e-ISSN: 2600 9374

PENERBIT PRESS UNIVERSITI TEKNOLOGI MARA
Available online at
https://journal.uitm.edu.my/ojs/index.php/JAS

Journal of Administrative Science 23(1) 2026, 146–168

Journal of Administrative Science

Exploring technostress through lived experiences: A qualitative study across professional and educational roles

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ARTICLE INFO

Article history:
Received 1 August 2026
Revised 15 September 2026
Accepted 5 October 2026
Online first 30 October 2026
Published 31 October 2026

Keywords:
Techno-stress
Job Performance
Digital Technology
Information Communication Technology (ICT)

DOI:

10.24191/jas.v23i3.10708

ABSTRACT

The evolution of digital technology has transformed work and learning paradigms throughout various sectors, including education and professional sectors. The utilisation of technology in professional environments can enhance job efficiency; nevertheless, it may also induce stress in users, commonly known as technostress. Technostress refers to the stress suffered by persons who struggle to manage or adapt to the demands of information and communication technology (ICT), resulting in technological demands surpassing the capabilities they have. This study seeks to examine the issue of technostress within the educational and professional sectors in Malaysia, emphasising individual characteristics, contributing variables, and employed coping strategies. This study employs a qualitative methodology that gathers data via semi-structured interviews and analyses it thematically. Informants selected were a lecturer, a counselling officer, and an administrative officer, all of whom utilise technology in their regular responsibilities. This study's findings indicate that technostress is affected by various individual variables, including limited digital literacy, personal attributes, generational disparities, and insufficient training. Furthermore, the primary variables contributing to technostress include techno overload, techno invasion, techno complexity, techno insecurity, and techno uncertainty, all of which impact individual well-being and performance. The study's findings indicate that an effective coping mechanism for technostress involves a combination of individual efforts, organisational support, and social assistance. Therefore, this study discusses the emergence of technostress within the educational and professional settings in Malaysia, highlighting the necessity for a strong and comprehensive technology management strategy.

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1. INTRODUCTION

Technostress has emerged as a significant concern in professional settings worldwide as digital tools, platforms, and communication technologies become deeply embedded in everyday work processes (Yang et al., 2025; Wang et al., 2023). It is commonly understood as the stress individuals experience when the demands of information and communication technologies (ICT) exceed their ability to adapt, leading to psychological strain, fatigue, and reduced job satisfaction (Zivi, 2025). Recent studies indicate that educators and professionals face substantial technostress as they must simultaneously integrate digital tools into teaching, assessment, communication, and administration while coping with rapid technological change and expectations of constant connectivity (Yang et al., 2025, Wang et al., 2023). The teachers experiencing high technostress frequently show lower job satisfaction, increased emotional exhaustion, and higher intentions to leave the profession, underlining technostress as a critical issue for education systems globally (Yang et al., 2025,).

The COVID-19 crisis has turbo-charged this trend by requiring tens of thousands of educators to make a rapid and large-scale conversion from face-to-face teaching to fully online, hybrid, and technology-mediated delivery modes, thereby increasing digital demands on educators almost daily (Yang et al., 2025; Wang et al., 2023). Evidence from various countries suggests that teachers and other education professionals have had to adapt quickly to learning management systems, video-conferencing platforms, online assessment tools, and multiple communication channels, often with limited preparation and inadequate technological resources (Wang et al., 2023). This sudden shift has caused numerous teachers to experience techno-overload (having far too many tasks because of ICT), techno-complexity (finding it difficult to understand and use new technologies), and techno-invasion (the blurring of work–life boundaries), which are directly associated with increased stress levels and decreased perceived performance (Yang et al., 2025; Zivi, 2025). At the same time, recent work suggests that there may also be a "bright side" of technostress, or "techno-eustress", whereby some educators perceive technology-related demands as opportunities for growth and advancement, indicating the need to examine not only negative outcomes but also conditions under which technostress can be harnessed in a positive way (Pérez et al., 2024).

On the global front, Malaysia has been aggressive in promoting ICT integration within education as part of its general national development and digitalisation efforts (Khalili & Hashim, 2025). Schools, colleges and universities have adopted policies and initiatives to promote on-line learning, digital content and technology-mediated teaching, with the pandemic further expediting this transition (Rahman & Sulaiman, 2023) Malaysian lecturers also utilize the internet, digital LMS and communication tools in conducting teaching-learning, assessment, student support as well as administrative activities (Khalili & Hashim, 2025). Studies carried out in Malaysia found that teachers and lecturers often experience technostress associated with techno-overload, techno-complexity, particularly when they need to become familiar with multiple systems, manage new and unstable platforms which make them anxious or fearful of being left behind as having lower digital skills profile (Khalili & Hashim, 2025; Rahman & Sulaiman, 2023).

Recent Malaysian research indicates that technostress is not just an abstract construct but has concrete implications for educators' well-being and job performance (Khalili & Hashim, 2025). A study of educators in private colleges and universities in Johor Bahru, for example, found significant relationships between

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techno-overload, techno-complexity, techno-insecurity and educator performance during online teaching, suggesting that unmanaged technostress can hinder effective teaching and learning (Wahab, 2022). A similar study in Malaysia, which concentrated on English teachers emphasized that continuous ICT integration into teaching practices led to technostress that has a detrimental impact on job performance (Khalili & Hashim, 2025). Research on teacher well-being had also noted that high levels of technostress are related to lower psychological health and professional satisfaction among Malaysian teachers, especially when they do not have the ability or support to deal with new digital technologies. This implies the significance of facilities and proper support.

Despite this growing body of literature, there remain important gaps in understanding technostress in Malaysian educational professional settings (Khalili & Hashim, 2025). Many existing studies concentrate on specific subgroups, such as private higher-education educators or English instructors, and on particular periods, especially during the height of the Covid-19 pandemic, which limits the generalizability of findings across the broader education sector (Khalili & Hashim, 2025). Furthermore, while prior research has documented relationships between technostress creators and outcomes like performance or well-being, there is relatively less empirical work that explores, in a holistic and context-specific way, how educators in Malaysia experience technostress in their daily professional roles and what coping mechanisms they actually use to manage these pressures (Nordin, 2025). This gap is particularly relevant at a time when digitalization in education is expected to continue beyond the pandemic, making technostress an ongoing rather than temporary concern (Yang et al., 2025; Wang et al., 2023).

Hence this research aims to understand technostress as experienced by education professionals in Malaysia and its relationship to their working environment, addressing gaps identified in prior studies (Khalili & Hashim, 2025). This research is intended to contribute to global and local debates by reporting information on the level of technological stress, the major dimensions of technological stress challenges confronted by lecturer, a counselling officer, and an administrative officer in Malaysia as well as what they do to address these demands (Zivi, 2025). Given the Malaysian educational context and level of analysis for the study, this project fills a gap by attempting to elicit and explore practical or contextually relevant findings that may help institutions develop effective measures (i.e., training/technical support/well-being initiatives), to assist educators toward better development of their technostress in their professional contexts.

2. LITERATURE REVIEW

In this era of rapid digital transformation, the use of information and communication technology (ICT) has become an essential part of daily life and professional work (Zivi et al., 2025). While technology improves efficiency and productivity, excessive reliance on it may lead to psychological strain known as technostress (Yang et al., 2025). Technostress refers to the stress experienced by individuals when the demands of ICT exceed their ability to adapt or cope with these technologies (Wang et al., 2023; Zivi et al., 2025). This concept can be better understood through the Transactional Model of Stress by Lazarus and Folkman (1984), which explains that stress does not arise solely from external demands, but from the interaction between those demands and an individual's ability to evaluate and cope with them. In this context, technostress occurs when individuals perceive technological demands as exceeding their available resources and capabilities. International studies (Zhong & Rosli, 2025; Yang et al., 2025) show that technostress is not a new issue, but rather it occurs widely in various professional sectors. It is something

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that happens especially to individuals who are exposed to the continuous use of technology. With what is faced, it is not only stressful, it will also affect the psychological well-being, work performance and balance in the individual's life (Yang et al., 2025). In addition, Malaysia faces a similar situation, where ICT has become routine in both the public and private sectors. Workers are increasingly exposed to various software, systems and digital applications used in their daily tasks. Studies have shown that excessive use of technology and lack of ICT skills contribute to technostress (Ab. Wahab et al., 2022; Vermila & Kurniawati, 2025), particularly as digital systems have become embedded in daily work practices. For example, a study by Ab. Wahab et al., (2022) found that since the COVID-19 pandemic, 62% of secondary school teachers in Malaysia have experienced stress due to excessive use of technology. Therefore, to determine whether the stress experienced can be classified as technostress, it is essential to examine the interaction between individual characteristics, technological factors, and coping mechanisms that influence individuals' responses to technology related demands.

2.1 Characteristics of individuals who experienced technostress.

The level of technostress experienced by individuals varies depending on personal characteristics, psychology, and experience in using technology. Among the characteristics that are often identified are the level of digital literacy, personality traits, generational differences, and exposure to technology training (Zivi et al., 2025). The level of digital literacy occurs when individuals have a low level of understanding of digital use or they are less confident in using technology. Most of them will feel anxious and feel that it is a threat when faced with technology, especially if it is in direct contact, so it tends to cause them to experience technostress (Zivi et al., 2025). Jimmy et al., (2023) also emphasized that employees with low digital literacy will take longer than individuals who are familiar with the use of ICT because they need to adapt to the system used. This is clearly in line with the transactional model which emphasizes that the lack of resources from the individual himself will increase the threat to the use of technology (Kivak & Rebecca, 2024).

Personality traits also influence the level of individual technostress. Individuals who are easily stressed, less flexible or tend to experience high anxiety usually have difficulty adapting to technological changes (Zivi et al., 2025). However, individuals who are open and positive-minded on the other hand have a good perspective that sees the existence of this technology as a tool for them to improve their skills and avoid feeling stressed (Zhong & Rosli, 2025). It clearly shows that even if two individuals face and use the same technology, the level of technostress of a person is different because it all reflects how they manage emotions either adaptively or maladaptively.

Next, the generational differences that exist in this work environment are characteristics that can be seen in individuals who experience technostress. In the employment sector, older workers are more likely to experience technostress due to techno-complexity and a large quantity of information compared to younger workers who are faster to adapt to new digital systems (Mohd Nazri et al., 2024; Ab. Wahab et al., 2022). However, studies also show that the younger generation does not run away from facing the pressure of technology. This is because they may be more exposed to techno-uncertainty, which is the constant technological change that puts pressure on even skilled workers (Mohd Nazri et al., 2024). This shows that generational differences are not the only characteristics of individuals experiencing techno-stress, but the

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interaction between experience, understanding of ICT and technological change also plays an important role.

Previous studies have also emphasized that lack of exposure to ICT training and support increases the risk for individuals to experience techno-stress (Zivi et al., 2025). The study explains that individuals who do not receive adequate training on this technology will feel unprepared, hesitant and have difficulty using the introduced system. On the other hand, individuals who are often given relevant training will be more confident in using digital systems because they have the skills built through the training (Jimmy et al., 2023; Zhong & Rosli, 2025). With this training and skills, individuals will be more enthusiastic and able to adapt more quickly to technological developments. A study by Yang et al., (2025) also supports that employees who are given an understanding and equipped with the use of ICT will face lower stress than individuals who do not get it.

In conclusion, technostress does exist but why individuals face technostress is different. Some may experience technostress due to their level of digital literacy, their own personality, generation gap or limited technology exposure. For this reason, it is important to first understand the characteristics of individuals who are exposed to technostress before planning any strategy to manage the stress that occurs.

2.2 Factors contributing to technostress.

From the perspective of the education sector, the use of ICT has indeed become part of the daily work of teachers, administrators and institutional staff. This technology certainly has its own effectiveness, but it also causes technostress because its use exceeds the individual's capacity (Jimmy et al., 2023; Yang et al., 2025). There are five main factors that are often identified as contributing to technostress, namely techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty.

The first factor is techno-overload which occurs when individuals have to learn and deal with several digital systems continuously (Wang & Yao, 2025). In fact, if we focus on the education sector, educators use many digital platforms simultaneously and this requires them to adapt to them more quickly and causes an increase in workload due to the need to use the technology. A study in China found that teachers indirectly experience this technology overload and cause them to be stressed, physically and mentally exhausted due to high work pressure (Tu et al., 2025). In Malaysia, a study by Ab. Wahab et al., (2022) found that teachers here also experience the same challenges as they have to adapt to applications such as Google Classroom or Google Meet due to the new norm of hybrid and online teaching.

Techno-invasion also occurs when the individual's work and personal time cannot be separated. It clearly shows that individuals are forced to work outside working hours because they need to be responsive to receiving information due to the existence of this digital system. International studies also indicate that teachers must be responsive to messages or emails outside working hours that results in sleep disruption, work-family conflict, and mental fatigue (Shaukat et al., 2022). Not only internationally, but also in Malaysia, teachers especially have to work even after office hours are over because they need to provide digital learning materials (Jimmy et al., 2023).

Next, techno-complexity exists when the technological system is too complex or requires specific skills to use. Each digital system has different functions, does it become a pressure because it requires individuals to really understand each function in the system. In fact, in Malaysia, studies have found that teaching staff need to understand systems such as the Malaysian Learning Environment (VLE) because it has many

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functions and requires more perseverance (Zivi et al., 2025). In China, they conducted studies on university lecturers and found that lecturers also experience difficulty in learning many e-learning platforms to the point that it makes lecturers worry about whether they have time to learn all the available platforms and causes them to become exhausted (Tu et al., 2025).

Techno-insecurity also occurs when individuals feel worried about their own safety due to the existence of technology. With the existence of this technology, employees will easily feel that their position will be replaced by employees who are more skilled in technology. This is supported by studies which found that teachers and educational staff are worried that their position will be replaced by technology or more skilled colleagues (Cazan et al., 2024; Yang et al., 2025). This situation is also clearly happening in Malaysia, where new teachers need to adapt to digital learning management systems more quickly because they feel insecure about their position and this causes stress (Ab. Wahab et al., 2022).

Techno-uncertainty occurs when digital systems and applications are constantly changing (Wang & Yao, 2025). For example, there are digital systems or applications that have new peripheral updates or new digital procedures released by the organization itself. So, when these digital system updates occur periodically, it will put pressure on employees because there is no adequate training or guidance. A study in Spain also emphasized that this factor occurs when employees face constant uncertainty about the actual function of a system and it causes anxiety and difficulty in planning lessons (Rey-Merchán & Arquillos, 2022). With the existence of techno-uncertainty and four other factors that cause this techno-stress to occur, it clearly shows that it is indeed a global issue that needs to be addressed to reduce the level of stress.

2.3 Coping mechanism to deal and respond towards technostress.

This stress can clearly affect personal well-being if not handled properly. Therefore, individual, organizational and social support should be considered to reduce the level of technostress and prevent it from continuing (Zhong & Rosli, 2025). From an individual perspective, increasing digital literacy is a key strategy. Increasing digital literacy means that individuals need to try to understand, evaluate and learn more to use technology better. This strategy has been successfully implemented in China, where employees in their education sector take initiative to improve digital literacy by attending the training and hands-on practices regarding technology, so that they can manage stress better and maintain teaching performance (Wang & Yao, 2025; Tu et al., 2025). Not only increasing digital literacy, individuals also need to regulate the use of these digital systems by setting work life boundaries. With the increasing use of technology, screen breaks are also needed or it is called digital detox which has shown potential effectiveness to reduce fatigue experienced due to excessive use of technology (Mirbabaie et al., 2022).

This clearly shows that increasing digital literacy and healthy technological habits are needed but it is not just individuals who need to put in the effort, organisations, especially in the education sector, can help by providing structured ICT training or providing clear guidelines on the use of technology. For example, in South Africa, they have established digital support systems and specific guidance for the use of new digital systems and it has been proven to help employees reduce the burden of understanding new technologies (Ward & Harunavamwe, 2025). Social support also plays an important role because with positive social support, they can be a place to rely on, express themselves or a comfortable place for individuals to seek help. A previous study suggests that teachers who have supportive colleagues and

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families can share experiences and advice that can help individuals and maintain mental well-being clearly even when there is still digital stress (Yang et al., 2025). In Malaysia, such a support system can be realized because there is a group of teachers, staff, guidance communities that can make individuals not feel alone in facing stress. Overall, the involvement of these three aspects is very important because it can help in reducing the stress of technology. It is not something new, this strategy has been successful internationally and it would not be strange if it could be applied in Malaysia, especially in a work environment that is increasingly advanced with this technology.

Overall, technostress can be better understood through the interaction of individual characteristics, technological factors, and coping mechanisms. This study is guided by the Transactional Model of Stress by Lazarus and Folkman (1984), which explains that stress occurs when individuals perceive that the demands of a situation exceed their ability to cope with it. In this context, technostress develops when technological demands such as workload, system complexity, and constant connectivity are perceived as overwhelming. Although technostress has been widely discussed in previous studies, most research tends to focus on its effects rather than a more detailed understanding of how it is experienced in different professional roles and how individuals actually manage it in their daily work. Therefore, this study seeks to fill this gap by exploring technostress from lived experiences in the Malaysian context.

Based on this, the study is guided by the following research questions and objectives:

Research Questions:

(i) What are the characteristics of individuals who are more likely to experience technostress?

(ii) What are the key factors that contribute to technostress?

(iii) How can coping mechanisms be developed to manage technostress?

Research Objectives:

(i) To identify the characteristics of individuals who experience technostress

(ii) To determine the factors contributing to technostress

(iii) To explore coping mechanisms for managing technostress

3. METHODOLOGY

This study employed a qualitative approach to explore the lived experiences of technostress among individuals in different professional and educational roles. Phenomenology is suitable for capturing subjective experiences and emotional responses to digital pressures in the workplace and academic settings.

Three informants were selected through purposive sampling based on the following criteria which are full-time employment status, daily reliance on digital tools and platforms, minimum five years of job experience, prior exposure to technology-related stress and working in related educational fields. The selected informants represent diverse roles: a lecturer, a counsellor and an officer allowing for comparative insights across occupational context and ensuring variation in professional experience with digital systems to enrich data depth. The selection of three informants in this study is appropriate for a preliminary qualitative exploration, as phenomenological studies often focus on depth of experience rather than large sample size, and small samples are acceptable when rich and detailed data are obtained (Oluka, 2025).

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Data collection was conducted through in-depth interviews where it was a one time and semi-structured interview between November and December 2025, and each session was conducted approximately 30 - 45 minutes. Interviews were audio-recorded with consent and supported by note-taking to capture non-verbal cues and spontaneous remarks. In line with ethical research procedures, informed consent was obtained from all participants, and ethical approval for the study was granted by Universiti Teknologi MARA (UiTM) under the supervision of the assigned course supervisor. Participation was voluntary, and respondents were informed of their right to withdraw at any time.

Thematic analysis was used to analyse the data. Transcripts were manually coded to identify recurring patterns related to technostress, such as characteristics, factors, and coping mechanisms of technostress. The analysis followed Braun and Clarke's six-step thematic analysis process, which includes familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report (Braun & Clarke, 2021). Then, coding was conducted manually by the researcher, and themes were developed through repeated reading and comparison of transcripts to ensure consistency and depth of interpretation. To enhance trustworthiness, credibility was maintained through careful transcript checking and consistent coding of all interview data.

4. FINDINGS

Table 1. Demographic and occupational profiles of the study respondents

No.	Informants	Age	Role	Working Experience
1.	I1	50	Lecturer	25 years
2.	I2	35	Counsellor	13 years
3.	I3	46	Administrative Officer	16 years

The table above presents the demographic and occupational profiles of the study respondents. Overall, the respondents consist of individuals with diverse roles and varying years of working experience, providing a relevant background for a better understanding and discussed in the following section.

4.1 Characteristics of technostress

Low digital literacy

Low digital literacy refers to the lack of knowledge, abilities, or understanding about using digital tools and technology to finish a task (Bigio, 2023). This disadvantage immediately leads to technostress within modern work and educational settings. Most of them state that when people don't have adequate abilities, they have problems with simple tasks like login into systems, filling out forms, or troubleshooting errors. Users experience psychological as well as technical stress because they worry about making mistakes, missing deadlines, or lagging behind their colleagues. Among the verbatim quotes are as follows:

> *"Personally, I did not feel confident. We were not used to using technology too much in our classroom. Sometimes we used the LCD, sometimes just Google, but we were not exposed to Google Meet or Zoom… Even WhatsApp and Telegram we only started using during that time.*

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> *And then my students, they did not have the gadgets either… Not everyone could join the classroom, so our objectives were not really achieved."*
>
> *(Informant 1/ 26 November 2025/ 1.40p.m.)*

> *"When the system was first introduced, there was a sense of awkwardness because we had been used to manual processes for many years. At the beginning, some colleagues found it difficult to use the system, but once it became mandatory and stable, it was easier. Still, in the early phase, because it was something new, we had to learn, and that process took time."*
>
> *(Informant 2/ 3 December 2025/ 10.15a.m.)*

> *"During the early implementation, everyone struggled, including myself, because the system was still new and we were not the developers. At the beginning, it was difficult to know how to use it, how to key in data, and how to manage the database. When the system was first introduced, many problems emerged, and we had to learn gradually in order to improve."*
>
> *(Informant 3/ 8 December 2025/ 11.25p.m.)*

Overall, this finding indicates that low digital literacy is a key characteristic of technostress, where limited knowledge and skills in using digital systems lead to confusion, errors, and increased anxiety during task completion.

Personal traits

Personal traits refer to the attitudes and reactions to technological difficulties, which include specific characteristics like discipline, emotional stability, and openness (Roberts et al., 2021). The informants demonstrate how people who are easily triggered, annoyed, or capable of impatience frequently find it difficult to deal with slower systems, unclear user interfaces, or unexpected technological problems. To see how these traits appear in real situations, we can look at the views shared by the informants in this study:

> *"So far, to be fair in answering this question, I go through the cases that I have handled. I rarely receive cases where stress comes directly from technology itself. Except, for example, clients who already have issues of anxiety. Let me give an example: they already have anxiety, but the anxiety is not caused by technology. However, when such colleagues face technology, it easily triggers their anxious feelings. For instance, people with anxiety sometimes feel nervous just from the sound of a phone ringing. So actually, this depends on the condition of the individual. If they are normal, as far as I have seen, they do not feel stressed with technology. But if someone already has problems, then they will feel stressed with technology."*
>
> *(Informant 2/ 3 December 2025/ 10.20 a.m.)*

This shows that a person's emotional condition is frequently the source of technostress rather than technology itself. Personality driven also matters, according to another source. This perspective can be seen more clearly through the words of the informants, who described their own experiences in detail:

> *"When an individual has a high level of interest, they are more willing to explore technology further. However, for work processes that have been formally digitised, training is usually provided before implementation, as not all individuals have the same level of adaptability."*
>
> *(Informant 3/ 8 December 2025/ 12.42p.m.)*

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Overall, this finding suggests that personal traits and emotional conditions play an important role in shaping technostress experiences, where individual attitudes and psychological readiness influence how technology-related challenges are perceived and managed.

Generational differences

Generational differences refer to the variations in technological familiarity and adaptability among various age groups (Omoniyi et al., 2025). According to the informants, younger employees or coworkers who have grown up with digital tools can adapt more quickly and easily, but elderly people who are getting close to retirement may find it difficult to use new technologies or might avoid them completely. The significance of these generational differences can be seen more clearly through the words of the informants:

> *"Older staff usually take longer to understand new systems. They prefer the manual way because they feel more in control. Younger staff, on the other hand, adapt faster since they are already familiar with technology."*
>
> *(Informant 1/ 26 November 2025/ 1.46p.m.)*

> *"From what I see, students who are younger tend to be more confident with technology. But those from older generations, especially lecturers who are not used to digital tools, sometimes feel stressed when systems change or when they have to use new applications."*
>
> *(Informant 2/ 3 December 2025/10.18a.m.)*

> *"I am from Generation Y. Your generation is Gen Z. So there is a generational gap. Generation X is not skilled with technology and faces many problems adapting. Generation Y is in between — we grew up during the transition when technology was just starting to develop, so we learned slowly and can adapt to both older and newer systems. That is why Generation Y leaders usually don't face big problems with technology, but Generation X often experiences technostress because they cannot fully use it."*
>
> *(Informant 3/ 8 December 2025/ 12.18p.m.)*

Overall, the findings show that generational differences significantly shape technostress experiences, as varying levels of exposure to technology influence how easily individuals adapt to and cope with digital systems.

Lack of training

One of the most significant insights obtained from the interviews is that technostress is directly caused by inadequate training. All employees are frequently expected to readily adapt to new systems without adequate guidance. Confusion, a fear of making mistakes, and a dependence on trial and error are the results of this lack of organizational support. It demonstrates that institutional practices that do not sufficiently prepare users are a contributing factor to technostress, in addition to the complexity of technology.

The informants emphasized that quick workshops or training sessions could boost confidence and lower stress. People must depend on their own initiative or unofficial assistance in the absence of such preparation, which leads to frustration and reduces productivity. Their experiences illustrate how the absence of training amplifies stress in everyday tasks.

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This perspective is reflected in the following accounts:

> *"When new systems are introduced, there is usually no detailed briefing. We just receive instructions to use it, and then we have to figure it out ourselves. That makes staff feel stressed because they are afraid of making mistakes."*
>
> *(Informant 1/ 26 November 2025/ 1.54p.m.)*

> *"Sometimes, to explore new applications, it takes extra effort. I have to watch YouTube tutorials or try things on my own. It is tiring, but you need to push yourself to learn if you want to get the result you want. If there was proper training, it would be easier."*
>
> *(Informant 3/ 8 December 2025/ 12.15p.m.)*

Overall, this finding highlights that insufficient training contributes to technostress, as the absence of proper guidance and structured support leads to uncertainty, trial and error learning, and reduced confidence in using the technology.

4.2 Factors contributing to technostress.

Techno-overload

A primary issue contributing to technostress among professionals is techno overload. In this context, it is elucidated that techno-overload has led people to face hardship and tension when it accelerates work and throws off the balance between regular tasks and digital demands. As stated by Callado et al. (2025) in their studies that due to larger workloads, people have been obliged to work longer hours, resulting in increased stress. Informants said that managers or superiors often provide job directives abruptly using digital channels such as WhatsApp. This will lead to pressure on employees since they are linked to their primary obligation (teaching) while also required to do extra ad hoc responsibilities within a limited timeframe and also can lead to uninformed or missing critical information. Moreover, techno-overload may adversely impact emotional and mental well-being due to prolonged or excessive engagement with digital technologies. Therefore, this study indicates that techno-overload is a contributing factor to technostress, resulting in cognitive weariness. As expressed by one informant below:

> *"BPLTV always gives ad hoc work. Ad hoc is online, so we can say online work. Sometimes they only give two days to fill it out, and the system is difficult to get into. At the same time, we have to teach, we have to do teaching. The instructions overlap, all via WhatsApp. When there are too many messages, some people miss information and then they get angry."*
>
> *(Informant 1/ 26 November 2025/ 1.52p.m.)*

> *"When we look at the laptop screen for a long time, it can actually affect our mental health because of stress. We only focus more on the world on the screen rather than on the real world."*
>
> *(Informant 2/ 3 December 2025/ 10.21a.m.)*

Overall, this finding indicates that techno-overload is a major contributing factor to technostress, where excessive digital demands and time pressure increase workload and lead to mental and emotional strain.

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Techno-invasion

One contributing factor to technostress is techno-invasion, when technology resources surpass the bounds of daily life, resulting in an imbalance between work and private life. In the context of this research, technostress occurs when the individuals are unable to separate work and leisure due to constant digital connectivity. As revealed by Callado et al. (2025), technology use has an influence on human life. Informants claim that messages and notifications received during nights or weekends disrupt personal and rest time, resulting in a perception of being always "on-call" outside of working hours. Moreover, the diversions encountered may arise not only from the workers' designated responsibilities but also from commercial or entertainment apps. The following quotes illustrate how informants endure persistent interruptions from messages and notifications beyond working hours:

> *"This is the same as sleeping, right? It was while I was sleeping that WhatsApp woke me up. If only it wasn't Shopee, it was a TikTok, right? What's going on live? Okay, so we thought that if we didn't join, we wouldn't be able to go live. Well, that's how it is."*
>
> *(Informant 2/ 3 December 2025/ 10.35a.m.)*

> *"In terms of using this technology, even if you're already at work tomorrow, mostly when you're already at work, your boss will create a WhatsApp group in your department. When he creates a WhatsApp group, he doesn't always use it during work hours. Sometimes he uses it on the weekends, at night, and on my days off. Then you're just about to fall asleep, and then you get a notification. He said, 'Please update this.'"*
>
> *(Informant 3/ 8 December 2025/ 11.52p.m.)*

Overall, this finding shows that techno-invasion contributes to technostress by disrupting personal boundaries, as constant digital connectivity blurs the separation between work and private life.

Techno-complexity

Furthermore, techno-complexity has been identified as one of the variables that lead to technostress. This happened because people believe that the system built is overly sophisticated and not user-friendly. This study indicates that it can be argued that the formation of techno-complexity occurs when the environment of persons who start utilizing a new system is introduced and needs more time to learn owing to elements that are harder to grasp and less stable. Therefore, this quotation illustrates that the system instability and complicated design might impact consumers' confidence and make adaptation more difficult in technology. Thus, it creates a burden for consumers since it is difficult to adjust and eventually adds to techno-complexity as indicated by several informants below:

> *"This is new to us and then the system is not helping either. Because it's difficult. So some of us don't want to use it because of that. The system is not stable. I'll keep it and it's gone tomorrow. So it's not stable."*
>
> *(Informant 1/ 26 November 2025/ 1.36P.M.)*

> *"So in terms of learning. At first, we had a little trouble adapting. Because we wanted to learn new things. Plus, like the system, okay. An example of the system in UITM. Mostly, we developed a lot of it ourselves. When we developed it ourselves, it had a lot of hiccups. There were problems sometimes. Because it was in a phase of trying to stabilize."*

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(Informant 3/ 8 December 2025/ 11.15p.m.)

Overall, this finding suggests that techno-complexity increases technostress when users perceive systems as difficult, unstable, and not user-friendly that making adaptation more challenging.

Techno-insecurity

Techno-insecurity refers to the fear or concern felt by persons about losing their job to new learning and teaching technology, techniques or other persons with more technological capabilities (Perera, 2021). In a professional setting, it manifests when individuals feel anxiety or fear of being seen as inadequate or obsolete in their technological competencies relative to more proficient peers. Employees are feeling stress and pressure to adapt to more advanced technology, stemming from feelings of insecurity over their positions and performance owing to a lack of trust in their capabilities. The informants state below that positioning and social comparison among coworkers have made technology adoption a necessity rather than a choice.

> *"Sometimes I feel like other people are better at using technology, and I'm scared that if I can't catch up, my work will be slow and people will think I'm not competent."*
>
> *(Informant 2/ 3 December 2025/ 10.30a.m.)*

> *"Like it or not, you have to adapt to technology, because if you don't, we will be left behind and people will see that we don't know."*
>
> *(Informant 3/ 8 December 2025/ 12.11p.m.)*

Overall, this finding indicates that techno-insecurity contributes to technostress by creating fear of being less competent compared to others, leading to anxiety and pressure to continuously improve digital skill.

Techno-uncertainty

Techno-uncertainty refers to a state in which humans experience extended uncertainty resulting from rapid technology advancements, highly unstable system circumstances, and inconsistent directives. This study examines the pressure or stress experienced by individuals due to uncertainty in performing technology-related tasks, particularly when adapting to a new system that is still in a trial phase while simultaneously fulfilling essential responsibilities. Numerous informants said that the frequent changes to the new system, which included instability, had resulted in several problems for users and adversely impacted performance by disrupting concentration on their primary duties. The following verbatim extracts show the informants' experiences with techno-uncertainty.

> *"And then every year the teacher changes. Next year it's different. So that person also must learn. So, it is not fixed. People say this kind of system is very unstable. Ad hoc instructions, overlapping, and at the same time we have to do our primary task, which is teaching."*
>
> *(Informant 1/ 26 November 2025/ 1.54p.m.)*

> *"That's what I've seen happen because this is how the system is introduced and how it usually runs first." This is why we test first. How system had too many problems at first. Right now, some clubs can just be simple until they can sign up. But in the end, we adapt too. Until now it's still trial and error because there are also a few errors that occur."*
>
> *(Informant 2/ 3 December 2025/ 10.39a.m.)*

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> *"The system has just been developed. It just started last year. So it is in the phase towards stability. Before it becomes stable, there are all kinds of problems and issues that we face."*
>
> *(Informant 3/ 8 December 2025/ 11.40p.m.)*

Overall, this finding highlights that techno-uncertainty contributes to technostress due to frequent system changes and instability, which create confusion and disrupt task performance.

4.3 Coping mechanisms used to deal with technostress

Seeking technical support and expert help

All three respondents cope with technostress by turning to technically skilled colleagues, IT units, or system developers when digital tools fail or are confusing. This reflects problem focused coping through instrumental social support, where educators reduce techno-complexity and techno-uncertainty by relying on others' expertise. Recent studies show that teachers and staff often manage technostress by asking IT personnel, "tech-savvy" peers and helpdesks for direct assistance, which reduces perceived overload and supports confidence with digital systems (Wang et al., 2023). In Malaysia, research similarly emphasises that accessible technical support and involvement facilitation are central organisational strategies to mitigate technostress and sustain performance among educators (Wahab et al., 2022; Zainudin et al., 2022).

> *"Okay. One is I will always refer my IT unit supervisor. We have an IT supervisor. We have a technician for IT who has a supervisor. So if the system is down, I will always call him to come and see how it is. And if there is something involving IT that we don't understand. I have a friend who is indeed the head of IT. The head of ICT. ICT unit. So I will always refer to her. If there is anything like there is a glitch in technology, what is it? So call him."*
>
> *(Informant 1/ 26 November 2025/ 1.56p.m.)*

> *"At that time, UiTM Shah Alam held a workshop for all counselors throughout the system. So we went and did it at the lab. There was help from the infotech unit at that time for people to refine our system to teach if there was one. At that time, we were ready to take student numbers and so on so that we could do examples like students wanting to make an appointment with us and so on. So that's where I saw it helping with the age issue, the age difference."*
>
> *(Informant 2/ 3 December 2025/ 10.41a.m.)*

> *"We depend on this, okay. If in terms of work, okay, when we are the question, he is not him not saying you know, when, okay. Because you are not the holder of the system, you are not.You do not have You do not have the power to change anything in the system or save it. Unless,you ask for help from above. So if it is like help from above, slow and so on, you have to face that stress."*
>
> *(Informant 3/ 8 December 2025/ 12.35p.m.)*

Overall, this finding suggests that seeking assistance from IT personnel, technical experts, and knowledgeable colleagues is a key coping strategy that helps reduce technostress by resolving technical issues efficiently and enhancing users' confidence in managing digital system.

Emotion regulation, self-care and digital detox

Across the interviews, respondents describe coping by regulating emotions, deliberately pausing when stressed, and encouraging self-care practices such as digital detox and work life boundary setting.

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Technostress research increasingly highlights emotion focused coping such as calming down, stepping away from devices, and practicing self-care, as crucial when individuals have limited control over problematic systems (Zivi, 2025). For Malaysian educators, recent reviews emphasize self-care, rest, and psychological support as necessary to protect wellbeing amid high digital workload and technostress (Wahab et al., 2022; Zainudin et al., 2022).

> *"So one more thing, when you are very stressed, you don't force yourself to do it. You have to pull down. And then you get stressed, right. And sometimes we have to complain. complain that improve the system or improve the internet, Google before you do things, right. So that teacher doesn't stress... We are facing technostress okay. But then how we cope with it. And then how we deal with stress. Don't continue to ignore it. We have to do something so that our work can be done."*
>
> *(Informant 1/ 26 November 2025/ 1.57p.m.)*

> *"So self-care depends a lot on the individual's situation. So let's say if the student has an anxiety issue. So for self-care, he must have time for a digital detox. That's the first thing we have. So that's what's very important to have a digital detox. But you have to remember that it depends on the individual's situation, it's not the same for everyone."*
>
> *(Informant 2/ 3 December 2025/ 10.46a.m.)*

> *"So if it's like help from above, it's slow and so on, then we have to face that stress. If we're stressed, we have to calm down. Usually, this system is not under us. Under Shah Alam, we have to wait for Shah Alam. Don't think about it anymore."*
>
> *(Informant 3/ 8 December 2025/ 12.37p.m.)*

Overall, the findings indicate that emotion regulation strategies such as calming down, taking breaks, and engaging in self-care practices including digital detox are important coping mechanisms that help individuals manage emotional strain and reduce the negative effects of technostress.

Continuous learning and acceptance of technological change

All three respondents emphasize learning, exploration and accepting technological change as central ways of coping with technostress. Rather than rejecting digital tools, they view them as unavoidable and choose to adapt through new skills acquisition. Recent literature conceptualizes this as a blend of problem focused coping and "techno-eustress", educators transform stress into motivation to learn, build digital self-efficacy, and reduce techno-complexity over time (Zivi, 2025). Malaysian studies since the pandemic show that teachers and administrators commonly report being "forced to learn" platforms during online learning, and that sustained professional learning can turn initial technostress into improved competence and confidence (Ab. Wahab et al., 2022).

> *"Okay time and then technicality. And then technology has also been improving and progressing. We have to follow that. So we as educators have to always be prepared and learn with the newly introduced system and understand and deepen it."*
>
> *(Informant 1/ 26 November 2025/ 2.02p.m.)*

> *"When TOT is right so when there is something like that. He makes it easier and that's where we see the reason that there was once a time to help the unit infotech So it's easy when there is*

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Anything can be asked directly Compared to what we do. For example online but we are at the branch right so when there is an issue It's hard to ask so. So What I see is that there has to be a TOT It means if you want to introduce something new There must be a TOT he will Help a little bit for Every age."

(Informant 2/ 3 December 2025/ 10.55a.m.)

"If we consider it positive, it will have a positive impact on us. If we consider it negative, it will have a negative impact on us. Like when a new system is introduced. For example, if we feel stressed about something. We have to face it. Why do we want to deal with that feeling of stress, stress, stress, stress. So why don't we instead of moving in that direction, we settle slowly, slowly, slowly, slowly. It's normal, this system or this new thing, we have to adapt. Trying to adapt is what makes us stressed."

(Informant 3/ 8 December 2025/12.49p.m.)

Overall, this finding shows that continuous learning and acceptance of technological change play a significant role in helping individuals adapt to new systems, improve digital competence, and gradually reduce feelings of technostress through increased familiarity and confidence.

Normalising technostress and structuring work to remain functional

Finally, all three interviews show a tendency to normalize technostress as something everyone faces, while differentiating between "good" and "bad" stress and attempting to structure work and boundaries so that stress remains manageable. Recent studies on teachers' technostress argue that some level of digital pressure is now an inevitable part of professional life, and that coping involves both accepting this reality and actively managing workload, expectations, and boundaries to avoid burnout (Tu et al., 2025). In Malaysia, emerging work notes that technostress is widespread across age groups, but that time management, realistic workloads and clear work life boundaries are key to maintaining well-being (Wahab et al., 2022).

"So basically teacher, everyone is facing the technostress actually. The difference is how do we cope with that?. We are facing technostress okay. But then how we cope with it. And then how we deal with stress. Don't ignore it. We have to do something so that our work can be done. Okay, we don't have to get angry either."

(Informant 1/ 26 November 2025/ 2.01p.m.)

"If it's from the staff's perspective. the work load, the time pressure is actually manageable if they know how to manage their time well. So most programs are carried out during holidays. So most issues are more about lack of rest time. But supposedly this is my personal opinion, if you know how to manage your time, God willing, it's manageable. Because there's good stress and bad stress. So good stress is important because good stress is what will push us to complete our work."

(Informant 2/ 3 December 2025/ 10.48a.m.)

"When we use the system, everything is recorded. So people know where the processes are and we have to adjust them within the time period that we have set. So through that stress, what do Mr. Izzuan and the staff here usually do when they are stressed with technology?He is stressed, he is personal, you know. So if it's like help from above, slow and so on, then he has to face that stress.Usually, this system is not under us. Under Shah Alam, you have to wait for Shah Alam.

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Don't think about it anymore."

(Informant 3/ 8 December 2025/ 12.30p.m.)

Overall, the findings suggest that normalising technostress as part of work life, along with effective time management and boundary setting, helps individuals maintain functionality and cope better with digital-related pressures without becoming overwhelmed.

5. DISCUSSION

Technostress occurs when the use of technology exceeds the individual's capabilities and this is in line with the views in the transactional model of Lazarus and Folkman (1984). The findings found that the lack of technological skills, especially for individuals in the education sector, can cause them to face difficulties in adapting to the new system and this is clearly the case as identified in the study of Zivi et al., (2025) and Jimmy et al., (2023) which emphasized that low digital literacy will increase the risk of technostress. This study also found that the personality traits of individuals will influence their stress levels. As shared in previous studies, individuals with adaptive personalities will be able to handle stress better than those with maladaptive personalities (Zhong & Rosli, 2025). Generational differences were also identified where older workers who are about to retire find it more difficult to adapt to existing technology due to lack of exposure and training to the technology. This is in line with the views of Mohd Nazri et al., (2024) and Ab. Wahab et al., (2022) which show that this stress is more likely to occur in older workers who are less knowledgeable about technology compared to the younger generation who are more skilled and were exposed earlier.

The factors contributing to the existence of technostress are also still relevant because they are still the same as those found in previous studies. In our findings, workers who experience stress are mostly due to overlapping tasks; workers still have their main job but at the same time, they receive instructions suddenly through digital systems that cause confusion and stress. This finding is in line with previous studies that emphasize teachers face increased workload and stress due to the use of various digital systems simultaneously (Ab. Wahab et al., 2022). Apart from excessive work, this technology also leads to stress because individuals receive notifications outside of working hours that affect their rest time and personal life, which is called techno-invasion. This stress on technology also occurs when individuals find it difficult to understand new systems and will affect confidence in using technology, similar to what was explained in the study by Zivi et al., (2025). Our study also found that techno-insecurity and techno-uncertainty still occur today, where individuals worry about being perceived as less skilled by colleagues and they also feel pressured by the system changes since it makes it difficult for employees to plan their work better.]

This study also found that technostress management among education professionals involves a combination of strategies at the individual, organizational and social levels, including technical support, systematic ICT training, emotion regulation, digital detox practices, continuous learning and acceptance of technological change. Informants explained that they rely on ICT units and colleagues who are skilled in technology to address system problems and this is clearly in line with previous studies that emphasize the role of organizational support and social support in reducing technological stress. In addition, to maintain mental well-being, informants choose to take breaks and limit their use of technology as discussed in previous literature on technostress management which is applying digital detox. In addition to controlling emotions and practicing self-care, individuals' willingness to try to learn and adapt to new systems can increase digital competence and self-confidence, thus reducing technological stress in the long term. This study also suggests another mechanism that has not been emphasized in previous studies, which is

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normalization of technostress as part of the reality of professional work today. Informants shared that individuals should distinguish between manageable stress and stress that has a negative impact, then organize work and manage expectations so that technostress does not lead to burnout.

The results indicate that technostress for education professionals is significantly influenced by ongoing digital expectations, insufficient training, and variability in personal adaptability. In Malaysia, this could be affected by the swift deployment of digital systems in education and public administration, especially after the COVID-19 pandemic, when users had to adjust rapidly without adequate preparation. Nonetheless, these results should be viewed carefully because of the very limited sample size of three informants, which restricts the degree to which the findings can reflect wider experiences. Despite this limitation, the study provides useful insights into how education professionals experience and manage technostress in their daily work.

6. CONCLUSION

This study elucidates that technostress is a significant issue that can directly affect educators and professionals in Malaysia. This study's results demonstrate that individuals experience technostress due to several factors, including techno overload, techno invasion, techno complexity, techno insecurity, and techno uncertainty. These factors can lead to imbalances in individual lives, impacting psychological well-being as well as job performance and satisfaction. In the realm of Education, the study findings indicate that informants (lecturers, counsellors, and administrative officers) have encountered significant problems due to the necessity of adapting to the integration of increasingly advanced ICT technologies in their everyday responsibilities.

This study effectively showed that coping measures, including enhanced digital literacy, organisational support (training and advice), and social support from colleagues, can mitigate the adverse impacts of technostress encountered. This study also has consequences for participants in the education system. Universities, school officials, and stakeholders should heed these findings by offering ongoing training, effective technical assistance, and explicit digital guidelines. A targeted intervention strategy can mitigate the extent of technostress experienced. Meanwhile, it enhances instructional efficacy and can elevate motivation and occupational productivity in response to contemporary technological advancements.

However, this study is not without limitations. Firstly, the extremely small sample size of three participants limits the generalisability and depth of data saturation, as it may not fully represent the broader population. Secondly, the focus on participants within the education sector restricts occupational diversity, thereby limiting the applicability of the findings to other professional contexts. In addition, as this study employs a qualitative approach, there is a potential for researcher bias in the interpretation and analysis of data.

In light of these limitations, future research is recommended to involve a larger and more diverse sample to enhance the robustness of findings. Additionally, the use of mixed-methods approaches is encouraged to provide more comprehensive insights into technostress. This means that future studies may also consider conducting comparative research across different institutions or sectors to better understand how technostress varies in different organisational settings.

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7. ACKNOWLEDGEMENTS/FUNDING

The authors would like to express their sincere gratitude to the Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UiTM), for providing the necessary resources and support throughout the course of this research.

The authors also would like to wish and extend their heartfelt thanks to the informants who participated in this research. their valuable insights, perspectives, and active engagement provided critical data that greatly enhanced the quality of this study. the authors are deeply grateful for their time and contribution, which were essential to the successful completion of this manuscript.

Special appreciation is extended to colleagues and peers who contributed valuable insights and constructive feedback, which greatly enhanced the quality of this paper.

The authors declare that no direct funding was received from any public, commercial, or not-for-profit sector for the conduct of this research.

8. CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the Journal of Administrative Science (JAS).

9. AUTHORS' CONTRIBUTIONS

Khairiyah Hj Md. Shahid: Conceptualization and study design and also provided essential methodological oversight. **Ahmad Hadif Halim, Nur Alya Maisarah Nor Hisham, Muhammad Haziq Hallmi and Nurul Natasya Annisya Nordin:** Data collection, **Ahmad Hadif Halim and Nur Alya Maisarah:** statistical analysis and data interpretation, **Ahmad Hadif Halim, Nur Alya Maisarah, Nor Hisham, Muhammad Haziq Hallmi and Nurul Natasya Annisya Nordin:** the initial drafting of the manuscript was carried out by the collective efforts with the supervision of **Khairiyah Hj Md. Shahid.** All authors read and approved the final version of the manuscript prior to submission.

10. DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this manuscript, the authors utilized **TurboScribe** for data analysis, specifically to **categorize qualitative survey responses / process large structured text datasets** Following the use of this technology, the authors independently audited verified all analytical outputs. The authors take full responsibility for the methodology, interpretation of results, and the ultimate content of this publication.

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11. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

All relevant data supporting the findings of this study are included within the article in the form anonymized participant quotations. Full transcripts are withheld to preserve participant anonymity.

12. ETHICS STATEMENT

This study was conducted in accordance with ethical research standards. All procedures involving human participants were reviewed and approved by the Ethics Committee of the faculty, approval number [600-FSPPP(PT.5/1/1]. Informed consent was obtained from all informants prior to data collection. Participation was voluntary, and informants were assured of confidentiality and anonymity. The data collected were used solely for academic purposes.

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