Impact of Technostress on the Academic Performance of Business School Students: Moderating Role of Self-efficacy

Sanghamitra Buddhapriya & Aparajita Mohapatra

With the increasing use of technology to facilitate training, MBAs, at times experience technostress. This study examines the technostress (techno-overload, techno- invasion and techno-complexity) in terms of their gender, age and academic background along with the impact of technostress on their academic performance. It further investigates the role of 'Self-efficacy' as a moderator between technostress and academic performance. Based on the data from 217 MBA students from 16 Indian business schools the study revealed that the respondents experience a moderate levels of technostress. Though there is no significant difference in the technostress level of the respondents across age groups and gender, differences in academic background lead to significantly different levels of technostress. While technostress impacts academic performance negatively, self-efficacy moderates the relationship between technostress and academic performance.

Sanghamitra Buddhapriya *(E-mail:*sanghamitra@fsm.ac.in) *is a Professor of OBHR, FORE School of Management, New Delhi.*
Aparajita Mohapatra *is a Senior Business Associate, Tech Mahindra, Mumbai*

Introduction

Recent developments in Information and Communication Technologies (ICT) have brought significant changes in the field of education, especially in higher education (Aydin, Gurol & Vanderlinde, 2016). In today's competitive environment, information technology is one area that educational institutions might use to compete with. More importantly, it can be used as a catalyst for transforming educational processes. Technology is playing a big role in the field of education: it is being included as part of the curriculum, used as a delivery system, as a means of aiding instructions, and also as a tool to enhance the entire learning process (Raja & Nagasubramani, 2018).

Business schools offering management education have

also adapted ICT to a great extent to keep themselves updated with the changing business requirements. They are also continuously adapting themselves to the changing demands and expectations of the corporate world by digitizing (through extensive usage of phones, laptops, and desktops) their curricula (Thune & Welle-Strand, 2005). The findings of the Central and East European Management Development Association (CEEMAN) survey (2016) on technology use by business schools and universities revealed that nearly 70 percent of them have either fully or partially incorporated technology-facilitated material delivery into their programs. On average, these schools use about six different technology tools to support teaching and learning.

These developments have profound impacts on teachers, students, and schools, school curricula, including the teaching and learning process (Hamilton et.al, 2000). Students who constitute an important group have been affected by this change, especially the post-graduate students who need to be highly advanced in the technology domain to be able to cope with competitiveness. On whether technology-enhanced learning (TEL) promotes better learning outcomes, researchers often have mixed outcomes— some have shown evidence of gains such as positive student appraisals with academic benefits (Heflin et. al, 2017) and others have evidence of negative outcomes such as burnout, drop in performance and low motivation levels (Jacobsen & Forste, 2011).

While technology enables efficiency, engagement, and a higher level of responsibility on the part of its users, there has been increased interest in understanding its negative impacts on end-users, especially technostress. Technostress has been defined as any negative effect on human attitudes, thoughts, behavior, and psychology that directly or indirectly results from the use of computer-based ICTs (Tu et.al, 2005). When left unaddressed, technostress can harm users in various ways, such as decreasing well-being and impairing cognitive abilities (Fischer & Riedl, 2017; Tarafdar et. al., 2019). Researchers have also highlighted burnout as a negative effect of technostress (Wang et al; 2020).

Even though individuals experience technostress due to the excessive use of technology, one can assume that those having the right behavioral composition such as high self-efficacy. Some researchers have empirically confirmed that self-efficacy is negatively correlated with resistance to technology change. People who perceive lower self-efficacy will be more resistant to technology change than those who are otherwise (Ellen et.al, 1991). In addition, positive self-efficacy may encourage learning new skills, whereas negative self-efficacy may create resistance to operative capabilities (Zhang & Espinoza, 1998).

Keeping in view the increasing use of technology in management education, the primary objective of this research is to study the impact of technostress on the performance of MBA students and to investigate the moderating role of self-

efficacy in the relationship between technostress and academic performance. Some specific objectives of this research are:

- To study the technostress (techno-overload, techno-invasion, and techno-complexity), self-efficacy and academic performance of MBA students across gender, age, and academic performance.
- To study the impact of technostress on the academic performance of MBA students.
- To investigate the moderating role of self-efficacy in the relationship between technostress and academic performance of MBA students.

Literature Review & Hypothesis Development

Technostress: The early adaptation of stress associated with using technologies and their impact on the psychological level was first explained by Craig Brod (1984) according to whom, the term "Technostress" refers to "a modern disease of adaptation caused by an inability to cope with new information technologies in a healthy manner," indicating all computers and software and a "state of arousal observed in certain employees who are heavily dependent on computers in their work" (Arnetz & Wiholm, 1997). Technostress is generally understood to be a maladaptation issue caused by people's inability to deal with technology and evolving requirements for using it (Brod, 1984; Ragu-Nathan et.al, 2008; Jena, 2015). According to Tarafdar et al (2007), it is an "issue of adaptation that an individual suffers when he or she is unable to cope with new technology". It is experienced when the expertise requirements of information and correspondence technologies exceed the level of users' capacity.

It is experienced when the expertise requirements of information and correspondence technologies exceed the level of users' capacity.

Drawing reference from the transaction-based model of stress, Ragu-Nathen et al (2008) highlighted: "technostress creators" and "technostress inhibitors" correspond to the stressors and situational factors respectively. Technostress creators represent the factors that create technostress and technostress inhibitors describe the organizational mechanisms that have the potential to reduce the effects of technostress. In their recent research Sharma and Gupta, (2022) argued that technostress is context-specific, and accordingly, it might adversely affect different factors relying on the unique situation.

Focusing on different dimensions of technostress, Tarafdar et.al (2007) and Ragu-Nathan et. al (2008) in their studies have mentioned five different dimensions of technostress creators, such as Techno-overload, Techno-invasion, Techno-complexity, Techno-insecurity, and Techno-uncertainty. Techno-overload (TO) deals with overloaded information in a limited time that forces employees to work faster and longer and Techno-invasion (TI*)* deals with the omnipresent

effect of technology which essentially blurs the line between work-home balances and creates unnecessary disturbances. Techno-complexity (TC) is about those associated with technologies. Due to this, employees may not be able to develop new skills frequently and their use of existing skills to new technologies may result in creating issues and errors. Techno-insecurity(TI) creates a fear of job loss in employees as they perceive new technologies may lead to automation or people with better skills and abilities will replace them in the long run. Finally, Techno-uncertainty (TU) deals with the frequent and innovative technical changes that make workers uncertain about their work and job roles.

Technostress among Students

Technology Enhanced Learning (TEL) could undoubtedly provide university students with significant advantages like flexibility, convenience, and increased access to top-notch educational resources (Jung et.al, 2012). However, it has the potential to put university students at risk for technological stress because of altered standards and expectations, increased demands for time and effort, and higher expectations for their capacity for self-learning and time management (Jung et.al, 2012; Qi, 2019). A study by Teo and Noyes (2014) investigated the impact of technostress on the mental health of university students and found that those who experienced higher levels of technostress had lower levels of well-being and were more likely to experience anxiety and depression.

It has been reported that technostress can influence the academic performance of students (Hsiao, et.al., 2017). Research by Tarafdar, Cooper, and Stich (2019) found that technostress is a significant problem for students, particularly when it comes to the use of social media. The study found that students who use social media excessively experienced higher levels of technostress, which led to negative effects on their well-being and academic performance.

Factors such as excessive workload, lack of support from peers and professors, and insufficient training on how to use technology were all significant predictors of technostress among students.

Researchers have indicated that factors such as excessive workload, lack of support from peers and professors, and insufficient training on how to use technology were all significant predictors of technostress among students. Research has also highlighted that different technostressors are significantly associated with female gender, academic background, and unemployment. (Torre et. al; 2020).

Technostress & Academic Performance

Prior researchers have looked at how technostress affects students' academic performance and the findings were contradictory. A study by Dhir, Chen, and Nieminen (2016) explored the relationship between technostress and academic performance among university students

and found that those who experienced higher levels of technostress had lower academic performance, particularly in subjects that required the use of technology. However, another study that investigated the impact of technostress in the context of college students using their mobile devices for academic purposes found no connection between education level and technological stress (Shu et al., 2011).

A study by Tarafdar et.al; (2007) found that the antecedents for technostress-creating conditions adversely affect end-user performance and satisfaction to help organizations cultivate appropriate benefits from ICT. Cao and Sun (2018) who investigated the relationship between the use of mobile social networking sites by the students and their academic achievements found that the pressure brought on by excessive usage of mobile social networking sites strongly predicts poor academic performance of the students. Similarly, the technostress arising out of compulsive smartphone use and information overload on university students' academic self-perception has been highlighted by Yao and Wang (2023)

On the contrary, the research by Qi (2019) to study the impact of technostress on college students using their mobile devices for academic purposes revealed that technological stress had no discernible impact on academic achievement. Torre et. al (2020) have highlighted that different techno-stressors are significantly associated with female gender, academic background, and unemployment.

Self-efficacy & Technostress

According to Bandura (1997), self-efficacy describes one's confidence in thei capacity to carry out a particular job, the judgments one makes about what one can do with the skills they do have are more important than the actual skills themselves. People who have a high level of self-efficacy are more inclined to attempt activities that they believe they are capable of accomplishing, and the opposite is also true. Self-efficacy influences a person's choice of activities and behavioral settings and can also affect their coping efforts.

Researchers have verified a significant positive influence of technological self-efficacy on technology acceptance and utilization.

Lai et.al (2013) conceptualized perceived behavioral control as "people's perceptions of their ability and the availability of the support necessary to achieve an expected behavior." Among the widely used, multidimensional constructs of perceived behavioral control, Technological Self-efficacy was considered the dominant determinant of the intention to use the technology (Teo, 2009; Teo &Van Schaik, 2012). In a study, technological self-efficacy was characterized as students' perception of their capabilities to utilize technology-related tools and sites to conduct learning behaviors to achieve the intended learning outcome (Bandura, 1997; Keengwe, 2007). Researchers have verified a significant positive influence of technological self-efficacy on technology acceptance and utilization (Celik &

Yesilyurt, 2013) and regarded technological self-efficacy as a proxy of individuals' control beliefs in technology use (Venkatesh & Davis, 1996).

It has been found that participants with higher self-efficacy beliefs reported a lower degree of computer-related stress. Compeau and Higgins' (1995) research findings suggest that individuals with higher computer self-efficacy beliefs tend to see themselves as able to use computer technology whereas those who have lower levels of computer self-efficacy tend to have greater levels of frustration and anxiety when using computers, as well as reluctance to utilize them when faced with difficulties. Findings of research conducted at workplaces also revealed that computer self-efficacy improves performance and lowers computer-induced anxiety in the workplace (Burkhardt & Brass,1990; Harrison & Rainer, 1997).

Self-efficacy & Academic Performance

A contributing factor to academic success is the individual's level of self-efficacy because it is defined as "one's belief in the capability to produce designated levels of performance for events that affect their lives, which determines how people feel, think, motivate themselves, and behave (Bandura,1994)." According to the social cognitive theory, self-efficacy is a major determinant of an individual's task performance and has been found to have diverse psychological and behavioral effects in many areas of human psychosocial functioning (Bandura, 1986; 1997).

Findings lend support to the predictive effectiveness of self-efficacy measures in academic settings. The results of Lane et. al. (2004) study indicated that self-efficacy mediated the relationship between performance accomplishments and academic performance. Wood et al's (1987) research established that self-efficacy is found to be significantly related to academic performance and self-set academic grade goals. Grade goals and ability were also related to course performance. These results were consistent with laboratory studies of the relationship between self-efficacy and goals to task performance.

Choi's (2005) findings indicated that the closer the level of specificity of self-efficacy and self-concept, the stronger the relationship between the two constructs. Both academic self-concept and specific self-concept were significant predictors of term grades. Another study by Akomolafe et. al. (2013) found that academic self-efficacy made the most significant contribution to academic performance. Students with high academic self-efficacy have been shown to perform better academically (Chemers et.al, 2001).

In the literature available about technostress, researchers have used various samples such as teachers, employees as well as undergraduate students. However, there remains a dearth of studies in the Indian context in the field of management education, especially on students of Master in Business Administration (MBA) or Post Graduate Diploma in Management

(PGDM). Since management education has been continuously increasing its dependency on technology, being a stress-inductive course in nature, it remains an unexplored sample. This research will widen the universe of technostress research and shall rightly validate the contrasting relationships between technostress and academic performance along with self-efficacy as a moderator.

Considering the findings of prior research on technostress, academic performance of the students and self-efficacy, the following hypotheses are formulated.

H1a: Technostress (TS), techno overload (TO), techno invasion (TI) and techno complexity (TC) experienced by the male and female MBA students are expected to have significant differences.

H1b: TS, TO, TI and TC experienced by the respondents of different age groups are expected to have significant differences.

H1c: TS, TO, TI & TC experienced by MBA students from different academic backgrounds is expected to reflect significant differences

H2: TS of the students is expected to have a negative impact on the academic performance of the MBA students.

H3: Self-efficacy is expected to moderate the relationship between technostress and academic performance amongst MBA students.

Sample

Using the purposive random sampling method, a sample size of 300 students pursuing their MBA or PGDM courses from 16 business schools in India was considered for this empirical research. The Business Schools were selected from the list of the National Institutional Ranking Framework (NIRF), 2022. These students were from both the first and second year of their two-year full-time programs and the composition of the sample was diverse in terms of their gender, academic background, and work experience. Table 1 displays the demographic profile of the sample:

Table-1 Demographic Profile of the Respondents

Demographic Dimensions	Type	Percentage
Gender		
	Male	53.52%
	Female	46.47%
Age		
	20-25	60.56%
	25-30	36.61%
	30-35	2.81%
Academic	Commerce	36.15%
Background	Science	29.10%
	Engineering	20.18%
	Humanities	14.08%

Method of Data Collection

A questionnaire containing three parts was used to collect the responses. The first part contained questions related to demography such as age, gender, academic background, and grade point average score. The second part contained the self-efficacy scale having 10 items, and the third part contained the technostress scale containing 12 items.

The questionnaire was uploaded in a Google link and sent to 300 identified students from 16 business schools who were contacted through various social media platforms such as LinkedIn, WhatsApp, and Telegram. Following initial data screening, 213 questionnaires were considered after discarding missing, erroneous, and incomplete data for data analysis. Therefore, the survey response rate was 72.33%.

Measuring Instruments

The technostress scale of Ragu Nathan et.al (2008) containing 12 items was used for measuring the technostress among students. Its reliability has been in the range of .80-.95. This instrument, validated across 200 articles (Tarafdar et. al. 2008), along with demographic questions was used for this study. For scoring, a 5-point Likert scale was used with the minimum score being 0 and maximum 48.

For measuring the self-efficacy of the respondents, the General Self-efficacy by Schwarzer et.al (1995) was used. It has 0 items with a reliability range of- .76-.90. The criterion-related validity of this scale is documented in over 100 correlation studies where positive coefficients were found with positive emotions, dispositional optimism, and work satisfaction. Negative coefficients were found with depression, anxiety, stress, burnout, and health complaints used to measure self-efficacy level. For scoring, a 4-point Likert scale was used with minimum score being 10 and the maximum 40.

Statistical Methods

Mean, standard deviation, percentage relation and regression methods were employed to analyze the data collected. The correlation method was used to understand the extent of the relationship between technostress and academic performance so also between self-efficacy and technostress. The regression method was used to examine the relationship between technostress and academic performance and to study the moderation interaction of general self-efficacy in the above relationship. The Mann-Whitney test has been used to study the significance of the difference in technostress levels of the male and female students and Kruskal Wallis test has been used to study the significance of the difference of the three age groups of students and students of different academic backgrounds.

Results & Discussion

The first objective of this research is to study the technostress (techno-overload, techno-invasion, and techno-complexity), self-efficacy and academic per-

Table 2 Average TS, TO, TI & TC of the Respondents

Variables Dimensions	TS		TO		TI		TC		Academic Performance		Self-Efficacy	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total Sample	22.25	8.71	7.71	3.13	6.32	2.7	8.21	4.4	7.3	1.02	30.41	5.7
Gender												
Male	22.34	9.03	7.68	3.2	6.57	2.9	8.08	4.6	7.26	0.8	30.73	5.6
Female	22.14	8.32	7.74	3.07	6.04	2.6	8.35	4.2	7.33	1.2	30.05	5.8
Age												
20-25	22.23	8.45	7.67	3.02	6.34	2.7	8.20	4.2	7.39	0.9	31.02	5.2
25-30	22.39	8.86	7.82	3.25	6.34	2.7	8.23	4.6	7.12	1.1	29.09	6.2
30-35	20.6	13.8	7.16	4.26	5.5	4.7	8	6.3	7.47	1.2	34.67	5.7
Academic Background												
Arts	23.83	8.73	7.76	2.92	6.3	2.7	9.76	4.1	6.76	1.1	28.4	6.6
Commerce	23.19	7.9	7.81	3.12	6.62	2.4	8.75	4.3	7.37	0.9	29.97	4.9
Engineering	20.23	9.93	7.37	3.36	5.6	3.4	7.25	4.4	7.34	1.0	31.90	6.0
Science	21.79	8.79	7.82	3.15	6.45	2.7	7.51	4.5	7.44	1.0	30.93	5.7

formance of the respondents across gender, age, and academic background.So, the following analyses are done to test the hypotheses built around the themes.

From the above results, it is found that the average technostress levels of MBA students across various demographic groups remain similar. Not much difference was found in the average scores of TS, TO, TI and TC across gender, age groups, and academic backgrounds except in the 25-30 age group and students from humanities background, who experienced higher TO. The average TI of the respondents lies relatively in the lower range and displays higher skewness. Students in the age group of 30-35 and those with science and engineering backgrounds face lower degrees of techno-invasion. Students with humanities backgrounds also expereienced higher TC as compared to others.

It is found that the average technostress levels of MBA students across various demographic groups remain similar.

To further test if there exists a significant difference among different groups of respondents in terms of their TO, TI and TC scores, the *Mann Whitney U test and Kruskal-Wallis test* have been conducted.

Table 3 TS Score Difference Between Male & Female Respondents

Mann- Whitney U	5638
Wilcoxon W	12193
Z	-.011
Asymp Significance (2-tailed)	.991

Table 4 TO, TI &TC Score Difference Between Male & Female Respondents

Null Hypothesis	Sig.	Decision
1 The distribution of TO is the same across categories of gender groups	.990	Retain the null hypothesis.
2 The distribution of TI is the same across categories of gender groups	.222	Retain the null hypothesis.
3 The distribution of TC is the same across categories of gender groups	.627	Retain the null hypothesis.

The result of the Mann-Whitney U test (Table 3*)* reveals that the difference between male and female MBA students' scores in terms of their overall technostress is not significant. The results of the Kruskal-Wallis test (Table 4) also show that no significant differences between male and female students are found in terms of their scores of techno-overload, techno-invasion, and techno-complexity. Hence, the following hypothesis is rejected:

H1a: TS, TO, TI & TC experienced by the male and female MBA students is expected to have a significant difference.

In the Indian business schools, usually female students constitute 20-35% of the batch size and they go through the same rigorous selection process and other academic criteria as their male counterparts. They are equally capable and confident of handling the technology requirements of the MBA program and this may be the reason behind no significant difference between male and female respondents' technostress scores.

Since small differences have been found in the technostress levels of the respondents of the three defined age groups, in order to find out if these dif-

Table 5 TS, TO, TI & TC Score Difference of Respondents Across Different Age Groups

Null Hypothesis	Sig.	Decision
1 The distribution of TS is the same across all categories of Age groups.	.804	Retain the null hypothesis
2 The distribution of TO is the same across categories of Age groups.	.985	Retain the null hypothesis.
3 The distribution of TI is the same across categories of Age groups.	.905	Retain the null hypothesis.
4 The distribution of TC is the same across categories of Age groups.	.990	Retain the null hypothesis.

ferences are significant, the Kruskal-Wallis test was conducted.

Table 5 results show that the distribution of TS, TO, TI, and TC amongst different age groups is even and reflects no significant difference. Hence, we reject the following hypothesis.

H1b: TS, TO, TI & TC experienced by different age groups is expected to have significant differences.

As all the respondents belong to the millennial group, their exposure to technology can be similar and therefore age group variations are not too high.

It has been observed that students from humanities and commerce backgrounds experience slightly higher technostress than students from engineering and science backgrounds. The significance of the difference among the four distinct groups is further tested by the Kruskal-Wallis test.

Table 6 TS, TO, TI & TC Score Difference of Respondents across Different Academic Background Groups

Null Hypothesis	Sig.	Decision
1 The distribution of TS is the same across categories of Academic Backgrounds.	.140	Reject the null hypothesis.
2 The distribution of TO is the same across categories of academic backgrounds	.628	Reject the null hypothesis.
3 The distribution of TI is the same across categories of academic backgrounds	.200	Reject the null hypothesis.
4 The distribution of TC is the same across categories of academic backgrounds	.028	Retain the null hypothesis.

TS, TO and TI faced by the students from different academic backgrounds are similar and have no significant difference, whereas in case of TC, there is a significant difference faced among different groups of academic backgrounds (Table-6).

Hence, we accept the following hypothesis:

H1c: TS, TO, TI & TC experienced by MBA students from different academic backgrounds is expected to reflect significant differences.

As stated by Ragu-Nathan et. al. (2008) and Tarafdar et. al. (2014), employees experience TC when they cannot manage the complexity of the new technology and they feel a lack of computer skills which force them to spend more time learning and understanding new technology. In this research, the MBA students having commerce and humanities in their undergraduate level experienced significantly higher techno complexity than students having science and engineering backgrounds and it could be due to the lesser exposure to technological tools as part of their pedagogy for students of humanities and commerce backgrounds. Therefore, they face difficulty in managing the complexity of technological interventions used in the MBA programs.

Impact of Technostress & Academic Performance

The next objective of this research is to study the impact of technostress and academic performance. Their relationship has been analyzed through the methods of correlation and regression statistics.

As shown in Table 7, though the correlation between technostress and the academic performance of the respondents is negative it is weak. To further understand the impact of technostress on academic performance, the linear relationship between these two variables has been investigated through regression statistics as mentioned in Table 8.

Table 7 Correlation Between Technostress & Academic Performance

	Technostress	Academic Performance
Technostress	1	
Academic Performance	-0.144213672	1

Table 8 Regression Statistics of Technostress & Academic Performance

Regression Statistics	
Multiple R	0.144213672
R Square	0.020797583
Adjusted R Square	0.016156814
Standard Error	1.01079123 (+/- i.e. unstd beta value)
Observations	213

Even though MBA students experience a certain level of technostress, it does not impact their academic performance much.

The result of Table 8 reveals that a linear relationship exists between technostress and academic performance. It suggests that technostress maintains a weak negative relationship with academic performance, which indicates that even though MBA students experience a certain level of technostress, it does not impact their academic performance much. Therefore, we accept the following hypothesis:

H2: TS is expected to have a negative impact on the academic performance of MBA students.

The curriculum of management education emphasizes continuous evaluation and it includes many evaluation components such as class participation, projects, assignments, presentations, and mid-term and end-term examinations. Therefore, even though students experience technostress, it is not reflected greatly in their academic scores. However, an earlier study by Borle et.al (2021) found that students may be subjected to psychological pressure related to the use of technology due to inappropriate working conditions, inadequate hardware with safety and compatibility issues, program-

ming restrictions, electrical issues, abrupt dysconnectivity, and data loss. Additionally, because of the absence of required abilities, preparation, information, insufficient framework, time limitations, vulnerability, and absence of help from experts, students experience increased psychological and physiological stress. This can affect the academic performance of the students.

Moderating Role of Self-efficacy

The final objective of this research is to investigate the moderating role of self-efficacy in the relationship between technostress and academic performance for the test of which the regression statistics were calculated to understand its significance.

Table 9 Moderation Interaction of Self-efficacy with Technostress & Academic Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.579	1	4.579	4.481	.035
	Residual	215.578	211	1.022		
	Total	220.157	212			
2	Regression	18.783	2	9.392	9.794	.000
	Residual	201.374	210	.959		
	Total	220.157	212			

The model with the interaction variable reflects a significance of .000 which is less than 0.05 thus showing that the interaction of self-efficacy has a significant effect on the relationship between technostress and academic performance. Thus, there exists a possibility that self-efficacy moderates the relationship between academic performance and technostress. However, the variation in academic performance of the respondents cannot be fully credited to technostress. Hence, we accept the following hypothesis:

H5: Self-efficacy is expected to moderate the relationship between technostress and academic performance amongst MBA students.

While analyzing the results of this study, one could argue that though MBA students experience technostress, they could be managing it well because of their confidence in their skills and capabilities. Students with higher academic performance levels and self-efficacy are attracted to management education as a career option which requires one to be confident, high performer, decisive, and achievement-oriented. Therefore, MBA students with higher self-efficacy may experience lower technostress and which also affects their academic performance positively. Self-efficacy may be weakening the negative impact of technostress on academic performance. As 'technological self-efficacy' has

Though MBA students experience technostress, they could be managing it well because of their confidence in their skills and capabilities.

been considered the dominant determinant of the intention of using the technology (Teo & Van Schaik, 2012), a significant positive influence of technological self-efficacy exists on technology acceptance and utilization (Celik & Yesilyurt, 2013) and computer self-efficacy improves performance and lowers computer-induced anxiety in the workplace (Harrison & Rainer, 1997), self-efficacy can be reducing the impact of technostress and bringing a positive influence on students' academic performance.

Practical Implications

There has been an increasing use of technology by Indian business schools to facilitate management teaching and learning of the students. As the reliance on technology has been increasing, the findings of the research have important implications for business schools, academics, and research as this study would help in building insights about the technostress of MBA students especially in the Indian context. Moreover, the study contributes to the literature by demonstrating that management institutions should pay special attention to developing policies and practices to address the issue of technostress as they get students from diverse academic backgrounds, to whom, the exposure to the use of technology could be different. Management institutions should also design their curriculum in a manner which would help students deal better with the complexities arising out of technology overload and invasion.

It is observed that the negative correlation between technostress and academics is fairly low but it is large enough to be reviewed as an important factor influencing students' academic performance. Management institutions should try to understand the antecedents of technostress and accordingly special orientation and training should be provided to MBA students from humanities and commerce backgrounds as they experience higher technostress, especially techno-complexity.

Since over-dependence on technology has been mentioned and validated by various authors and institutions themselves, the entrance examination needs to incorporate a section on technological awareness to assess the fitness of candidates to enter into MBA courses.

The entrance examination needs to incorporate a section on technological awareness to assess the fitness of candidates to enter into MBA courses.

While self-efficacy moderates the impact of technostress on academic performance, it is an important criterion for institutes to evaluate during the selection processes while recruiting students for their programs. Students should also be given additional training for using softwares and upcoming technologies. Balancing and mitigating the dominance of technostress should remain in the hindsight of all institutions, as it may enhance student performance and yield better results.

Limitations & Scope of Future Research

The limitation of this study is that the sample is composed of a group of institutions that are similar in terms of their educational standard. Therefore, the sample does not seem to be very diverse. Secondly, the sample size is not too large to generalize the findings of this research. Due to known constraints, interviews were not conducted with the respondents.

To widen the scope of existing literature, more qualitative research can be carried out in the area of technostress. The impact of various other demographic variables such as family background, rural and urban upbringing, etc. can also be interesting areas of investigation. Other variables such as resilience, locus of control, adaptability, etc. can be investigated as moderators between technostress and academic performance. Since technostress and academic performance maintain a negative relationship, though non-significant, controlling the relationship through other variables is considered a healthy precaution.

While management programs tend to contain students with higher self-efficacy levels, other postgraduate-level programs might show new results. Investigating this model on a wider range of samples, a mixed group, or specific courses that contain students with a limited technological background, and lower levels of self-efficacy will help and guide institutions in the development and advancement of their course curriculum.

Acknowledgment

The financial and infrastructural support provided by FORE School of Management, New Delhi throughout this research is recognised and highly acknowledged.

References

Akomolafe, M. J., Ogunmakin, A. O.& Fasooto, G. M. (2013), "The Role of Academic Self-efficacy, Academic Motivation and Academic Self-concept in Predicting Secondary School Students' Academic Performance", *Journal of Educational and Social Research*, 3(2): 335.

Arnetz, B. B. & Wiholm, C. (1997), "Technological Stress: Psychophysiological Symptoms in Modern Offices", *Journal of Psychosomatic Research*, 43(1): 35-42.

Aydin, M. K., Gürol, M. & Vanderlinde, R. (2016), "Evaluating ICT Integration in Turkish K-12 Schools through Teachers' Views", *Eurasia Journal of Mathematics Science and Technology Education*, 12(4): 747-66.

Bandura, A. (1986), Social Foundations of Thought and Action, Englewood Cliffs, NJ, 1986(23-28).

Bandura, A. (1994), "Self-Efficacy " in V. S. Ramachaudran (Ed.), Encyclopedia of Human Behavior (Vol. 4), New York: Academic Press. (Reprinted in H. Friedman (Ed.) (1998). Encyclopedia of Mental Health. San Diego: Academic Press)

Bandura, A.(1997). Self- efficacy, the Exercise of Control, W H Freeman/Times Books/ Henry Holt & Co.

Borle, P., Reichel, K., Niebuhr, F.& Voelter-Mahlknecht, S. (2021), "How Are Technostressors Associated with Mental Health and Work Outcomes? A Systematic Review of Occupational Exposure to Information

and Communication Technologies within the Technostress Model", *International Journal of Environmental Research and Public Health*, 18(16): 8673.

Brod, C. (1984), Technostress: The Human Cost of the Computer Revolution, Basic Books.

Burkhardt, M. E. & Brass, D. J. (1990), "Changing Patterns or Patterns of Change: The Effects of a Change in Technology on Social Network Structure and Power", *Administrative Science Quarterly*:104-27.

Cao, X. & Sun,J. (2017), "Exploring the Effect of Overload on the Discontinuous Intention of Social Media Users: An S-O-R Perspective", *Computers in Human Behavior,* 81:10-18

Celik, V. & Yesilyurt, E. (2013), "Attitudes to Technology, Perceived Computer Self-efficacy and Computer Anxiety as Predictors of Computer Supported Education", *Computers & Education*, 60(1): 148-58.

Chemers, M. M., Hu, L. T. & Garcia, B. F. (2001), "Academic Self-efficacy and First Year College Student Performance and Adjustment", *Journal of Educational Psychology*, 93(1): 55.

Choi, N. (2005), "Self efficacy and Self concept as Predictors of College Students' Academic Performance", *Psychology in the Schools*, 42(2): 197-205.

Compeau, D. R. & Higgins, C. A. (1995), "Computer Self-efficacy: Development of a Measure and Initial Test", *MIS Quarterly*: 189-211.

Dhir, A., Chen, S. & Nieminen, M. (2017), "Development and Validation of the Internet Gratification Scale for Adolescents", *Journal of Psychoeducational Assessment*, 35(4): 361-76.

Ellen, P. S., Bearden, W. O. & Sharma, S. (1991), "Resistance to Technological Innovations: An Examination of the Role of Self-efficacy and Performance Satisfaction", *Journal of the Academy of Marketing Science*, 19: 297-307.

Fischer, T. & Riedl, R. (2017), "Technostress Research: A Nurturing Ground for Measurement Pluralism?" *Communications of the Association for Information Systems*, *40*(1):17.

Hamilton, D., McFarland, D. & Mirchandani, D. (2000), "A Decision Model for Integration Across the Business Curriculum in the 21st Century", *Journal of Management Education*, 24(1): 102-26.

Harrison, A. & Rainer, K. (1997), "The Effects of Individual Differences on User S". Human Factors in Information Systems: The Relationship Between User Interface Design and Human Performance", Ed.: J. Carey.

Heflin, H., Shewmaker, J. & Nguyen, J. (2017), "Impact of Mobile Technology on Student Attitudes, Engagement, and Learning", *Computers & Education*, *107*: 91-99.

Hsiao, K. L., Shu, Y. & Huang, T. C. (2017), "Exploring the Effect of Compulsive Social App Usage on Technostress and Academic Performance: Perspectives from Personality Traits", *Telematics and Informatics*, 34(2): 679-90.

Jacobsen, W. C. & Forste, R. (2011), "The Wired Generation: Academic and Social Outcomes of Electronic Media Use Among University Students". *Cyberpsychology, Behavior, and Social Networking*, 14(5): 275-80.

Jena, R. K. (2015), "Technostress in ICT Enabled Collaborative Learning Environment: An Empirical Study Among Indian Academician", *Computers in Human Behavior*, 51: 1116-23.

Jung, I., Kudo, M. & Choi, S. K. (2012), "Stress in Japanese Learners Engaged in Online Collaborative Learning in English", *British Journal of Educational Technology*, *43*(6):1016-29.

Keengwe, J. (2007), "Faculty Integration of Technology into Instruction and Students' Per-

ceptions of Computer Technology to Improve Student Learning."/ *Journal of Information Technology Education: Research*, 6(1): 169-80

La Torre, G., De Leonardis, V. & Chiappetta, M. (2020), "Technostress: How Does It Affect the Productivity and Life of an Individual? Results of an Observational Study", *Public Health*, 189: 60-65.

Lai, K. W., Khaddage, F. & Knezek, G. (2013), "Blending Student Technology Experiences in Formal and Informal Learning", *Journal of Computer Assisted Learning*, 29(5): 414-25.

Lane, J., Lane, A. M. & Kyprianou, A. (2004), "Self-efficacy, Self-esteem and Their Impact on Academic Performance *Social Behavior and Personality: an International Journal*, *32*(3): 247-56.

Qi, C. (2019), "A Double-edged Sword? Exploring the Impact of Students' Academic Usage of Mobile Devices on Technostress and Academic Performance", *Behaviour & Information Technology*, *38*(12): 1337-54.

Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S. & Tu, Q. (2008), "The Consequences of Technostress for End Users in Organizations: Conceptual Development and Empirical Validation", *Information Systems Research*, 19(4): 417-33.

Raja, R. & Nagasubramani, P. C. (2018), "Impact of Modern Technology in Education", *Journal of Applied and Advanced Research*, 3(1): 33-35.

Schwarzer, R. & Jerusalem, M. (1995), Generalized Self-efficacy Scale Measure in Health Psychology: A User's Portfolio Causal and Control Beliefs, *Windsor: NFER-NELSON*.

Sharma, S. & Gupta, B. (2023), "Investigating the Role of Technostress, Cognitive Appraisal and Coping Strategies on Students' Learning Performance in Higher Education: A Multidimensional Transactional Theory of Stress Approach", *Information Technology & People*, *36*(2): 26-60.

Tarafdar, M., Cooper, C. L. & Stich, J. F. (2019), "The Technostress Trifecta techno eustress, Technodistress and Design: Theoretical Directions and an Agenda for Research", *Information Systems Journal*, 29(1): 6-42.

Tarafdar, M., Pullins, E. B. & Ragu Nathan, T. S. (2015), "Technostress: Negative Effect on Performance and Possible Mitigations", *Information Systems Journal*, *25*(2): 103-32.

Tarafdar, M., Tu, Q., Ragu-Nathan, T. S. & Ragu-Nathan, B. S. (2007), "Impact of Technostress on Productivity", *Journal of Management Information Systems, 24*(1): 301-28

Teo, T. (2009), "Modelling Technology Acceptance in Education: A Study of Pre-service Teachers", *Computers & Education, 52*(2): 302–12

Teo, T. & Noyes, J. (2014), "Explaining the Intention to Use Technology Among Pre-service Teachers: a Multi-group Analysis of the Unified Theory of Acceptance and Use of Technology", *Interactive Learning Environments*, 22(1): 51-66.

Teo, T. & Van Schaik, P. (2012), "Understanding the Intention to Use Technology by Preservice Teachers: An Empirical Test of Competing Theoretical Models". *International Journal of Human-Computer Interaction*, 28(3): 178-88.

Thune, T. & Welle-Strand, A. (2005), "ICT for and in Internationalization Processes: A Business School Case Study", *Higher Education*, *50*(4): 593-611.

Tu, Q., Wang, K. & Shu, Q. (2005), "Computer-related Technostress in China", *Communications of the ACM*, 48(4): 77-81.

Venkatesh, V. & Davis, F. D. (1996), "A Model of the Antecedents of Perceived Ease of Use: Development and Test", *Decision Sciences*, 27(3): 451-81.

Wang, X., Tan, S. C. & Li, L. (2020), "Technostress in University Students' Technology-enhanced Learning: An Inves-

tigation from Multidimensional Person-environment Misfit", *Computers in Human Behavior*, 105:106208.

Wood, R. E., Mento, A. J. & Locke, E. A. (1987), "Task Complexity as a Moderator of Geffects: A Meta-analysis", *Journal of Applied Psychology*, 72(3): 416

Yao, N. & Wang, Q. (2023), "Technostress from Smartphone Use and Its Impact on University Students' Sleep Quality and Academic Performance", *The Asia-Pacific Education Researcher*, 32(3): 317-26.

Zhang, Y. & Espinoza, S. (1998), "Relationships Among Computer Self-efficacy, Attitudes Toward Computers, and Desirability of Learning Computing Skills", *Journal of Research on Computing in Education*, 30(4): 420-36.