Exploring the Role of Techno-stress in Job Performance of Academic Librarians of Lahore Pakistan

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ARTICLE INFO	ABSTRACT
	Rapid changes in technology have affected all walks of life. Role of Techno-stress in job performance of academic librarians is the facts and impact on employees with higher stress levels. This paper studies four dimensions of techno-stress among academic librarians of Public and Private Colleges of Lahore in Punjab Province. Quantitative approach for this study was used with survey method and non-probability sampling technique was employed on population. Those 50 public and private colleges in Lahore were chosen, from which 180 academic librarians were the part of study. Online survey questionnaire was conducted. Frequencies, percentage, mean, standard deviation, correlation, t-test and regression was used for data analysis through SPSS. Results of this research carried out to study techno-stress, it described college librarians experienced moderate level of techno-stress in their job performance. There was particular difference found between male and female college librarians in terms of techno stress. The findings, however, show that techno-overload and techno uncertainty has negative effect on job-performance of female librarians.

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1. Introduction

Librarians are the professionals who interact with and serve all sorts of communities all over the world. They have to remain aware of different kinds of information regarding physical and electronic sources and deliver accurate information. Librarians must deal with human knowledge as well as technology, even past and present and upcoming advancements in the library spectrum. Information professionals have to maintain competence; it refers to the capacity to perform tasks efficiently and competently (Willis & Dubin, 1990). The impact of the workplace on job performance is significant, and with the advancements in information technology, librarianship has been undergoing rapid technological changes. According to Harris (1999) the focus is now on re-skilling with regards to information and communication technology (ICT), such as web interfaces and websites, due to their impact on sophistication in searching skills. In addition, the work environment has become more intricate with the advent of integrated library systems. Despite the prevalence of modern technologies, traditional resources are still utilized by staff to answer reference questions (Ross & Nilsen, 2000). This could be due to the lack of familiarity of librarians with the Internet and insufficient access. Moreover, reference librarians continue to express concerns regarding the dynamic and disorganized nature of information (Curry & Harris, 2000).

In recent decades, the field of librarianship has undergone a significant transformation, becoming a more dynamic profession. While technology has become a fundamental aspect that has made the lives easier, it has also introduced new challenges. New technologies often captivate the attention of many organizations, yet this eagerness to adopt them may result in the experience of techno-stress as noted by (Ayyagari, Grover, & Purvis, 2011).

1.1. Techno Stress among Library

The exponential growth of information technology has put a significant burden on librarians, as evidenced by research conducted by (Kupersmith, 2006). Fleet and Wallace (2003) point out that the implementation of virtual reference services has caused certain librarians to undergo a sense of personal identity loss. According to Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007) working in a technological environment can result in techno-stress, a form of stress caused by technology. Stress is an inherent aspect of human existence that has been acknowledged and studied across various disciplines and throughout history. It is a ubiquitous phenomenon that is recognized as a defining trait of life (De Raeve, Vasse, Jansen, Van den Brandt, & Kant, 2007). Techno-stress is a novel form of stress caused by the influence of technology. This condition is viewed as a psychosomatic ailment that can manifest in either anxiety related to the use of technological devices or excessive attachment to computers (Ahmad, Amin, & Ismail, 2012).

1.2. Statement of the Problem

Rapid changes in technology have affected all walks of life. Libraries should must change the way of providing services with the changes in reading material hard to soft format. Acceptance of change in every field by persons is very difficult task. Library professionals also facing theses drastic changes and shy to adopt. Techno-stress and job performance are considered important factors in various professions. Present study has attempted to explore the effect of techno-stress on librarians and their job performance in public and private college librarians of Lahore. This research model presented the correlation between different aspects of techno-stress and the overall job performance of librarians.

1.3. Objectives of the Study

- To find out significant relationship between job performance and techno stress (techno over load, techno-complexity, techno-uncertainty, techno-insecurity and techno-invasion).
- To explore the techno overload, techno complexity and techno uncertainty impact on the job performance in college librarians of Lahore.
- To examine the differences of techno stress in gender.

1.4. Research Questions

1. What is the significant relationship between job performance and techno stress (techno over load, techno-complexity, techno-uncertainty, techno-insecurity and techno-invasion)?
2. Which type of (techno overload, techno complexity and techno uncertainty) impact on the job performance in College librarians of Lahore?
3. What is the level of differences of techno stress in gender?

1.5. Research Hypothesis

H1: There is a significant relationship between job performance and techno stress (techno over load, techno-complexity, techno-uncertainty, techno-insecurity and techno-invasion).
H2: Techno overload, techno complexity and techno uncertainty put impact on the job performance in college librarians of Lahore.
H3: Techno stress is higher in female as compared to male librarians.

1.6. Significance of Study

The research aims to benefit the field of librarianship, to create an understanding that how technology has affected the field of librarianship, how librarians are being mentally affected by technology, and what is the impact of technology on human health, what are different measures to be taken to avoid mental hazards. The research will uncover the major factors that are imposing negative influence so they can be controlled. The study will help the librarians to perform in a much better environment efficiently. It will help the librarians to analyze their own perception of techno-stress to gain insight and take action to prevent it. The research will also create an in-depth understanding in the community of what problems librarians face, and they can accommodate them. The study will help the stakeholder and the library administrators in removing these barriers for the better performance in a much better environment efficiently

2.   Review of the Literature

There exist a multitude of research studies that investigate the relationship between job satisfaction, job performance, and techno-stress. An association between occupational vulnerability to techno stress (Borle, Reichel, Niebuhr, & Voelter-Mahlknecht, 2021). Technology create feelings of frustration, overload, and stress (Tacy, 2016). Techno-stress decreased job satisfaction (Khan, Rehman, & Rehman, 2013). Sinha (2012) says staff suffering by techno-stress express low productivity and job satisfaction. Learning new technological advancements can be complicated by various factors, including age, level of technological proficiency, reluctance of workers to embrace new technology, stress management programs, information and communication technology (ICT) skill acquisition overload, job insecurity, job responsibilities, financial constraints, work-life balance, relevance of newly acquired skills, necessary abilities, and courses taken in Library and Information Science (LIS) schools (Ameen, 2008; Mahmood, 2003; Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008; Tarafdar et al., 2007). According to Ahsan, Abdullah, Fie, and Alam (2009) a correlation exists between stress and job satisfaction. Findings of Khan et al. (2013) found that job satisfaction was negatively impacted by technostress.

Mahmood (2003); Warraich (2008) presented that the course contents of LIS are outdated and no longer pertinent. Ameen (2008) reported various issues arises in learning technological innovations. Techno-stress research has been conducted in various fields, including psychology Weil and Rosen (1997), medicine Arnetz and Wiholm (1997), and in perspectives pertaining to economics and organization Brillhart (2004); Tarafdar et al. (2007); Wang, Shu, and Tu (2008). Brod is credited with coining the term "techno-stress" in the 1980s (Wang, et. al., 2008). Working in an automated library environment may create pressure for library personnel to perform at their best, potentially leading to techno-stress. The excessive dependence on information and communication technology (ICT) can lead to the experience of this stress, particularly computers, to provide information services to users. The concept of techno-stress has been examined and characterized in various ways by different authors and behavioral experts.

Numerous studies have investigated how the technology utilization in libraries can contribute to techno-stress in library services. Some of the studies that have been conducted on this subject, identify common symptoms of techno-stress among librarians have been identified such as mental fatigue, headache, panic, fear, nightmares, exhaustion, intimidation, frustration, isolation, inadequacy, irritation, and dislike (Fleet & Wallace, 2003; Gorman, 2001). The results of a poll that was carried out by Kupersmith (2006) found that 59 percent of the 92 librarians who took part in the study were affected by the effects of technological stress. The study also found that 65% of the librarians considered techno-stress to be a significant problem for them.

Al-Qallaf (2006) investigation of the impact of technology on librarians found that a lack of training was a leading cause of techno-stress. Quinn (2001) emphasized the importance of training in addressing techno-stress. Raitoharju (2005) identified six ways in which technology can induce stress in the workplace. According to Graig (2008), academic librarians, and library staff in general, face new expectations as they try to navigate the challenges presented by the information age. The growth of stress among library staff can be attributed to several factors, including the dynamic nature of information and its delivery, the adoption of (ICT) in libraries. Techno-stress is produced when working in a technological environment, according to Tarafdar et al. (2007), it is related to the challenges of adapting to new technologies.

Despite the integration of technology such as automation, digital and virtual librarianship as a fundamental element of libraries, many librarians are experiencing techno-stress. The utilization of Information and Communication Technology (ICT) in various forms such as research databases and the internet in libraries has resulted in techno-stress, leading to a decrease in job satisfaction among workers (Kupersmith, 2006). According to Ragu-Nathan et al. (2008), employment unhappiness is linked to factors such as technological complexity, technological insecurity, technological overload, technological invasion, and technological uncertainty. As a direct consequence of this, workers who experience techno-stress report lower levels of both productivity and overall job satisfaction (Sinha, 2012). According to Pors (2003), there may be a strong connection between the level of job satisfaction experienced by librarians and the amount of stress brought on by technological advancements and other demographic

factors. In addition, not making effective use of one's abilities can be just as unpleasant as working too many hours. When providing assistance to customers, librarians could experience stress since they might not have enough time to become adept in all of the systems. This research inquiry has developed a one-of-a-kind research framework by making use of the literature review that came before it. This research model has concentrated on three distinct creators - techno-invasion, techno-uncertainty, and techno-overload as the diverse aspects of techno-stress. While the literature review has recognised multiple sources of techno-stress, this research model has focused on these three specific creators. According to this model, technostress is considered to be the independent variable, while job performance is regarded as the dependent variable. The current study, which is based on this paradigm, has designed three research questions, which are detailed as follows.

2.1. Research Gap

An exhaustive review of literature was carried out, focusing on the topics related to the scope described earlier. After analyzing the copious amount of literature published on the subject in the last decade, the predominant concerns related to the changing technologies and the responsibilities of librarians were identified in Asian countries especially in Pakistan, reviewing different resources. Very few studies have been conducted in Pakistan particularly in qualitative method. Off course, it is valuable to cite few resources here, those amongst the most significant in the author's opinion. There is still much need of comprehensive studies in this perspective. Research on techno-stress has been conducted in different domains, for instance, medicine, psychology, and from economical, organizational and educational perspectives, but there is much need for library professionals as increasing demands of technology and its dimensions.

3. Research Design and Methodology

For the purpose of this study, a quantitative approach was taken, and a non-probability sampling technique was utilised. The sampling was done based on private institutions that have libraries that have been in operation for more than 5 years. It was a handy method of sampling because the researcher was able to easily access it due to their location in the same city as the participants and have face-to-face interaction. The sampling frame was gathered from the respective college libraries' respective websites. The automated library systems in these 25 public and 25 private colleges in Lahore were taken into consideration when making the selection. The information for this study was collected through the use of an online questionnaire, and the participants consisted of 180 academic librarians from the aforementioned universities. On the questionnaire, there was a sequence of statements, and the respondents were asked to indicate how much they agreed or disagreed with each statement using a number scale of seven points. In this study, the statements that were used to quantify the level of techno-stress were derived from the work of Ahmad, Amin, and Ismail (2009), which utilised instruments produced by (Tarafdar et al., 2007). The instrument consists of 23 components, each of which can be placed into one of the following five dimensions: techno-overload, techno-invasion, techno-uncertainty, and techno-complexity. The mean scores of these variables were calculated with SPSS using a 5-level mean score scale devised by (Ahmad et al., 2009). This was done in order to measure the levels of techno-stress that the participants were experiencing.

3.1. Delimitations and Limitations

Considering the limitations and boundaries inherent to any research study, it is concluded that a single research result cannot assert completeness, nor can a single research study address all research inquiries. Additionally, a single research study cannot resolve all subsidiary issues linked to the central problem. Consequently, the present study has a few delimitations, the foremost being the limitation imposed by the population i.e., the study considered 50 private/public college librarians from one province of Pakistan. Secondly, the number of dimensions considered in this study was limited, as it only took into account five dimensions of techno-stress, and the thirdly because of small population its results cannot be generalized to whole population of Punjab Province and at National level. Fourthly, quantitative method is used to address the presents situation of techno stress. The findings of this study will, despite this, be of similar significance for college librarianship in Pakistan's other provinces. A comparable study might be conducted out with a larger sample size and a different research methodology involving other public college librarians serving in other provinces or portions of Pakistan in order to gain a greater variety in the variables being studied. Additionally, additional research

can be carried out by taking into consideration additional techno-stress generators in order to broaden the scope of the study and generalise the findings on a national scale. The current study has various shortcomings that need to be addressed. In the first place, the population of the study is restricted, as it only includes general college library personnel from Lahore. The research did not include any of the other commercial, technical, or vocational schools that are available. Second, there are only five aspects of techno-stress that were taken into consideration in this research, which means that the scope of the study is restricted by the number of dimensions. Thirdly, there was a time constraint, which was the most important element because it limited the breadth and depth of the investigation. Fourthly, findings of this study may not be applicable beyond the specific conditions or context in which the study was conducted. Lastly, its results cannot be generalized to whole population of Pakistan.

4. Discussion of Results

The total number of respondents were 180 college librarians of Lahore. Majority of them were male (n=106, 59%), female participants were less in number (n=74, 41%). The highest age group in this study was 25-30 years old (n=104, 58%), participants with age group more than 40 years were (n=33, 18%) and two age groups (31-35), (35-40) represents almost in equal number with (n=21 and 22, 12%). The data shows younger people were in majority. Education level in this study indicates majority of them were having MLIS/Master degree (n=105, 58%), less than half were M.Phil. degree holders (n=63, 35%) and few of participants were (n=12, 7%) which is smallest figure in data. Private institutes in study were (n=87, 48%) which is less than a half of the total. More than half were public institutes (n=93, 52%). The data depicts almost equal representation from both sides. It was also found that there is positive significant correlation among techno overload, techno insecurity, techno uncertainty and job performance at p=.01 level.

Table 1: Correlation among Techno overload, Techno Insecurity and Techno Uncertainty

Variables	Job Performance	Sig
Techno Uncertainty	.424**	.000
Techno Insecurity	.567**	.000
Techno Overload	.453**	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1 depicts the relationship among techno overload, techno insecurity, techno uncertainty and job performance. It reports that there is positive significant relationship exist among techno overload, techno insecurity, techno uncertainty and job performance. The correlation is significant at p = .01 level. Regression test indicates that techno overload and techno uncertainty has significant impact on job performance at p= .01 weather techno complexity has no significant relationship with job performance.

Table 2: Regression Test on Techno Uncertainty and Job Performance

Variables	B	SE	B	T	P
Constant	2.489	.385		6.500	.000
Techno Uncertainty	.420	.109	.278	3.687	.000

R^2 = .077. Independent Variable = Techno Uncertainty   Dependent Variable = Job performance.

The data in Table 2 presents the regression analysis between two variables. It reports that the techno uncertainty has significant influence on job performance as the ($p < 0.05$). It aims to produce 77% change in dependent variable.

Table 3: Regression Test on Techno Overload and Job Performance

Variables	B	SE	B	T	P
Constant	2.079	.282		7.379	.000
Techno Overload	.522	.077	.453	6.786	.000

R^2 = .453. Independent Variable = Techno Overload   Dependent Variable = Job performance.

The data in Table 3 shows the regression analysis between two variables. It reports that the techno overload has significant influence on job performance as the ($p < 0.05$). It aims to produce 45% change in dependent variable.

Table 4: Regression Test on Techno Complexity and Job Performance

Variables	B	SE	B	T	P
Constant	3.857	.314		12.302	.000
Techno Complexity	.032	.107	.023	.304	.761

R^2 = .023. Independent Variable = Techno Complexity   Dependent Variable = Job performance.

The data in Table 4 shows the regression analysis between two variables. It reports that the techno complexity has no significant influence on job performance as the (p > 0.05). It aims to make only 23% change in dependent variable. Independent t-test confirms that there is no significant difference between male and female librarians in terms of techno stress at p=0.05 level.

Table 5: Independent sample T-Test on Techno Uncertainty and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Uncertainty	.09657	1.109	178	.022

The independent samples t-test revealed a statistically significant difference in Techno Uncertainty between male (M = 3.5189, SD = 0.51720) and female (M = 3.4223, SD = 0.64893) at (p = 0.022, two-tailed). The mean difference of 0.09657 indicates that, on average, males exhibited higher levels of Techno Uncertainty compared to females.

Table 6: Independent sample T-Test on Techno Insecurity and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Insecurity	-.04238	-.389	178	.325

The analysis of Techno Insecurity by gender reveals that there is no statistically significant difference in Techno Insecurity levels between males (M = 3.0792, SD = 0.70949) and females (M = 3.1216, SD = 0.73116). The independent samples t-test yielded a non-significant result at (p = 0.697, two-tailed), indicating that, on average, the levels of Techno Insecurity are similar between the two gender groups.

Table 7: Independent sample T-Test on Techno Complexity and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Complexity	-.19648	-2.146	178	.191

Table 7 indicates the analysis of Techno Complexity by gender indicates a statistically significant difference (p = 0.033, two-tailed) in Techno Complexity levels between males (M = 2.7981, SD = 0.61752) and females (M = 2.9946, SD = 0.58471). The independent samples t-test demonstrates that, on average, females exhibit higher levels of Techno Complexity compared to males.

Table 8: Independent sample T-Test on Techno Invasion and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Invasion	-.41790	-3.370	178	.675

The analysis of Techno Invasion by gender indicates a statistically significant difference (p = 0.001, two-tailed) in Techno Invasion levels between males (M = 2.8726, SD = 0.80048) and females (M = 3.2905, SD = 0.84402). The independent samples t-test reveals that, on average, females have higher levels of Techno Invasion compared to males. Additionally, Levene's test suggests that the assumption of equal variances between the groups is not met (p = 0.675), but the results from the t-test assuming unequal variances still confirm the significant difference.

Table 9: Independent sample T-Test on Techno Overload and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Overload	-.18164	-1.599	178	.000

The analysis of Techno Overload by gender indicates that there is no statistically significant difference (p = 0.112, two-tailed) in Techno Overload levels between males (M = 3.5075, SD = 0.87947) and females (M = 3.6892, SD = 0.50871). While the mean difference is negative (-0.18164), suggesting slightly lower Techno Overload levels in males, the p-value

is greater than the common significance level of 0.05. This suggests that, on average, the Techno Overload levels between the two gender groups are not significantly different.

Table 10: Independent sample T-Test on Techno Stress and Gender

Variables	Means Difference	T	Df	sig(two tailed)
Techno Uncertainty	.09657	1.109	178	.022
Techno Insecurity	-.04238	-.389	178	.325
Techno Complexity	-.19648	-2.146	178	.191
Techno Invasion	-.41790	-3.370	178	.675
Techno Overload	-.18164	-1.599	178	.000

The findings of this analysis may be found in Table 10, which presents the results of a t-test on independent samples to investigate the differences in mean scores of Techno Stress variables between two groups. You are looking at five different factors: technological uncertainty, technological insecurity, technological complexity, technological invasion, and technological overload. The results of the t-test are broken down by gender and presented in the table below. In terms of technological uncertainty, the t-test revealed that there is a statistically significant difference between the sexes, with a mean difference of 0.09657. Due to the fact that the t-value was 1.109 and there were 178 degrees of freedom, the p-value was 0.022; this indicates that the difference is statistically significant at the level of 0.05.

The t-test for Techno Insecurity showed no significant difference between genders. The mean difference is -0.04238, and the t-value is -0.389, resulting in a non-significant p-value of 0.325. For Techno Complexity t-test indicated no significant difference between genders. The mean difference is -0.19648, and the t-value is -2.146, resulting in a non-significant p-value of 0.191. In case of Techno Invasion t-test proposed no significant difference between genders. The mean difference is -0.41790, and the t-value is -3.370, resulting in a non-significant p-value of 0.675. In terms of Techno Overload t-test results showed a significant difference between genders, with a mean difference of -0.18164. The t-value of -1.599, resulted in a p-value of 0.000, indicating that the difference is statistically significant at the 0.05 level. Overall, your analysis indicates that there are significant differences in Techno Uncertainty and Techno Overload scores between males and females, but no significant differences in Techno Insecurity, Techno Complexity, or Techno Invasion scores. However, it is important to note that the effect size is relatively small. Thus, this study can conclude from three hypotheses (H1, and H2) are supported weather H3 is rejected.

5.   Conclusion

According to the findings of this study, college librarians feel a moderate level of techno-stress in their daily work performance. It was discovered that there is a substantial association between job performance and techno-stress dimensions such as techno-uncertainty, techno-overload, techno-insecurity, and techno invasion. This was discovered in relation to the techno-stress dimensions. The findings also reveal that there is a significant relationship between technological uncertainty and work performance. The analysis indicates that there are significant differences in Techno Uncertainty and Techno Overload scores between males and females, but no significant differences in Techno Insecurity, Techno Complexity, or Techno Invasion scores. However, it's mentioned that the effect size is relatively small. The findings, however, show that techno-overload and techno uncertainty has negative effect on job-performance. In the light of results of study, it is recommended that workshops, seminars and training session may be arranged frequently, job rotation during working hours may also reduce techno stress. Group discussions related technological developments among library professionals also be beneficial. Meeting with IT experts may arrange from time to time to get awareness about current and forthcoming developments even expert talks/Human Library may be arranged. Technology has become the integral part of most organizations. It helps to increase the efficiency and effectiveness of information and librarian's performance. The most significant implication of this study is public and private college libraries of Lahore should be conscious about the negative effects of technology on librarians and to avoid mental hazards. This study will help the librarians to perform in a much better environment efficiently. It will help them to analyze their own perception of techno-stress. To the extent initiatives can be taken to offset this problem.

In the realm of upcoming studies, several recommendations warrant consideration. To begin, it is vital to investigate the impact that technological stress has on the motivation that

librarians have for their jobs. Second, other psychological elements that are known to be problematic for the performance of librarians on the work can be investigated. In addition, doing research on the link between technological stress and the pressures brought on by librarians' jobs would yield extremely helpful insights. In addition, it is of the utmost importance to have a solid grasp of the connection between the stress caused by technology and the mental health of librarians. Additionally, it is of the utmost importance to investigate the effect that technological stress has on the efficiency of organizational libraries. It is proposed, as a final point of discussion, to concentrate on the impact that technological stress has on occupational performance, particularly in the context of college and university librarians in Pakistan. Overall, these recommended studies collectively aim to shed light on the intricate dynamics between techno stress and various aspects of librarians' professional lives, offering valuable insights and potentially paving the way for strategies to enhance their overall well-being and effectiveness in their roles.

References

Ahmad, U. N. U., Amin, S. M., & Ismail, W. K. W. (2009). The impact of technostress on organizational commitment among Malaysian academic librarians. *Singapore Journal of Library and Information Management, 38*(103), 103-123.

Ahmad, U. N. U., Amin, S. M., & Ismail, W. K. W. (2012). The relationship between technostress creators and organisational commitment among academic librarians. *Procedia-Social and Behavioral Sciences, 40*, 182-186. doi:https://doi.org/10.1016/j.sbspro.2012.03.179

Ahsan, N., Abdullah, Z., Fie, D. Y. G., & Alam, S. S. (2009). A study of job stress on job satisfaction among university staff in Malaysia: Empirical study. *European journal of social sciences, 8*(1), 121-131.

Al-Qallaf, C. L. (2006). Librarians and technology in academic and research libraries in Kuwait: perceptions and effects. doi:https://doi.org/10.1515/LIBR.2006.168

Ameen, K. (2008). Perceptions and self-assessment of university librarians regarding Collection Management (CM): a case study of Pakistan. *Collection Building, 27*(4), 167-173. doi:https://doi.org/10.1108/01604950810913733

Arnetz, B. B., & Wiholm, C. (1997). Technological stress: Psychophysiological symptoms in modern offices. *Journal of psychosomatic research, 43*(1), 35-42. doi:https://doi.org/10.1016/S0022-3999(97)00083-4

Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS quarterly*, 831-858. doi:https://doi.org/10.2307/41409963

Borle, P., Reichel, K., Niebuhr, F., & Voelter-Mahlknecht, S. (2021). How are techno-stressors associated with mental health and work outcomes? A systematic review of occupational exposure to information and communication technologies within the technostress model. *International Journal of Environmental Research and Public Health, 18*(16), 8673. doi:https://doi.org/10.3390/ijerph18168673

Brillhart, P. E. (2004). Technostress in the workplace: Managing stress in the electronic workplace. *Journal of American Academy of Business, 5*(1/2), 302-307.

Curry, A., & Harris, G. J. (2000). Reference librarians' attitudes towards the World Wide Web. *Public Library Quarterly, 18*(2), 25-39. doi:https://doi.org/10.1300/J118v18n02_08

De Raeve, L., Vasse, R. M., Jansen, N. W., Van den Brandt, P. A., & Kant, I. (2007). Mental health effects of changes in psychosocial work characteristics: a prospective cohort study. *Journal of occupational and environmental medicine*, 890-899.

Fleet, C. V., & Wallace, D. P. (2003). From the Editors-VIRTUAL LIBRARIES--REAL THREATS-Technostress and Virtual Reference. *Reference and User Services Quarterly, 42*(3), 188-192.

Gorman, M. (2001). Technostress and Library Values. *Library journal, 126*(7), 48-50.

Graig, M. (2008). Office Workers Survival Handbook. BSSR, Landon.

Harris, R. M. (1999). Gender and technology relations in librarianship. *Journal of education for library and information science*, 232-246. doi:https://doi.org/10.2307/40324095

Khan, A., Rehman, H., & Rehman, D. S.-u. (2013). An empirical analysis of correlation between technostress and job satisfaction: A case of KPK, Pakistan. *Pakistan Journal of Information Management and Libraries, 14*(1).

Kupersmith, J. (2006). Library technostress survey results. *Retrieved October, 7*, 2008.

Mahmood, K. (2003). A comparison between needed competencies of academic librarians and LIS curricula in Pakistan. *The electronic library, 21*(2), 99-109. doi:https://doi.org/10.1108/02640470310462434

Pors, N. O. (2003). Job satisfaction among library managers: a cross-cultural study of stress, freedom and job conditions. *New Library World, 104*(11/12), 464-473. doi:https://doi.org/10.1108/03074800310508740

Quinn, B. (2001). Overcoming technostress in reference services to adult learners. *The Reference Librarian, 33*(69-70), 49-62. doi:https://doi.org/10.1300/J120v33n69_05

Ragu-Nathan, T., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and empirical validation. *Information systems research, 19*(4), 417-433. doi:https://doi.org/10.1287/isre.1070.0165

Raitoharju, R. (2005). *Information technology-related stress.* Paper presented at the 28th Information System Research Seminar in Scandinavia (IRIS28).

Ross, C. S., & Nilsen, K. (2000). Has the internet changed anything in reference? The library visit study, phase 2. *Reference & User Services Quarterly*, 147-155.

Sinha, C. (2012). Factors affecting quality of work life: Empirical evidence from Indian organizations. *Australian Journal of Business and Management Research, 1*(11), 31-40.

Tacy, J. W. (2016). Technostress: a concept analysis. *On-Line Journal of Nursing Informatics, 20*(2).

Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. (2007). The impact of technostress on role stress and productivity. *Journal of management information systems, 24*(1), 301-328. doi:https://doi.org/10.2753/MIS0742-1222240109

Wang, K., Shu, Q., & Tu, Q. (2008). Technostress under different organizational environments: An empirical investigation. *Computers in human behavior, 24*(6), 3002-3013. doi:https://doi.org/10.1016/j.chb.2008.05.007

Warraich, N. F. (2008). *LIS graduates employability-needs and expectations of the library and information science (LIS) curriculum at the University of the Punjab (PU): An appraisal of Pakistani LIS professionals.* Paper presented at the World Library and Information Congress: 74th IFLA General Conference and Council.

Weil, M. M., & Rosen, L. D. (1997). *Technostress: Coping with technology@ work@ home@ play* (Vol. 13): J. Wiley New York.

Willis, S. L., & Dubin, S. S. (1990). *Maintaining professional competence: Approaches to career enhancement vitality, and success throughout a work life*: Jossey-Bass.