the hypothesis arrived at is:

H4: User satisfaction has a positive effect on JTS continuance intention.

TECHNOSTRESS PERSPECTIVE

Work overload

The implementation of technology in an organisation enhances the productivity of its users, but may put more demands on them (Hayashi, 2011), leading to work overload. To improve productivity and enhance competitive advantage, levels of expectation and the pace of work have increased via the internet (Ayyagari et al., 2011). Owing to new technology, new business processes must be developed and implemented, and users have to be allocated sufficient time for this restructuring to prevent stress build-up (Michie, 2002).

According to Cooper et al. (2001), the pressure to maintain timelines and inflexible deadlines, despite the novelty and ambiguity of dealing with a new system, increases work overload. This can, of course, be compounded by social factors, such as the reluctance to consult others for fear of drawing attention to one's perceived deficiencies. In organisational settings, Mahmud et al. (2017) formalised that work overload will lead to higher degree of exhaustion or strain in the user. Finally, the recent review by Saim et al. (2021) identified work overload as a strong predictor of exhaustion. Hence, we propose:

H5: Work overload has a positive influence on exhaustion.

Work-home conflict

The availability, usefulness, and reliability of ICT can have a negative impact on the working patterns of users (Ayyagari et al., 2011; Lei & Ngai, 2014). Technology encourages users to remain constantly connected (Hayashi, 2011), and it has been suggested that this is a source of strain on employees (Duxbury & Higgins, 1991). Electronic devices like mobile phones and laptops, as well as facilities like broadband connections, are factors that obscure the boundaries of work by providing the means to work in any place at any time. This encourages many employees to adopt the practice of "working from home," in which users continue to handle their professional duties from their domestic environments (Mazmanian et al., 2006; Middleton & Cukier, 2006). Here, the impact of intrinsic motivation – for example, in heightening promotion prospects, securing favourable assessment reports from line managers, or attracting the positive attention of colleagues, and internal and external customers – becomes more pronounced when the opportunity to work extends beyond the physical confines of the office and the temporal ones of office hours (Laumer et al. 2016). Thus, we propose:

H6: Work–life conflict has a positive influence on exhaustion.

Role ambiguity

The introduction of a new technology plays a vital role in increasing an organisation's effectiveness, but it also calls for the implementation of new business processes (Hayashi, 2011). As a result, new working roles may be imposed on employees without their being consulted or their buy-in solicited. According to Hargreaves (1994), this constitutes arrogance of the most inconsiderate kind and may lead to non-compliance. In other words, the management decides how these roles are extended or contracted based on the new framework (Michie, 2002). But if users are not consulted about their responsibilities and their active participation is assumed, then role ambiguity might occur, indicating a lack of clarity on whether they should be concerned with IT as part of their work responsibilities (Christ-Brendemühl & Schaarschmidt, 2020). As is obvious, eventually, role ambiguity negatively affects the productivity of users (Tarafdar et al., 2007). Management needs clear and concise role definitions to avoid these issues (Michie, 2002). Hence, we hypothesize:

H7: Role ambiguity has a positive influence on exhaustion.

Exhaustion

A previous study by Tarafdar et al. (2011) indicated that techno-exhaustion is the psychological reflection of technostress. When users become exhausted and feel depressed about using technology, techno-exhaustion sets in (Ayyagari et al., 2011) and has a significant impact on social communication (Tarafdar et al., 2011), indicating negative behaviour. According to Tarafdar et al. (2007), users are more affected by technostress when they are using technology during work hours and at the end of the day. This stress turns into exhaustion (Ayyagari et al., 2011). Techno-exhaustion has an adverse effect on end-user satisfaction as well (Tarafdar et al., 2007; 2011). According to Mahmud et al. (2017), the antecedents of technostress can affect users badly in technology-enabled innovation. IT-related exhaustion or fatigue can influence users into not using a new system, meaning an increase in discontinuance intention. Therefore, we propose:

H8: Exhaustion has a negative impact on the satisfaction with a new system.

The overall proposed model and hypotheses are presented in Figure 1.

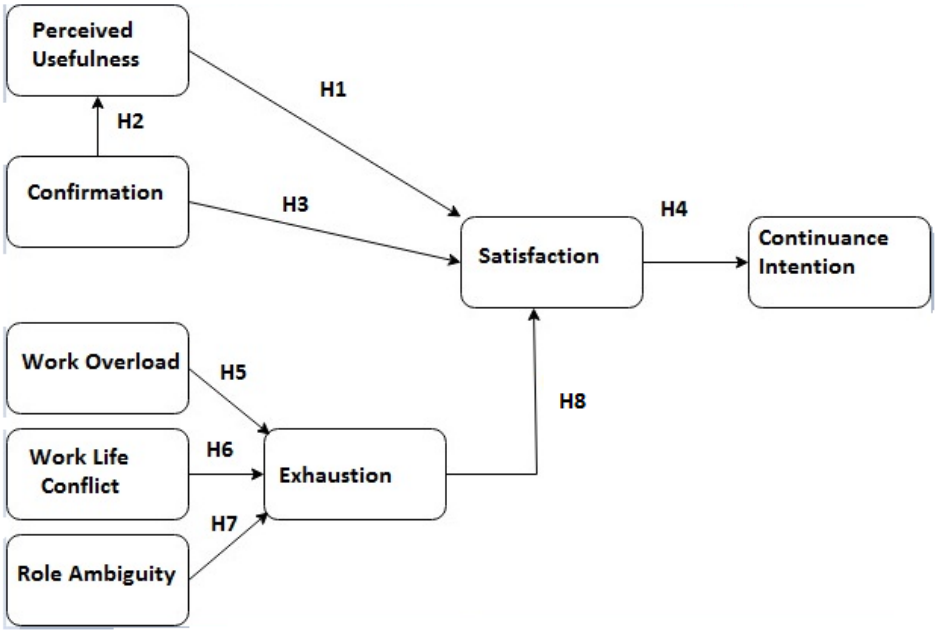

Figure 1. Research model

METHODOLOGY

DATA COLLECTION

This study focuses on examining the impact of technostress on the continuance intention of a new IT system in academic institutions. It seeks to investigate the relationships between techno stressors and exhaustion, exhaustion and perception, and perception and continuance intention via satisfaction.

A quantitative research approach has been adopted, in which a structured questionnaire has been used as the main research instrument. The study is a cross-sectional investigation in which data was collected only once (Mahmud et al., 2020; Toma et al., 2018).

The population of this study was the non-academic staff of different educational institutes of the Daffodil Group, namely, Daffodil International University, Daffodil Institute of IT, Daffodil International College, Daffodil International School, Daffodil Polytechnic Institute, Bangladesh Skill Development Institute and 13 other institutes. As the population was not clearly defined for JTS users, the purposive sampling method was applied.

Purposive sampling incorporates a group of different non-probability sampling techniques. Also known as judgmental, selective, or subjective sampling, purposive sampling relies on the judgement of the researcher when it comes to selecting the units (e.g., people, cases/organisations, events, and pieces of data) that are to be studied. By understanding a priori power analyses (Cohen, 1992; Mahmud et al., 2017), sample size N is computed as a function of the required power level (1- β), the pre-specified significance level α, and the population effect size to be detected with probability (1- β). Using the software G*Power 3, with input parameters: medium effect size, probability of Type I error $\alpha = 0.05$, probability of Type II error $\beta = 0.05$, which means $(1-\beta) = .95$, and the number of predictors = 9, the minimum estimated sample size is 166 with actual power of 95%. We distributed twice the number of questionnaires (printed version) among JTS users from DIU and its 18 sister concerns. We received 211 usable questionnaires with a response rate of 70.3%.

The demographic data of the respondents shown in Table 3 was derived from descriptive analysis. Most of the respondents (42.65%) were aged 20–29 years. As many as 84.34% of them were male and 15.16% were female. Of the respondents, 65.3% worked 8–10 hours on weekdays and 65.9% had work experience of 1–5 years. In terms of IT usage per day, most of the respondents (59.7%) worked 5–10 hours. Reports also suggest that 42.8% had IT experience of 1–5 years.

Table 3. Demographic information

Category		Frequency	Percentage
Age	Less than 20	1	0.474
	20–29	90	42.654
	30–39	81	38.389
	40–49	26	12.322
	50–59	12	5.687
	More than 59	1	0.474
Gender	Male	179	84.834
	Female	32	15.166
Working hours	Less than 8 hours	8	3.8
	8–10 hours	142	67.3
	More than 10 hours	61	28.9
Work experience	1–5 years	139	65.9
	6–10 years	65	30.8
	More than 10 years	7	3.3
IT usage per day	1–5 hours	71	33.6
	5–10 hrs	126	59.7
	More than 10 hrs	14	6.6
Overall IT experience	1–5 years	89	42.180
	6–10 years	77	36.493
	More than 10 years	45	21.327

MEASUREMENT

The first part contains six questions to collect demographic information about age, gender, years of experience, and types of technologies used. A questionnaire related to technostress has been adapted from Ayyagari et al. (2011), and another related to continuance intention has been modified from Bhattacharjee (2001). All the items along with their reliability are presented in Tables 4 and 5.

Table 4. Survey items from ECT theory

Items	Questionnaire	Reliability	Source
Perceived Usefulness			
PU1	Using the job tracking system enhanced my effectiveness at study.	0.88	Bhattacharjee (2001)
PU2	Using the job tracking system increased my productivity at study.		
PU3	Using the job tracking system enabled me to accomplish tasks more quickly.		
PU4	I found the job tracking system useful.		
Confirmation			
CON1	My experience of using the job tracking system was better than I had expected.	0.82	Bhattacherjee (2001)
CON2	The service level provided by the job tracking system was better than I had expected.		
CON3	Most of my expectations from the job tracking system were fulfilled.		
Satisfaction			
SAT1	My overall experience with job tracking usage was: very satisfied.	0.87	Bhattacherjee (2001)
SAT2	My overall experience with job tracking usage was: very pleased.		
SAT3	My overall experience with job tracking usage was: very content.		
SAT4	My overall experience with job tracking usage was: absolutely delighted.		
Continuance Intention			
CI1	I will use the job tracking system in the future.	0.83	Bhattacherjee (2001)
CI2	I intend to continue using the job tracking system rather than discontinue its use.		
CI3	My intentions are to continue using the job tracking system rather than using any alternative means.		
CI4	If I could, I would like to continue using job tracking as much as possible.		

Table 5. Survey items from Technostress Theory

Items	Questionnaire	Reliability	Source
Work Overload			
WO1	ICTs create many more requests, problems, or complaints in my job than I would otherwise experience.	0.88	Ayyagari et al. (2011)
WO2	I feel busy or rushed due to ICT.		
WO3	I feel pressured due to ICT.		
Work–Life Conflict			
WL1	Using ICT blurs the boundary between my job and home life.	0.93	Ayyagari et al. (2011)
WL2	Using ICT for work-related responsibilities leads to conflicts with my domestic responsibilities.		
WL3	I do not get everything done at home because I find myself completing job-related work due to ICT.		
Role Ambiguity			
RA1	ICT problems or with my work activities.	0.93	Ayyagari et al. (2011)
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 activities varies.		
RA4	Time spent resolving ICT problems takes time away from fulfilling my work responsibilities.		
Exhaustion			
EX1	I feel drained by activities that require me to use ICT.	0.97	Ayyagari et al. (2011)
EX2	I feel tired because of my ICT activities.		
EX3	Working all day with ICT is strenuous for me.		
EX4	I feel burned out because of my ICT activities.		

All items in the questionnaire were based on the 7-point Likert scale (ranging from 1 "Strongly Disagree" to 7 "Strongly Agree") to reduce variability in the results. A marker variable was used to test common method bias in line with the research of Mahmud et al. (2017).

Data Analysis Strategy

Data was analysed using descriptive statistical analysis with the software SPSS version 21.0, and the relationship between the variables was tested using structural equation modelling with the software SmartPLS version 3.0. Expectation- Maximization (EM) method was applied to handle the missing values.

Both procedural and statistical technique were used to handle common method bias. Fun facts were put within the survey questionnaire. Marker variable was used to tackle common method bias by following the research of Mahmud et al. (2017). The markers variable had three items, which are i. Once I've come to a conclusion, I'm not likely to change my mind, ii. I don't change my mind easily and iii. My views are very consistent over time. For details of common method bias, please see the appendix.

RESULTS

This section provides the analysis report of our collected data set. First, we provide information of data screening and common method bias. The next section covers measurement model and structured model by following the research of Hair et al. (2019).

Data Screening and Common Method Bias

To solve the missing data issues, an EM technique was employed (Mahmud et al., 2017). We had less than 3% missing data. As per a previous study, up to 10% of missing data will not cause any serious problems for further analysis (Cohen 1982).

To get the test result of common method bias, we linked the marker variable with EX, SAT and CI. After running SmartPLS 3.0, we did not get any noticeable change among other relationships. Therefore, our dataset has no issue-related common method bias (see the detailed results in the Appendix).

Measurement Model

To measure internal consistency, composite reliability (CR) was tested, and the convergent validity of the items was examined by measuring the average variance extracted (AVE). The threshold values for Cronbach's Alpha, AVE and CR were 0.50 and 0.70 respectively, as per the suggestion of Hair et al. (2019), Mahmud et al. (2017), and Vafaei-Zadeh et al. (2020). The results of AVE and CR are provided in Table 6.

Table 6. Convergent validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
CI	0.850	0.899	0.691
CON	0.812	0.888	0.725
EX	0.758	0.845	0.580
PU	0.802	0.876	0.655
RA	0.790	0.864	0.615
SAT	0.848	0.898	0.687
WL	0.819	0.892	0.734
WO	0.875	0.876	0.704

Table 6 shows that all our constructs fulfilled the recommended criterion in terms of AVE and CR. The discriminant validity can be examined using the Fornell-Larcker criterion suggested by Hair et al.

(2019), Sadia et al. (2019) and Satter et al. (2021), which is also satisfied in this model (see Table 7 for discriminant validity).

Table 7. Discriminant validity

	CI	CON	EX	PU	RA	SAT	WL	WO
CI	**0.831**							
CON	0.673	**0.851**						
EX	-0.101	-0.153	**0.762**					
PU	0.546	0.676	-0.194	**0.809**				
RA	-0.145	-0.152	0.690	-0.182	**0.784**			
SAT	0.640	0.773	-0.240	0.677	-0.211	**0.829**		
WL	-0.025	-0.065	0.520	-0.071	0.515	-0.099	**0.857**	
WO	-0.115	-0.144	0.563	-0.127	0.560	-0.124	0.400	**0.839**

The variance inflation factor (VIF) is often used to evaluate collinearity of the formative indicators. VIF values of 5 or above indicate critical collinearity issues among the indicators of formatively measured constructs. In our case, all values of the items are lower than 5 (see Table 8).

Table 8. Multicollinearity test (VIF)

	Items	VIF
Continuance Intention	ci1	2.073
	ci2	2.432
	ci3	1.907
	ci4	1.717
Confirmation	con1	1.858
	con2	1.857
	con3	1.671
Exhaustion	ex1	1.552
	ex2	1.800
	ex3	1.555
	ex4	1.310
Perceived Usefulness	pu1	2.751
	pu2	3.568
	pu3	2.603
	pu4	1.087
Role Ambiguity	ra1	1.706
	ra2	1.347
	ra3	1.612
	ra4	1.774

	Items	VIF
Satisfaction	sat1	2.302
	sat2	2.144
	sat3	1.684
	sat4	2.027
Work life conflict	wl1	1.658
	wl2	2.116
	wl3	1.880
Work Overload	wo1	1.383
	wo2	2.717
	wo3	2.282

Structural Model

The path coefficients generated by the SmartPLS3.0 software were used to confirm or reject the hypotheses associated with our research model. The results of the structural model, including path coefficient, t value, p value, and hypothesis test results, are provided in Table 9.

Table 9. Path coefficient and hypothesis test result

H1	**PU -> SAT**	0.271	4.309	0.000
H2	**CON -> PU**	0.678	13.268	0.000
H3	**CON -> SAT**	0.569	10.291	0.000
H4	**SAT -> CI**	0.640	12.605	0.000
H5	**WO -> EX**	0.226	3.501	0.001
H6	**WL -> EX**	0.189	3.082	0.002
H7	**RA -> EX**	0.465	7.197	0.000
H8	**EX -> SAT**	-0.100	2.741	0.006

The hypotheses were tested according to the significance level of each path coefficient. Among the variables of ECT theory, all hypotheses, namely H1, H2, H3, and H4, are strongly supported. The relationship results are as follows: PU to SAT (β= 0.271, p <0.01), CON to PU (β= 0.678, p < 0.01), CON to SAT (β= 0.569, p< 0.01), and SAT to CI (β= 0.640, p < 0.01).

With regards to our model (see Table 9), the relationship between WO (β= 0.226, p < 0.01), WL (β= 0.189, p < 0.01), and RA (β= 0.465, p < 0.01) on EX are strong and significant, indicating that H4, H5, and H6 are supported.

Finally, EX significantly influences SAT (β= -0.100, p < 0.01) and strongly supports H8. CON explains 46% variance on PU. The predictors of EX explain 54% variance. PU, CON, and EX explain 65% variance on SAT. Finally, 41% variance is explained by SAT in the research model.

Besides the squared multiple correlations (R2) and path coefficient, the effect size (f^2) can also be evaluated to control for the respective impact of different variables in one model. The results of the effect sizes are given in Table 10.

Table 10. Effect size

Predictors of EX		
WO-> EX	0.076	Small
WL->EX	0.057	Small
RA->EX	0.280	Medium
Predictors of ECT		
PU-> SAT	0.110	Medium
CON->SAT	0.515	Large
EX -> SAT	0.027	Small
SAT-> CI	0.694	Large

DISCUSSION

FINDINGS AND DISCUSSIONS

This research develops a theoretical advancement of the expectation-confirmation theory with respect to the JTS at DIU and other Daffodil Family concerns, suggesting implications for IT managers and DIU senior management so that they can deal with such behaviour like continuance intention. Based on the relevant literature, eight hypotheses were developed. As per data, our entire hypotheses were supported. Details of the findings are provided below.

RELATIONSHIP BETWEEN VARIABLES OF ECT THEORY

The expectation-confirmation theory by Bhattacherjee (2001) formed the core theoretical basis of this study, which includes these key constructs: usefulness, confirmation, satisfaction, and continuance intention. Perceived usefulness and confirmation are strong predictors of IT usage satisfaction. Users' continuance intention is determined primarily by their satisfaction with prior IT use. Based on these insights, we developed hypotheses H1, H2, H3, and H4.

Among the variables of ECT theory, all the hypotheses (H1, H2, H3, and H4) are strongly supported. The relationship results are as follows: PU to SAT ($\beta = 0.271$, $p < 0.01$), CON to PU ($\beta = 0.678$, $p < 0.01$), CON to SAT ($\beta = 0.569$, $p < 0.01$), and SAT to CI ($\beta = 0.640$, $p < 0.01$).

Based on the results, we can verify that perceived usefulness has a positive impact on users' satisfaction. The confirmation of using the JTS has a positive correlation with user satisfaction, and finally, users' satisfaction with the JTS strongly influences the continuance intention of the system. The results are consistent with the original model of Bhattacherjee (2001). Moreover, the results of this analysis are aligned with the above findings. This model is validated again, and the analysis is aligned with the previous works of Huang (2019) and Tam et al. (2018).

The expectation-confirmation theory is widely used in the consumer behaviour literature to study consumer satisfaction and post-purchase behaviour. In the present research, it was used to analyse users' satisfaction with the post-implementation stage of the JTS. First, user figures suggest a perception of the usefulness of the system. Second, users form expectations and determine the confirmation of using the JTS. Third, users' satisfaction levels increase based on the difference between expectation and confirmation. Finally, satisfaction leads to users' continuance intention towards the JTS.

Relationship Between Technostress Creators and Exhaustion

Based on Ayyagari et al.'s (2011) research and Maier et al.'s (2015) model of the influence of technostress on ERP research, we included the stressors as predictors of exhaustion and formulated hypotheses H5, H6, and H7. This suggested that higher levels of IT-induced work overload, work–life conflict, and role ambiguity would create greater exhaustion.

As per hypotheses H5, H6, and H7, IT-induced work overload, work–life conflict, and role ambiguity have a positive impact on exhaustion. The results from the previous section suggest that the relationship between WO (β= 0.226, $p < 0.01$), WL (β= 0.189, $p < 0.01$), and RA (β= 0.465, $p < 0.01$) on EX are strongly significant, thereby indicating that H5, H6, and H7 are supported.

The results of H5, H6, and H7 are consistent with the findings of Ayyagari et al. (2011), Mahmud et al. (2017), and Maier et al. (2015).

The IT division of DIU introduced the JTS to reduce paperwork, speed up data processing, and improve decision-making. The JTS users felt there was work overload due to its use. As a result, IT-induced work overload caused a significant impact on exhaustion. Another reason for non-significant relations might be the IT expertise of users. As per our demographic information, 57% of the respondents were accustomed to using IT for more than six years. This might have caused the users to feel more work overload due to IT use.

The result of this research indicates that 54% variance is explained on EX by WO, WL, and RA. This result is larger than the original model of Ayyagari et al. (2011), implying that technostress has a considerable impact on exhaustion in users from the Daffodil Group.

Finally, we can conclude that techno-induced stress is real in Bangladesh. Similar to the research of Mahmud et al. (2017), this study also provides significant evidence that, much like the manufacturing industry in Bangladesh, educational institutes are also being negatively impacted by technostress.

Relationship Between Exhaustion and Satisfaction

Maier et al. (2012) suggested that the introduction of new technology in organisations caused many employees to complain about the change and to try to avoid using the technology. In this research, it appears that, if users feel exhausted by new technology, they might not understand the full potential of the new IT system implemented at their organisation. Based on this, we conceptualised H4, which implies that exhaustion has a negative impact on the perceived usefulness of a new system.

Our results also suggested a negative significant relationship between EX and SAT (β= -0.100, $p < 0.01$). This means that H8 is also significant. A higher level of IT-induced exhaustion will lead to lower levels of satisfaction with using new IT systems such as the JTS. Therefore, this finding is aligned with the claim made by Cao et al. (2018) and Maier et al. (2012).

Users who face difficulty in adopting innovative technology feel pressured to continue using the system. If users cannot adopt the technology properly but feel compelled to use it, they are sometimes overcome by technology fatigue and become less productive. This could also lead to them being dissatisfied with the organisation and trigger turnover intention. According to Tarafdar et al. (2014), technostress can lead employees to be less innovative at work. With the JTS and continuous usage research, recent studies discuss the perception of a stress creator causing intention to discontinue (Maier et al., 2015). The rationale for this is that individuals try to avoid stressful situations by changing their behaviour (Beaudry & Pinsonnault, 2005), which prompts them to stop using the IS in this case (Turel, 2015). Thus, users affected by stress creators develop low continuous usage intention.

Theoretical Contribution

This research contributes to the body of work that helps to better understand users' continuance intention in the post-implementation phase of the JTS. It complements the micro-level examinations

of continuance intention of using IT by building on our understanding of the phenomenon at the individual level. Specifically, this paper examined the role of technostress where organisations invest to make their users become more comfortable in innovative and new technological tools like the JTS.

Practical Implication

In terms of practical implication, this study gives an idea of some of the difficulties faced when implementing new and innovative IT, particularly in academia in Bangladesh. It offers insights into strategies the management may want to follow when it comes to implementing new technology like the JTS.

First, user satisfaction plays a key role in determining continuance intention. A high perception of usefulness and a higher level of conformation would lead to higher levels of user satisfaction. The results of this study provide suggestions to management about improving user satisfaction in IS implementation.

Second, from a technostress point of view, the model that was proposed can also be another way of diagnosing the implications of stress through technology and the reasons for their existence in organisations. It also provides guidance on the interventions that could reduce costs of stressed individuals to organisations. The management should also focus on expectations about the job from end users to reduce stressors like work–life conflict and work overload. Managers should also be prepared to discuss with end users the need for the JTS and drum up their support in order to reduce confusion (role ambiguity) regarding the new system.

Methodological Contributions

Methodologically, due to its treatment, the study contributes towards reducing the threat of the common method bias. First, this has led to a separation between criterion and predictor variable. Second, the threat of common method variance is actively controlled by modelling a latent method factor and by using marker variables.

The PLS marker variable approach for analysing data is combined with the method variance proposed by Mahmud et al. (2017). The main contribution of this study lies in using a PLS marker variable approach to control for problems caused by 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 to control for common method variance.

The research is built around a well-conducted and well-reported quantitative analysis of a proposed model of end user complaining behaviour and symbolic adoption. PLS-SEM is an appropriate method to test a multivariate, multi-path model.

Limitations

Limitations are inherent to every facet of the practical sphere. Thus, it is important that the results are to be interpreted in the right context. To begin with, the study was restricted to the post-implementation phase of the JTS. Hence, it is important that everyone concerned is aware of the fact that the results may change anytime, with some support structures gaining or losing influence on the outcomes of interest.

Second, this research was conducted on the implementation of the JTS in the context of Bangladesh. Bangladesh is a new entrant to the field of technology and, as a result, there is a lack of IT skills in the country, which results in technostress. Also, as Hamid and Baldauf (2008) noted, both English language education, and its widespread use, have taken a backseat in Bangladesh. One of the reasons for this was the strong nationalistic sentiment for the native language, which is Bengali. But JTS functionalities are in English, so Bangladeshi users often face difficulty using it. This may not be the case in many other countries, where new IT projects may be implemented by different players and means.

CONCLUSION

This research is among the limited studies that attempt to explain user resistance to new IS-related change during post-implementation of the system, from the theoretical perspective with empirical validation. Going beyond previous research, this study develops a theoretical model for user continuous intention by ECT theory and brings the technostress perspective to the forefront.

The outcome of this study is representative but not exhaustive. The most important hypothesis illustrated in this study is a reciprocal relationship between IT exhaustion and the overall quality of the system. The present study did not specifically focus on this issue, but it can be a major research area in future studies.

In sum, this research shows that the improvement in the quality of IS and the readiness of the users can ensure user satisfaction and continuance intention. On the other hand, lessening the level of IT exhaustion may increase the perceived usefulness of the IS, which may finally lead to the users having continuance intention.

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APPENDIX

COMMON METHOD BIAS: PROCEDURAL TECHNIQUES

- Respondents were assured anonymity

- Respondents were told that there was no right or wrong answers.

- Fun facts were introduced for separation of the theories as procedural remedies

Placing	**Fun facts**
Before the items of ECT theory	Scotland has 421 words for "snow"
Before the items of Technostress	Octopuses lay 56,000 eggs at a time

Note: Fun facts are adopted from Reader's digest

COMMON METHOD BIAS: MARKER VARAIBLE TEST RESULT

		Without Marker			With Marker		
H1	PU -> SAT	0.271	4.309	Supported	0.252	4.102	Supported
H2	CON -> PU	0.678	13.268	Supported	0.649	12.558	Supported
H3	CON -> SAT	0.569	10.291	Supported	0.544	9.573	Supported
H4	SAT -> CI	0.64	12.605	Supported	0.627	11.883	Supported
H5	WO -> EX	0.226	3.501	Supported	0.240	3.641	Supported
H6	WL -> EX	0.189	3.082	Supported	0.174	2.703	Supported
H7	RA -> EX	0.465	7.197	Supported	0.473	7.212	Supported
H8	EX -> SAT	-0.1	2.741	Supported	-0.097	2.488	Supported

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