

# Coping mechanisms for technostress through social support among librarians in Indonesian public libraries

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## ABSTRACT

*The advancement of contemporary technology requires librarians to continually adapt to manage technology-driven library services. However, technological challenges can cause technostress, which may affect librarians' performance. Workplace social support is essential in helping librarians cope with technostress. The aim of this study is to determine the role of social support as a coping strategy for technostress among librarians in Indonesian public libraries. This study employed qualitative methods, using semi-structured interviews for data collection. The data were analysed through condensation, presentation, formulation, and validation of findings. This article provides an overview of technostress among librarians in public libraries, their coping mechanisms, and the social support they receive. Librarians cope with technostress through both internal and external mechanisms. Social support as a coping mechanism includes instrumental and emotional support. It is essential for libraries to cultivate a conducive work climate and offer continuous technology training. This study highlights that technostress adversely impacts librarians' physiology and performance. Therefore, libraries must foster a supportive work environment and provide ongoing technological training.*

**Keywords:** Public library; Technostress; Coping mechanism; Social supports.

## INTRODUCTION

Libraries have become dynamic environments that foster digital literacy, offer access to diverse information sources, and serve as hubs of innovation and community collaboration (Isiaka et al., 2024). The transition process has faced challenges, despite the adoption of increasingly diverse technologies. In the post-pandemic period, many libraries have accelerated the use of advanced technologies to enhance their digital services. The onset of the pandemic catalysed a fundamental transformation in library services, requiring institutions to shift from traditional to technology-based offerings (Adedokun & Komolafe-Opadeji, 2021).

Information and communication technology (ICT) is recognized for its potential to enhance library services and operations. Nonetheless, ICT presents obstacles, notably technostress, which has emerged as a considerable impediment to library advancement (Panda, 2021). Sanjeeva Kumar (2024) assert that technostress arises from the integration of new technology, resulting from overwhelming pressure and a deficiency of technological standards and training support. Technostress, characterized as overwhelming and uncontrollable stress arising from technology (Maier et al., 2019), represents a considerable risk to individual well-being, potentially leading to reduced performance outcomes (Maier et al., 2019).

Individuals often use coping methods as a response to stressful situations (Maftai, Merlici, & Danila, 2023). Maqsood et al. (2024) define a coping mechanism as a set of techniques used to confront and overcome stress, whether it arises from internal or external sources. Coping techniques have been shown to increase the effectiveness of psychological therapies, thereby improving an individual's ability to manage stress (Leszko, Iwański, & Jarzębińska, 2020). Social support has been identified as a factor that can strengthen an individual's coping strategies when facing stressful circumstances (Jolly, Kong & Kim, 2021). Melguizo-Garin et al. (2023) define social support as an interpersonal exchange involving aid from a support provider, such as a spouse, family member, friend, or community member to a recipient of that assistance.

Librarians experiencing difficulties with library automation software sometimes seek help or advice from colleagues during technology deployment. In contrast, emotional support involves offering empathy, understanding, and encouragement, which can help stabilise an individual's emotional state (Hu et al., 2022). Initial investigations at public libraries in Indonesia have identified challenges associated with technostress, recognised as a significant obstacle. Several indicators of technostress were observed, including disorientation, mistakes, and reduced performance, when librarians engaged in technology-related activities.

A recurring issue in many public libraries in Indonesia is that senior librarians often lack sufficient proficiency in using library automation tools. This underscores the importance of social support in professional environments, particularly from experienced and expert librarians. Such circumstances have been shown to hinder the workflow of senior librarians and increase the workload of others, who must spend time assisting colleagues experiencing difficulties. This situation exemplifies technostress, which arises from inadequate technological competence.

Numerous studies have shown that social support significantly mitigates the effects of technostress. Weinert et al. (2020) demonstrate that social support, including both instrumental and emotional forms, significantly influences final performance, technology-related fatigue, and physiological responses. Khedhaouria et al. (2024) also report consistent findings, showing that social support significantly reduces the effects of technostress. Sanjeeva Kumar (2024) produced similar results, indicating that social support significantly alleviates the stress teachers experience when using technology in their teaching during the pandemic. In this context, social support from colleagues and organisations is considered essential for helping librarians manage the challenges they face.

The scientific uniqueness of this study lies in its examination of technostress coping strategies among librarians through social support, a topic that remains underexplored,

particularly in Indonesian libraries. A review of the existing literature indicates that most studies to date have focused on other sectors, such as education, and have not emphasised the role of social support as a coping mechanism for technostress among librarians in Indonesian libraries. Consequently, the researchers formulated the following research questions:

- i. How do librarians in Indonesian public libraries experience technostress?
- ii. How do librarians implement technostress coping mechanisms?
- iii. How do technostress coping mechanisms interact with social support within a library setting?

The aim of this study is to determine how social support for librarians can serve as a coping mechanism for technostress in Indonesian public libraries.

## **LITERATURE REVIEW**

Brod (1982) first introduced the term "technostress" to describe a modern adaptation issue arising from an individual's inability to manage computer technology in a healthy manner. Rahmani et al. (2023) define technostress as the fear, uneasiness, anxiety, and apprehension associated with the direct or indirect use of computer technology. Tarafdar et al. (2020) further describe technostress as the stress perceived from using technology. Overall, technostress is understood as the psychological strain resulting from an individual's inability to use or adapt to computer technology, whether directly or indirectly. Ragu-Nathan et al. (2008) divide the technostress model into two components: "creators," which are factors that induce technostress, and "inhibitors," which are factors that mitigate it. The creator component includes five elements identified by Tarafdar et al. (2020), while the inhibitors include literacy support, technical assistance, and user involvement in the technology adaptation process.

Technostress is particularly prevalent among librarians, who must adapt to rapid developments in information technology to support library operations and services. Yuvaraj and Singh (2015) found that 62% (125 out of 200) of surveyed librarians experienced moderate to severe technostress. Similarly, Olorunfemi and Adekoya (2025) found moderate levels of psychological, emotional, and physical technostress among academic librarians in Nigeria. While these studies establish the prevalence and components of technostress, much of the literature focuses on defining the concept and identifying its sources and effects, with less emphasis on effective interventions or long-term coping strategies. Further research is needed into practical solutions and support mechanisms to help individuals, particularly librarians, manage technostress in rapidly evolving technological environments.

Imam et al. (2022) examined the factors contributing to technostress among librarians and categorised them into two main groups: environmental and social factors. Environmental factors include substandard working conditions, insufficient lighting, user incompatibility, lack of knowledge about technology maintenance, inadequate training, insufficient funding, and the risk of inadvertent data loss. Social factors include employment dispersion, changes in hierarchy, modifications in roles and occupations, and apprehension about potential job loss. These findings highlight various aspects of the workplace and social interactions that contribute to technostress among librarians. Panda (2021) explains that technostress among librarians arises from several variables associated with technology use in their professional duties.

Lazarus (1993) defines a "coping mechanism" as a sustained cognitive and behavioural effort to manage external or internal demands perceived as overwhelming or exceeding an individual's capabilities. Gustems-Carnicer, Calderón and Calderón-Garrido (2019) describe coping mechanisms as cognitive and behavioural techniques used to address challenging internal and external pressures. Maqsood et al. (2024) state that coping processes include various strategies for managing and overcoming stressful situations, both internal and external. Coping mechanisms are a set of cognitive and behavioural techniques employed to manage and address difficult demands or situations that exceed an individual's capacity, whether arising from internal or external sources.

There are two principal functions in coping theory: problem-focused coping and emotion-focused coping (Lazarus 1993). Problem-focused coping is an approach used to address and resolve the root causes of stress. This method involves altering the interaction between an individual and their environment through direct intervention, either on the environment or the individual. In contrast, emotion-focused coping strategies aim to change an individual's perception of a stressful situation, either by ignoring it, becoming overly aware of it, or reinterpreting the situation to improve emotional well-being, even if the underlying issues persist. These strategies have demonstrated effects on individual welfare, organisational health, team dynamics, and overall productivity (Zhao, Xia, and Huang, 2020).

Social support is recognised as a vital factor in enhancing individuals' coping strategies in high-stress situations (Calhoun et al., 2022). Many scholars have described social support from various perspectives. Drageset (2021) defines social support as the provision of emotional and instrumental aid among individuals. Gottlieb and Bergen (2010) describe it as the exchange of aid among people, involving the use of social resources when needed. Similarly, Melguizo-Garín et al. (2023) define social support as an interpersonal exchange in which a support giver, such as a spouse, family member, friend, or community member, offers aid to a recipient. Experts characterise social support as an interpersonal connection involving the sharing of social resources, which may include emotional support and practical aid. The purpose of this exchange is to provide support, either practical or emotional, to help individuals manage specific issues.

Weinert et al. (2020) state that instrumental support represents a problem-focused approach to coping with technostress, while emotional support reflects an emotion-focused coping strategy. A comprehensive review of the literature on technostress coping identifies two main perspectives. The first, the "organisational perspective", analyses strategies used by organisations to reduce technostress. The second, the "individual perspective", focuses on the behavioural, cognitive, and perceptual efforts of users to manage technostress. Weinert et al. (2020) find that social support significantly affects user performance, feelings of technological fatigue, and physical responses to technostress.

## **METHODS**

This study employs a qualitative methodology, prioritising an in-depth understanding of the issue rather than seeking generalisable conclusions (Lim, 2025). Informants were selected through purposive sampling, with the sample determined by specific criteria relevant to the research aims. The inclusion criteria for research subjects were: currently employed librarians who had experienced or were currently experiencing technostress due to technology-related work demands, had either overcome or were capable of overcoming the technostress they faced, and were willing to participate in comprehensive interviews.

A researcher with a public health background conducted an initial screening, as outlined in the interview questions, to identify signs of technostress among librarians. The screening questions ensured that participants met the informant selection criteria, such as: "What is the relationship between job descriptions and technology?" Librarians identified as experiencing technostress were then recruited as research informants. The criteria were chosen to ensure that the collected data adequately represented experiences related to technostress and the effectiveness of social support in alleviating it. The researcher then contacted the librarians identified as experiencing technostress and asked about their willingness to participate as informants in the study.

The researchers obtained authorisation from Diponegoro University (Reference No. 430/UN7.F6.1/AK/XII/2024) to conduct the study and adhered to the principles outlined in established ethical guidelines for social science research, as detailed in Appendix 2. Participation in the study was voluntary, and all individuals provided informed consent before data collection began. Participants were fully informed of the study's objectives, the nature of their involvement, and their right to withdraw from the study at any time. To maintain anonymity and confidentiality, all identifying information was removed or anonymised throughout the reporting of the results. Special care was taken to ensure a secure and respectful workplace, particularly in consideration of the vulnerability of librarians experiencing technostress, and all efforts were made to mitigate any potential psychological or social risks. The research team is committed to the ethical representation of participants lived experiences and has implemented measures to ensure that the community's views are accurately and respectfully represented.

This research used a semi-structured interview methodology, involving fifteen librarians as participants. The interviews were conducted in person at public libraries in Central Java from December 2024 to July 2025. A comprehensive interview guide was developed based on relevant literature, as detailed in Appendix 1. This inquiry was conducted in accordance with the regulations and criteria established in the procedure. The collected data were analysed according to the protocols set out by Miles, Huberman and Saldaña (2014). This analysis comprised three main phases: (1) data condensation, which involved summarising and documenting key points, identifying major themes, and recognising relevant trends; (2) data presentation, which referred to displaying the data in a readily understandable format; and (3) the formulation and validation of conclusions.

The concepts of maintaining quality, as outlined by Ahmed (2024), include credibility, transferability, dependability, and confirmability. The researchers used triangulation methods to ensure data accuracy, comparing data from interviews and observations, and seeking additional evidence if any data appeared doubtful. Transferability was achieved by providing detailed, clear, systematic, and reliable descriptions, enabling readers to understand and be encouraged to implement the research findings. The researcher carefully documented interview techniques, research instruments, and field notes, ensuring that the data collection process met stringent reliability requirements. Dependability was ensured through comprehensive recording of the data collection, analysis, and reporting stages. The researchers used member checking, a process in which the findings of interviews or preliminary interpretations were validated with informants to ensure data accuracy. Researchers shared the interview transcripts with participants so they could review the accuracy of the information. The fourth principle states that confirmability is maintained by reducing personal bias through transparent, methodical, and scientifically grounded data coding. This methodology ensures that the research findings are more impartial and verifiable.

## RESULTS

The results are based on data collected through semi-structured individual interviews. The original data, available in Bahasa Indonesia, have been translated into English by the researcher, who notes any comments that may have been altered in translation. Table 1 presents an overview of the study participants.

Table 1: Participants demographic information

N/S	Code	Positions	Age	Gender	Years of service
1	Inf_1	Junior Librarian	27	M	3
2	Inf_2	Junior Librarian	37	F	5
3	Inf_3	Senior Librarian	44	F	16
4	Inf_4	Senior Librarian	57	F	35
5	Inf_5	Senior Librarian	50	F	15
6	Inf_6	Senior Librarian	41	M	17
7	Inf_7	Senior Librarian	40	M	11
8	Inf_8	Junior Librarian	31	M	2
9	Inf_9	Junior Librarian	25	F	3
10	Inf_10	Senior Librarian	40	F	11
11	Inf_11	Senior Librarian	36	M	10
12	Inf_12	Senior Librarian	45	F	11
13	Inf_13	Senior Librarian	52	M	10
14	Inf_14	Junior Librarian	27	F	5
15	Inf_15	Junior Librarian	24	M	3

The findings are organised into three main themes corresponding to the research questions:

### i) Librarian technostress situations

Librarian technostress situations consist of three elements: emotional responses to technostress, contributing factors to technostress, and consequences of technostress. This theme addresses the first research question, which aims to understand the perspectives of public library librarians in Indonesia regarding the technostress they have experienced or are currently experiencing.

#### a. Emotional responses to technostress

Emotional responses to technostress serve as coping strategies by managing or alleviating the emotional strain caused by stressful situations, rather than addressing the underlying problem directly. All informants reported experiencing feelings of being overwhelmed, panic, and mild stress symptoms when handling tasks related to ICTs. Librarians display three main responses to technostress: panic, restlessness, and frustration.

Inf\_3 stated that the stress manifested as restlessness accompanied by irritation: "Yes, I feel restless and sometimes irritated; I also tend to complain, often jokingly, when I am in the room."

Inf\_10 mentioned, "Sometimes my mood becomes unsettled. I often wonder whether I should continue this work. Occasionally, this feeling even carries over into my home life, and I still find myself contemplating work issues." Inf\_8 described, "Not extremely stressed, but when encountering problems or obstacles in the system, I do panic a little."

All informants reported experiencing feelings of overwhelm, panic, and mild stress symptoms when managing tasks related to ICTs. Librarians exhibit three main responses to technostress: panic, restlessness, and frustration.

***b. Contributing factors to technostress***

The findings reveal several sources of technostress experienced by librarians in public libraries: network problems, hardware problems, software problems, knowledge issues, and other unexpected difficulties. In addition to network constraints, librarians encounter numerous technical issues with the software they use. Server outages and system malfunctions are common. Obsolete and unsuitable equipment further exacerbates the situation. This is evident from the following verbatim statements:

Inf\_5 shared their experience regarding the factors causing technostress: “The most frequent issue is mainly with the network. For example, if an invitation letter arrives at 9 a.m., sometimes there is a problem, usually because the server is down. Because the server is down, a letter that should have arrived at 8 a.m. actually arrives at 10 a.m. This delay occurs frequently.”

Network issues as a cause of technostress were also experienced by Inf\_11: “Maybe it is the network. We cannot subscribe on our own. We have to confirm with the Ministry of Communication and Information. If, for instance, we want to add network access, we have to obtain permission from the Ministry.”

In contrast, Inf\_3 stated, “The hardware is inadequate and has been used for too long. Basically, it is too outdated. Just imagine, both the network and the hardware are experiencing sluggish performance; that is the typical outcome.”

Other factors causing technostress can also arise from programme-related issues, as revealed by Inf\_8: “It turns out that the server was not compatible. It was supposed to use a Windows server, but at the Ministry of Communication and Information Technology, they used Linux. So some commands and some coding did not match, some programming languages were incompatible, and there were conflicts.”

“The average age of librarians here is mostly over forty. Therefore, it is likely that they are reluctant to adopt new technologies or applications.” Age is also identified as one of the triggers of technostress, as noted by Inf\_6.

***c. Consequences of technostress***

The researchers examined the impact of technostress on the professional and personal lives of librarians. The informants’ responses indicated the following:

“So the impact is not just between me and the computer; I also receive complaints from users. The effect is twofold, like a combination.” Inf\_11.

Inf\_2 stated, “Seriously, for half of the day, I could not get anything else done; it was just dealing with paperwork, and the coordination part was not even finished yet.”

Inf\_3 remarked, “Sometimes, it even affected my home life, causing me to keep thinking about it. This letter was often written in a rush, as the library-free letters needed to be completed quickly. I have not yet received the incoming letters; sometimes, I would review them at home.”

Interview findings indicate that when librarians experience technostress in the workplace, it can negatively affect their social and personal lives outside work. The researchers further explored the emotions elicited by technology.

Inf\_11 stated, "Indeed, it facilitates processes; in fact, it can enhance efficiency if used and optimised effectively. If we understand the procedure, it can be optimised. However, if we do not have the necessary knowledge to use it effectively, the situation becomes dire."

Inf\_7 commented, "Despite the existence of technology that accelerates processes, the workload continues to escalate. In my view, technology exerts an influence."

Several informants encountered challenges during their initial use of ICTs but recognised that these technologies ultimately facilitate their tasks. The informants were also willing to invest time in learning new technology to ensure efficient task completion. Nonetheless, it is noteworthy that Inf\_7 observed that while technology appears to alleviate the strain on librarians, the demands of the job simultaneously increase.

Based on the data analysis, four themes emerge regarding how technostress impacts librarians. First, increased workload occurs when tasks remain unfinished because of technostress; for example, employees may need to work overtime to resolve issues caused by network restrictions. Second, there is a fear of not meeting deadlines; since some tasks are time-sensitive, technostress increases the likelihood of work delays. Third, the accumulation of tasks disrupts work efficiency. Finally, service quality decreases. Libraries operate in the service sector, so technostress affects the quality of librarians' services to users.

## **ii) Librarian technostress coping mechanisms**

Librarians cope with technostress through two main approaches: internal coping mechanisms and external coping mechanisms. Internal coping mechanisms involve self-learning, while external coping mechanisms, which involve others, include seeking support systems and inter-agency collaboration. This theme emerged in response to the second research question.

### **a. Internal coping mechanisms**

Librarians who recognise technostress in themselves are intrinsically motivated to use coping strategies. The technostress coping strategies adopted by librarians include efforts to understand the technological challenges they face. As Inf\_8 explained, "Yes, at first I tried to do it on my own; well, it was not immediately correct; I had to try several times, but thankfully I eventually succeeded."

Inf\_14 stated, "I try to figure it out myself first as much as I can; if I cannot, then I ask for help."

In contrast, Inf\_15 mentioned that they often seek explanations online to address technology-related issues: "I check the internet, perhaps someone has encountered the same problem."

From the informants' responses, it is evident that many engage in technostress coping mechanisms through self-directed learning. Self-directed learning may involve learning from past mistakes, attempting to solve problems independently, searching for information on the internet to resolve issues, and revisiting system guidelines.

***b. External coping mechanisms***

When employing coping mechanisms, librarians often require external support to address the problems they encounter. In this study, this is referred to as an external coping mechanism, such as seeking a support system and engaging in inter-agency collaboration. Other technostress coping mechanisms used by librarians include seeking support from colleagues at the office. Inf\_11 stated, "Yes, eventually, I share it with other friends, and then someone offers help."

Inf\_4 mentioned, "Sometimes friends who are struggling encourage each other and give motivation to try again."

Inf\_1 stated, "When I start showing signs of network-related stress, I usually focus more on regulating my breathing, like inhale, exhale, just to stay calm."

Based on the informants' responses, it can be understood that one way to manage stress is by sharing feelings with peers to gain support and motivation to keep trying. The emotions arising from technostress do not necessarily result from direct interaction between librarians and technology but can also occur when a librarian considered an expert teaches a less proficient colleague, particularly in the case of senior librarians.

Inter-agency collaboration is another coping mechanism, occurring through informal discussions in WhatsApp groups, where experiences and solutions related to technology use beyond their professional training are shared. This is evident from Inf\_2's response: "We have a WhatsApp group consisting of implementing librarians from several regions, and there we often ask questions if there are any issues."

Inf\_6 emphasised, "Sometimes when we meet at certain events, we tend to discuss, and from there we even gain insights into problems we have encountered."

**iii) Coping mechanisms with social support for librarians**

The third research question focuses on understanding how technostress coping mechanisms can be implemented through social support for librarians in public libraries. Two groups emerged from the theme of coping mechanisms with social support for librarians: instrumental support and emotional support.

***a. Instrumental support***

Instrumental support arises from the organisational perspective on social support. In this study, social support provided by the library influences technostress coping mechanisms. Interviews revealed that the institution has provided expert teams to address potential issues, as expressed by Inf\_3: "There is an administrator assigned here, named Mr A, whom we can approach directly if we encounter problems, such as access or screen issues, by going to the IT department."

Inf\_9 stated, "So the assistance is more in the form of direct guidance or a tutor from someone more knowledgeable. But that is mainly technical."

From the interviews, it can be understood that institutional support for helping librarians overcome technostress includes recruiting experts, providing tutorials, and offering technology training.

Inf\_3 stated, "Clearly, in a work environment, if there is new technology, you should not have to use it immediately; rather, there should be some socialisation first and some time to learn."

"Training is almost always provided, but that instead becomes a burden, because if I am trained but do not understand it, then what am I supposed to convey later?" Inf\_6

Alongside technological adaptation, training has proven to be an effective method for helping librarians overcome technical challenges. The National Library has organised several training courses on the introduction and use of the latest version of the information system, as well as additional technical training, including specific instruction on media conversion tools. Acquiring these skills enables librarians to handle technical problems independently.

#### ***b. Emotional supports***

From a personal perspective, emotional support is a form of social support, which includes practical, emotional, and informational assistance received from social networks such as family and colleagues. In this study, the individual perspective on social support focuses on fellow librarians in the workplace. Based on interviews, it is evident that social support from colleagues can help resolve technological issues or alleviate technostress.

Inf\_5 responded positively: "It is like, 'Be patient, ma'am.' That is how some of my friends behave occasionally. They sometimes come over and ask what they can do to help." Inf\_14 stated that he often tried to motivate friends who appeared stressed: "Yes, sometimes when they look stressed, we invite them to joke around, so it is not too serious and the stress goes away."

Meanwhile, Inf\_9 explained that even if a solution was not found, knowing that a friend sympathised made them feel calmer, as expressed in the following interview quote: "I like to ask other friends how to handle it; later my friends help. Occasionally the problem is not solved, but I feel calm because I feel cared for by my friends."

From the informants' responses, it is clear that they demonstrate the ability for autonomous learning in technology, frequently seeking help when facing difficulties. Junior librarians tend to adapt more quickly and actively learn new technologies, including those supporting library administration and related systems. Conversely, senior librarians who encounter difficulties in adopting technology often seek assistance from more experienced peers. Nonetheless, senior librarians maintain a commitment to continuous learning and adaptation to avoid complete dependence on external organisations. This commitment reflects a strong sense of professional responsibility, emphasising the need to keep up with technological changes in the library context.

There is a difference in providing social support based on gender. Female respondents tended to offer more emotional validation when experiencing technostress, as explained by Inf\_2: "Sometimes friends who are struggling encourage each other and motivate each other to try again," and Inf\_4: "Just try again; maybe this time it will work."

Meanwhile, male respondents were more likely to provide technical assistance, as demonstrated by Inf\_1: "First, I look at what the problem is, then I just resolve it directly."

Another respondent, Inf\_7, stated: "If a friend has a problem, I directly tell them how to solve it; if not, I refer them to someone who can help better."

## **DISCUSSION**

The findings on network, software, and hardware issues, as well as knowledge limitations as factors causing technostress among public librarians, align with the concept of techno-complexity proposed by Tarafdar et al. (2020), in which librarians face challenges in understanding and operating increasingly complex technology. In contrast, techno-uncertainty encompasses uncertainties in system operations and other unexpected problems (Tarafdar et al., 2020). This uncertainty makes it difficult for librarians to predict the stability of the systems used in daily work, thereby increasing their stress and anxiety levels. In another study by Panda (2021), similar findings were reported, with network issues and security concerns identified as causes of technostress among librarians. The demands of using technology create various pressures for librarians, affecting their well-being at work.

The increasing workload is directly proportional to the high expectations of supervisors regarding the efficient use of technology in daily activities. However, in practice, many technical obstacles hinder the work. Deadline pressure also worsens the situation, especially when librarians must deal with error-prone or slow systems and networks while tasks such as administrative work or correspondence need to be completed immediately. Additionally, librarians who are more technologically proficient are often burdened with helping colleagues who are struggling, which ultimately leads to emotional fatigue. Moreover, senior colleagues tend to be impatient and want only quick solutions, which becomes frustrating for the librarians providing assistance. These findings reflect techno-overload. This concept, as explained by Tarafdar et al. (2020), occurs when individuals feel compelled to work faster and do more due to technological demands.

The presence of various technical challenges, exacerbated by increased workload and deadline pressures, significantly affects librarians' psychological well-being. Librarians often experience prolonged frustration and stress that extend beyond working hours. These findings indicate that technostress causes significant psychological symptoms. According to Panda (2021), psychological symptoms resulting from technostress include prolonged stress, frustration, mental fatigue, and emotional disturbances such as irritation and anger. Furthermore, prolonged stress can also carry over into the home environment, as explained by Mordi, Ajonbadi and Adekoya (2024). Feelings of anxiety, even when not interacting with technology, can be related to the techno-invasion theory proposed by Tarafdar et al. (2020), in which the invasive impact of technology use creates a sense of being "always connected" for users. Imam et al. (2022) also explain that one of the emotional symptoms of technostress is the emergence of high anxiety when separated from technology. In addition to psychological disturbances in librarians as individuals, technological obstacles negatively affect work efficiency and reduce the quality of library services. Technostress is not merely an individual problem but also an institutional challenge that affects librarians' work efficiency and the overall effectiveness of library services.

Public librarians strive to overcome technostress by focusing on both internal and external coping mechanisms. Internal coping mechanisms involve self-reliant techniques for managing stress and emotions. In this study, self-directed learning addresses problems by drawing on lessons from past mistakes, attempting to solve issues independently, seeking information online to resolve challenges, and reviewing the system's usage guidelines. Additionally, librarians use external coping mechanisms by involving parties outside themselves. This strategy includes technology adaptation, training, and collaboration with various parties. According to the coping mechanism theory proposed by Lazarus (1993), the efforts of public librarians in addressing technostress can be categorised as problem-focused coping, a strategy aimed at directly resolving the sources of stress. Furthermore, training

provided by the National Library and informal discussions in the workplace reflect efforts to enhance technology literacy support, which, according to Ragu-Nathan et al. (2008), are considered inhibitors or factors that reduce technostress. However, despite the availability of training, a gap remains between librarians' information needs and the training materials provided, leading some to feel the need for in-house training that is more relevant to the technological challenges they face. As explained by Panda (2021), the rapid pace of technological change, which is difficult to keep up with, and the lack of adequate training to master new technologies, also increase the risk of technostress.

Social support is used as a coping mechanism to minimise technostress. This approach is considered appropriate according to Khedhaouria et al. (2024), who found that social support plays an important role in reducing the impact of technostress. The technostress coping mechanisms through social support employed by public librarians include instrumental and emotional support. Social support, whether instrumental or emotional, is highly influential and plays a crucial role in librarians' coping mechanisms against technostress, as explained in the study by Weinert et al. (2020). This study identifies two forms of social support: instrumental support and emotional support. Instrumental support, such as technical assistance from colleagues or IT staff, aligns with Lazarus's (1993) concept of problem-focused coping, in which individuals seek direct solutions to the source of stress. This assistance enables librarians to resolve technological issues more quickly and effectively, thereby reducing the impact of technostress. Instrumental support also constitutes social support from an organisational perspective, as described by Weinert et al. (2020). Providing guidance, tutorials, or direct task transfers reflects the application of inhibitors in the technostress model by Ragu-Nathan et al. (2008), where librarians receive technical assistance that can mitigate stress caused by technology use. Instrumental support represents the organisational perspective, while emotional support reflects the emotional perspective, as described by Weinert et al. (2020).

Emotional support is also used as a coping mechanism by librarians, reflecting an individual perspective of social support (Weinert et al., 2020). In the context of Lazarus's coping theory (1993), this emotional support can be categorised as emotion-focused coping, in which individuals regulate their emotional responses to stress through supportive social interactions. Emotional support is important because it conveys the message that a person is not facing their difficulties alone and demonstrates that they are valued and cared for by others (Chin et al., 2023). The emotional support provided by librarians at the Indonesian public library takes the form of encouragement or motivation. However, new challenges may arise if librarians continuously rely on assistance when facing technological difficulties. This can lead to dependence on librarians who are more proficient with technology, especially when these librarians are unavailable or occupied with other tasks.

In such situations, the implementation of knowledge management can help reduce excessive reliance on specific individuals (Rafi, Zheng, & Ahmad, 2022). The implementation of knowledge management can also be categorised within the concept of inhibitors in the technostress model by Ragu-Nathan et al. (2008), which emphasises that improving technological literacy can reduce the impact of technostress. Knowledge management enables librarians to resolve technological issues without constantly relying on colleagues who are more proficient in technology, thereby helping to reduce the level of technostress that arises due to limited access to social support and knowledge-related problems.

The finding of differences in responses between male and female librarians in dealing with technostress aligns with Wurtz's (2022) research, which found that women are more likely

to address problems with emotion-focused coping, particularly by expressing their emotions and seeking social support to manage stress. In other words, women tend to prioritise emotional social support more than men. This is consistent with the finding that male librarians are more rational and composed when facing technological challenges, often seeking solutions independently before asking for help and focusing more on problem-focused coping. Conversely, female librarians are more likely to employ emotion-focused coping, responding to stress through their feelings or emotions rather than directly seeking technical solutions. This is evident in the tendency of female librarians to be more expressive in demonstrating work-related stress and to share complaints with colleagues more frequently.

## **CONCLUSIONS**

This study demonstrates that technostress significantly affects librarians, impacting their psychological well-being and job performance. Experiences of worry, frustration, and mental fatigue caused by technology failures negatively influence productivity and the quality of library services. Librarians employ various coping strategies, primarily relying on social support, which includes both emotional and instrumental assistance. Emotional support is provided through sharing concerns, engaging in discussions, and offering encouragement, while instrumental support involves direct technical help, guidance, or task delegation by colleagues and IT staff during technological challenges. The findings indicate that social support, encompassing both technical and emotional aspects, is essential in mitigating technostress.

Understanding these social support-based coping mechanisms is crucial for libraries seeking to develop effective stress management practices and advocate for policies that support librarians. Libraries should improve their technological infrastructure and ensure regular system maintenance. To address skill gaps, ongoing and relevant technological training should be provided. Additionally, fostering a supportive work environment can strengthen librarians' sense of security and provide a more effective support network when facing technological issues. Future research could examine variations in coping strategies based on educational background or professional experience. The use of knowledge management tools, such as technical manuals and troubleshooting guides, enables librarians to resolve issues independently, increasing their autonomy and reducing dependence on external help, which has been shown to lessen the negative effects of technostress.

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## CONFLICT OF INTEREST

The authors declare that there are no potential conflicts of interest with this research and/or article.

## AUTHOR CONTRIBUTIONS

Conceptualization: [Pramudya, R.R.G., Ganggi. R.I.P.], Methodology: [Pramudya, R.R.G.], Formal analysis and investigation: [Pramudya, R.R.G., Ganggi. R.I.P., Budiayanti. R. T], Writing - original draft preparation: [Pramudya, R.R.G. Ganggi. R.I.P.], Writing - review and editing: [Pramudya, R.R.G., Ganggi. R.I.P.].

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**Appendix 1: Mapping of research questions to interview questions**

<b>Research questions</b>	<b>Theory</b>	<b>Interview questions</b>
RQ1: What are the experiences of librarian technostress in Indonesian public libraries?	Creators of technostress (Tarafdar et al., 2020)	Have you ever felt overwhelmed by work related to ICTs? Have you ever experienced a blurring of boundaries between work and personal life? Have you ever found technology too complex to understand and use effectively?
RQ2: How do librarians employ technostress coping mechanisms?	Problem focused on technostress coping mechanism (Lazarus, 1993) Emotion focused on technostress coping mechanism (Lazarus, 1993)	How does the informant become aware of technostress in themselves and its effects? What factors trigger technostress? Have you ever felt stress, frustration, panic, or tension caused by using technology in the library? How do you manage the emotions that arise from technostress?
RQ3: How do technostress coping mechanisms interact with social support in a library setting?	Organizational perspective (Weinert et al., 2020) Individual perspective (Weinert et al., 2020)	What forms of assistance or social support does the institution provide? Does the library where you work regularly offer technology training? How can your work environment affect the technostress you experience? When providing social support to colleagues facing challenges, have you ever felt overwhelmed or stressed? How can support from peers help you resolve technological issues or reduce technostress?

**Appendix 2: Informed consent for ethical guideline**

***INFORMED CONSENT***

Dear Informants,

We are the research team from the Department of Library and Information Science at Diponegoro University: Ramadhani Rizky Galih Pramudya, Roro Isyawati Permata Ganggi, and Rani Tiyas Budiyantri. We are currently collecting data for a study entitled "Coping Mechanisms for Technostress through Social Support among Librarians in Indonesian Public Libraries."

The purpose of this research is to determine how social support for librarians can serve as a coping mechanism for technostress in Indonesian public libraries. The interview session consists of 13 questions related to technostress coping mechanisms and social support.

We invite you to participate as an informant in this study, which will require approximately 30–45 minutes of your time. Your participation is entirely voluntary, and you are free to withdraw from the study at any time. We kindly ask for your willingness to participate. All data and information you provide will be kept strictly confidential. If anything remains unclear, you may contact the researcher responsible for the study. We apologise if any wording is inappropriate. We sincerely appreciate your cooperation. After reading and understanding the explanation of the study, I, the undersigned:

Name : \_\_\_\_\_  
Position : \_\_\_\_\_  
Gender : Male / Female  
Age : \_\_\_\_\_  
Length of service : \_\_\_\_\_

**AGREE / DISAGREE\***

to participate as an informant in this research.

Semarang, ..... 2025  
Informant

(.....)

\* Cross the unnecessary ones