An Empirical Analysis of Correlation Between Technostress and Job Satisfaction: A Case of KPK, Pakistan

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The objective of this research was to explore an association between technostress and job satisfaction of university librarians in Khyber Pakhtoonkhwa (KPK), Pakistan. For that reason a self-administered questionnaire was used to gather the data from 148 librarians serving in 25 public and private sectors universities of KPK.

The entire population (N=148) was selected as respondents because the population was accessible. For this study, 148 questionnaires were distributed and only 120 questionnaires were returned. However, after initial data screening, 116 questionnaires were ascertained as useable for further statistical analyses. Pearson correlation was calculated to investigate the correlation of technostress and job satisfaction. Multiple regression analysis was performed to test the three hypotheses between technostress dimensions and job satisfaction. Findings of this study show a negative but statistically significant relationship of three dimensions of technostress with job satisfaction. Based on multiple regression analysis-all the three hypotheses, (H1, H2, and H3) are supported. This study will be significant in controlling stress caused by technology and enhancing the level of job satisfaction among Pakistani university librarians. The study will equally contribute to the literature on relationship between technostress and job satisfaction. No identical previous studies were located on this topic in the context of Pakistani university librarianship.

Keywords: Technostress –Librarian; Technostress - Job Satisfaction; Technostress – Pakistani Librarians; Technostress – University Librarian.

Introduction

No one repudiates the diverse functions of university libraries or librarians because it functions like a beating heart in academic institutions.Due to the technological advancements, the role of university librarians has become more complex. Technology has become a critical issue for librarianship especially in the developing countries (Chang & Chen, 2011). University librarians are constantly dictated by researchers to perform contemporarily and are forced to acquire the technological competencies for effective performance (Haider, 1998; Mahmood, 2003; 2012; Ameen, 2008, Ullah, 2011). As a result, the diffusion and infusion of these technological innovations have also transformed the traditional ideologies of libraries from a social unit to a digital or virtual identity.

On the other side, university library users' needs have changed (Tanlet & Tuamusak, 2011) but librarians' response to the adoption of technological skills is stationary (Ramazan, 2004; Sridhar, 1999; Ullah, 2011). Additionally, university librarianship in Pakistan is declining (Haider, 1998) and there is a need of competent staff (Ameen, 2008). Mahmoood (2003) indicated miscellaneous rationales causing scarcity of competent staff in Pakistani academic libraries such as, lack of technological knowledge, deprived library and information science (LIS) education, obsolete LIS course contents. Along with collaboration between librarians and lack of interest among librarians to update acquired skills etc.

Khan (1994) argued that Pakistani LIS graduates skills are mismatching with the professional demands. Likewise, Rehman (1994) posited that LIS curriculum has not improved in the last twenty five years. The current curriculum is unmethodical replication of contents from the west. It is further supported by Mahmood (2003) and Warraich (2008) that LIS course contents are obsolete and irrelevant.

The above debate extracts that similar to other organizations, technological innovations have uniformly interjected the nucleus of librarianship. However, these intrusions have significantly enhanced the basic mechanisms of information management. Previous research has indicated a strong relationship between technology and librarianship such as technology enhanced information searching, its retrieval, organization, design, and dissemination. Nonetheless, these technological innovations have prompted to stress among employees known as technostress (Harper, 2000). Majority of librarians revealed that technological innovations have developed technostress (Kupersmith, 2000).

A satisfied librarian is needed in university libraries for effective performance. It is deduced that a stressful and unhappy librarian will not be productive. This will not only bring a depressing image of librarianship but will lessen the role of university libraries as service oriented program in any academic institution. Although, literature has explored a relationship between technostress and job satisfaction but unfortunately there is limited research on these two significant constructs in the context of Pakistani university libraries. This study will be an attempt to cover this gap in the LIS literature.

Review of the Literature

This study attempted to explore a relationship between technostress and job satisfaction of KPK's university librarians in Pakistan. Job satisfaction and technostress are significant constructs across numerous professions. It is imperative to have a holistic analysis of the terms technostress and job satisfaction. This section first reviewed the available as well as accessible literature on technostress and job satisfaction and then designed its own conceptual framework for the study. The research model portrayed relationship between various dimensions of technostress with general job satisfaction of university librarians in KPK, Pakistan.

Job satisfaction

Job satisfaction is anemotional feeling of employees about job which may be positive or negative. Irrespective of fields of knowledge, the construct job satisfaction has received substantial consideration from researchers due to its contributions toward employees' job performance and attainment of organizational goals (Somvir, 2012). Numerous research findings posited a satisfied employee as an effective job performer (Boyatzis, 1982). Therefore, job satisfaction of university librarians can be one of considerable dynamics in augmenting job performance. Job satisfaction is portrayed as an attitude of persons toward their job (Aydogdu & Askgil, 2011). It denotes the insight of potentials, prospects, aptitude (Testa, 2001) and people's emotional and mental retorts towards job (Hart, 2010).

Job satisfaction plays a pivotal role in enhancing workforce productivity. The dimensions of job satisfaction are pay, promotion, supervision, job conditions, and benefits (Ivancevich & Matteson, 1980; Locke, 1976) which are classified as; 1) *intrinsic satisfaction* signifies a category of situation or tasks that makeup the job, such as skills and; 2) *extrinsic satisfaction* refers to work state of affairs, for instance pay, co-worker, etc. (Spector, 1985). In LIS literature, several research studies examined librarians' job satisfaction. Some of these studies reported on general aspects of job satisfaction while other conceptualized satisfaction with respect to other aspects of the job (Leysen & Boydston, 2009).

Technostress

The term technostress, was introduced by Craig Brod (1984). He conceptualized technostress as a modern disease caused by one's inability to cope with ICT in a healthy approach. Hence, technostress is caused due to poor person- technology fit and can be avoided by generating a best fit of person- technology environment. Technostress in the workplaces is an adaptation disease caused by the inability of a person to handle new technological innovations (Brod, 1984; Tarafdar et al. 2007). It is caused by resist to and over-load adaptation of information and communication technology (Brod, 1984). Tarafdar et al. (2007) revealed that employees face technostress due to the use of ICT in organizations. It is a problem caused by adaptation where worker is incapable to manage requirements related to the use of ICT. Stressors associated with technostress are called

technostress creators. There are five dimensions/creators of technostress (Tarafdar et al. 2007) namely 1) *techno-overload* implies that ICT forces workers to work faster and longer; 2) *techno-invasion* refers to workers are needed to be connected with ICT; 3) *techno-complexity* signifies that workers feel their level of ICT skills inappropriate to perform effectively; 4) *techno-insecurity* indicates that workers feel job insecurity due to automation and accessibility to highly skilled person in ICT and; 5) *techno-uncertainty* denotes workers are worried to continuously learn and update themselves about ICT.

Relationship of job satisfaction and technostress

There are numerous research studies on correlation of job satisfaction, job performance, and technostress. Raftar (1998) demonstrated a positive association between technostress and job performance i.e. proactive approach to technology acceptance led to effective performance and vice versa. Although technology is now a basic component of libraries in the form of automation, digital and virtual librarianship (Ahmad et al., 2009) but numerous librarians are suffering from technostress. The utilization of ICT in libraries in different forms such as research databases, internet etc has caused technstress (Kupersmith, 1992). These technostress creators reduced workers' job satisfaction (Tarafdar et al., 2007). Technologies have facilitated the work of employees and need them to learn about the new ICT skills but they are techno-stressed. However, there are multiple issues in the way of learning these technological innovations such as age, technological competencies, passive attitude of workers towards the adoption of technology, stress management programs, overload due to learning of ICT skills, job insecurity, nature of tasks, finances, balance between job and family, appropriateness of acquired skills, required abilities, and courses studied in schools of LIS (Ameen, 2008; Ayyagari (2008); Haider,1998; Mahmood, 2003; 2012; Ragu-Nathan et al., 2008; Tarafdar et al., 2007; Ullah, 2011).

Ragu-Nathan et al. (2008) reported a negative association between technostress and job satisfaction. It means that a technologically stressed employee is dissatisfied with job. It also means that job satisfaction can be created if technostress among workers is properly controlled by concerned organization. Ayyagari (2008) identified a negative correlation between technostress and job satisfaction and further elaborated that technology uncertainty is a strong predictor of job dissatisfaction among employees.

Ragu-Nathan et al. (2008) indicated techno-complexity, techno-insecurity, techno-overload, techno-invasion, and techno-uncertainty as correlates of job dissatisfaction. Thus, employees suffering from technostress have low productivity and job satisfaction (Sinha, 2012). Pors (2003) articulated that there is strong correlation between librarians' job satisfaction and level of stress due to technology and other demographic characteristics.

Further Ahsan et al. (2009) indicated that there is a relationship between stress and job satisfaction. Corbett et al. (1989) further elaborated that work changes due to

technological innovations have decreased the level of job satisfaction among workers.

Based on the above literature review, this research study has designed its own research model depicted in Figure 1. There are numerous technostress creators indentified in literature review but this research model selected only three creators namely techno-overload, techno-invasion, and techno-uncertainty as dimensions of technostress. In this model technostress is treated as independent variable while job satisfaction is treated as dependent variable. Based on this model the present study has designed three hypotheses described as under.

Figure 1: Research model of the study
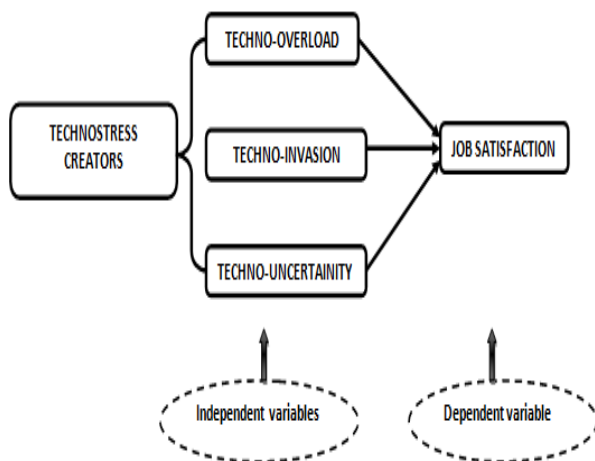
H1:　　There is a statistically significant relationship between techno-overload and job satisfaction among university librarians of KPK, Pakistan

H2:　　There is a statistically significant relationship between techno-invasion and job satisfaction among university librarians of KPK, Pakistan

H3:　　There is a statistically significant relationship between techno-uncertainty and job satisfaction among university librarians of KPK, Pakistan

Methods
Population and sampling techniques
Survey method was employed to collect data regarding the demographic profile, technostress and job satisfaction levels of university librarians of KPK, Pakistan. The target population was small, and accessible (N=148) and hence the entire population was selected as respondent for the present empirical investigation.

For data collection, 148 questionnaires were distributed however, only 120 questionnaires were returned. After, initial data screening, only 116 questionnaires were ascertained as useable for further statistical analyses. Initial data screening identified four questionnaires with missing, erroneous or incomplete data and were discarded. Thus the survey response rate was calculated as 78%.

Measurement of technosress and job satisfaction
To measure the three dimensions (total 11 items) of technostress and overall job satisfaction (total 3 items), this study adapted the Ragu-Nathan et al. (2008) scale of measurement of technostress and job satisfaction.

The Cronbach's alpha coefficient of reliability for techno-overload was (α =0.82); techno-invasion was (α =0.82), techno-uncertainity was (α =0.83) and for job satisfaction was (α =0.87). Responses on all items were gathered through 5-point Likert scale anchored as 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree.

However, the Cronbach's alpha was calculated as reliability score in the context of university librarians in KPK, Pakistan. Nunnally (1978) recommended at least 0.70 alpha coefficients for social sciences as acceptable. Under the psychometric properties, the internal reliabilities of overall scale was calculated and found all variables with high internal consistency and reliability in Pakistani context as provided in Table

Table1
Psychometric properties of the scale

Constructs	Items	Cronbach's alpha coefficient
Techno-overload	4	.810
Techno-invasion	4	.796
Techno-uncertainty	4	.801
Job satisfaction	3	.780

Results and Analysis
Correlation analysis
The Pearson product-moment correlation was calculated using SPSS version 19 to explore the direction, strength, and significance of bivaraiate relationships of KPK university librarians' job satisfaction with technostress creators namely techno-overload, techno-invasion and techno-uncertainty.

Multiple regression analysis was employed for testing the hypotheses and input of variance by techno stressors in job satisfaction. Before running these parametric tests, it is appropriate to examine data distribution assumptions of normality.

Plots are useful for validation of assumption of normality, linearity, equality of variances, detecting outliers, unusual observations, influential cases, and homoscedasticity (Tabachnick & Fidell, 2013). A scatter plot was used to verify that a relationship is linear, to detect outliers, and to graphically depict a relationship. Testing of this assumption is required before analyzing data through Pearson product-moment correlation, and multiple regression analysis. A scatter plot shown in Figure 2 depicted linear distribution of data points which implies that there is a linear relationship between the predictors and outcome. A histogram of residuals is also shown in the Figure 3, illustrated a normal distribution of data.

A P-P plot of residuals found in Figure 4 also indicated that residuals fell close to the straight line, which indicated normality in the population. A violation of unequal variances or linearity does not exist. Thus, the results of normality tests allow us to proceed with calculating Pearson product-moment correlation and run multiple regression analysis.
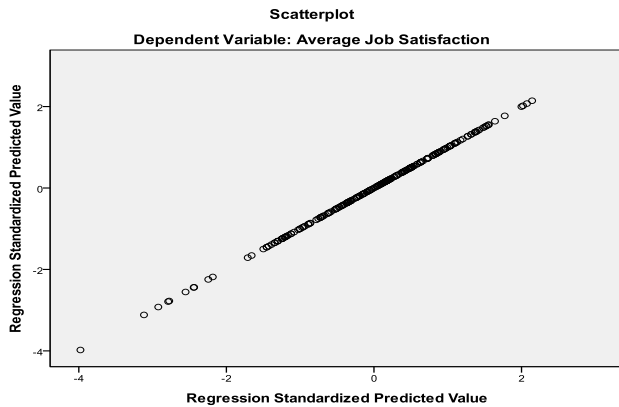
FIGURE 2: Scatter plot of scores

Scatterplot
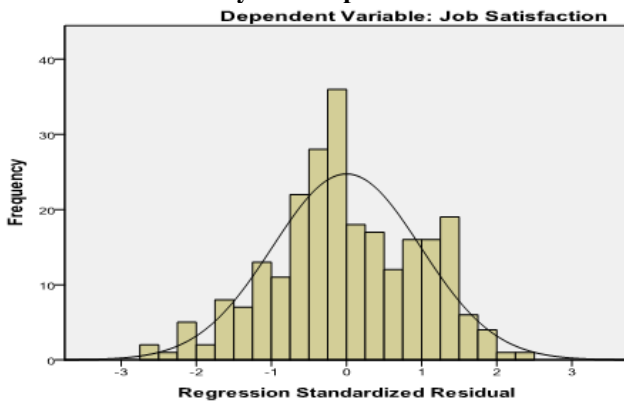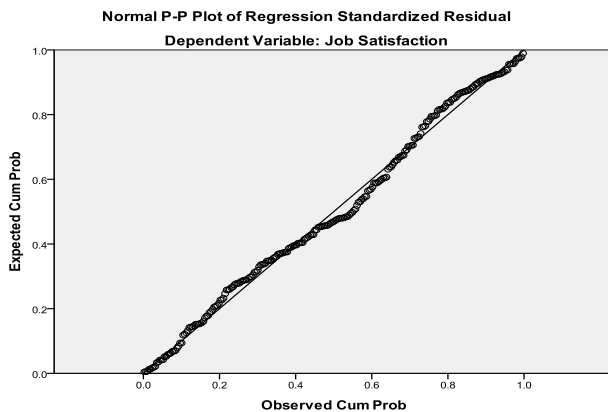Dependent Variable: Average Job Satisfaction

FIGURE 3: Normality of data points

Dependent Variable: Job Satisfaction

FIGURE 4: Normal P-P plot of regression residuals

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Job Satisfaction

The present research study employed Pearson correlation analysis for examining the relationship between the techno stressors and job satisfaction. The results of Pearson correlation coefficient showed a negative but significant correlation among the three dimensions of technostress and job satisfaction. The Pearson correlation matrix is shown in Table 2 indicating that variables are significantly correlated with job satisfaction.

There is a significant but negative correlation between job satisfaction and all the three independent variables of technostress at .01 alpha-level among KPK university librarians. The negative correlation coefficient explains that increase in technostress lead to decrease in job satisfaction and vice versa.

Table2
Pearson correlation matrix of technostress and job satisfaction

		1	2	3	4
1	Techno-overload	1			
2	Techno-invasion	-.150	1		
3	Techno-uncertainty	.888**	-.119	1	
4	Job satisfaction	-.308**	-.311**	-.420**	1

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

Regression analysis
The utilization of regression analysis test determined if a linear combination of predictor variables (technostress) that significantly correlated with the dependent variable (job satisfaction) predicted job satisfaction for KPK university librarians.

The results of enter method analysis was significant $F(3,116) = 14.019$, where p = .000. This indicated that a linear combination of three predictor variables significantly predicted job satisfaction level for KPK University librarians. The coefficient matrix indicated that beta values were significantly different from zero. The correlation coefficient (R = .522) indicated correlation of three independent variables with dependent variable and thus model has moderate effect on job satisfaction prediction. The $R^2 = .273$ signifies that 27.3% of variance is explained in the model for job satisfaction using three predictors while adjusted $R^2 = .254$ only reduced the variance explained by 1.9%. The results of tests are shown in Table 2.

The equation utilized to predict the job satisfaction variable was Y = a + b1x + b2x + b3x, interpreted as Y = 3.714-.414(Techno-overload)-.246(Techno-invasion) +.703(Techno-uncertainty). Y represented job satisfaction as dependent variable. Each predictor supplied a regression coefficient that presented the value of how much change is predictable in the outcome variable when values on the predictor variable increased by 1 and the values of the other variables did not change. When coefficient was positive, outcome value increased with the increase in predictor variable. While there was a negative coefficient, outcome value decreased with the decrease in predictor variable. An analysis of each independent variable incorporated a paired sample t-Test, which described that all variables were significant. The findings explained that likelihood of beta values which is equivalent to zero is expected in the population. The weighted beta values confirmed that all independent variables contributed to model for predicting values for job satisfaction of KPK university librarians. Thus, all the three hypotheses are supported. The coefficient of predictor variables and other results are shown in Table 3.

Table 3
Overall regression model summary [b]

Model	R	R^2	R^2change	Adj. R^2	Std. Error	F	df1	df2	F change	Sig
1	.522[a]	.273	.273	.254	.67652	14.019	3	112	14.019	.000

a. Predictors: (Constant), techno-uncertainty, techno-insecurity, techno-overload;
b. Dependent Variable: Job Satisfaction

Table 4
Linear regression analysis of technostress and job satisfaction

Model	Un-standardized Coefficient		t	Sig.	Correlations		Collinearity Statistics		
	B	β			Zero-order	Partial	VIF	Tolerance	Condition Index
(Constant)	3.714		8.558	.000					1.000
Techno-overload	-.414	-.365	-2.074	040	.308	-.192	4.758	.210	6.923
Techno-invasion	-.246	-.281	-3.448	.001	-.388	-.105	1.024	.976	14.873
Techno-uncertainty	.703	.710	4.055	.000	.420	.358	4.717	.212	27.343

a. Predictors: (Constant), techno-uncertainty, techno-insecurity, techno-overload; b. Dependent Variable: Job Satisfaction

Discussion of Results

Using Pearson correlation analysis and multiple regression analysis, the results of this research study indicated a negative and statistically significant correlation between technostress creators and job satisfaction among KPK university librarians of Pakistan. Thus, all the three hypotheses (H1, H2, and H3) are supported.

Multiple regression analysis demonstrated that technostress creators together explained 27.3% (R^2 = .273) of variance in job satisfactions among KPK university library librarians of Pakistan.

Furthermore, the F value (14.019) with significance level of p = .000 determined the regression model as statistically significant. Table 3 further explained that techno-uncertainty (β=0.710) is the strongest contributor of job satisfaction while techno-invasion (β=0.281) is the weaker contributor of job satisfaction in the overall model.

The findings of this study confirmed that stress caused by technological innovations have a significant effect on job satisfaction of KPK university librarians after establishing a correlation between them. It is derived that technology overload is a predictor of job dissatisfaction i.e. technology load decreased the job satisfaction of KPK university librarians and vice versa.

Those university librarians in KPK who are working for long hours on technological instruments or forced to use technology in their work for long hours are not satisfied with their jobs. Likewise, technological influxes into librarianship have created the feelings of invasion among KPK librarians and are offensive to ICT in their libraries. They feel exposed to all and can be reached and contacted by individuals all the time and thus feel the need to be connected with technology constantly. There may be a risk of increase in job such as the case may be in digital reference services. Thus, technological invasion is a predictor of job dissatisfaction.

Similarly, the results of this research study explained that KPK university librarians are worried about the incessantly culture of keeping informed themselves about technology innovations. The uncertain diffusion and infusion of technological innovations have led KPK university librarians to the state of job dissatisfaction. Thus, techno-uncertainty is a predictor of job dissatisfaction in the context of KPK university librarians. Finally, the present empirical research study can generalize that in the context of KPK university librarians all the three techostress creators (techno-overloads, techno-invasions and techno-uncertainty) are the predictors of job dissatisfaction. The possible reasons may be their attitude towards the adoption of technological innovations (Ramazan, 2004, Mahmood, 2003); lack of needed competencies explicitly technological skills (Ameen, 2008; Mahmood, 2003); outdated LIS education system (Rehman, 1996; Mahommod, 2003). The results of this study are consistent with the findings of Ahmad et, al. (2012), Ragu-Nathan, et al. (2008), Ahsan, et al. (2009), Nahar, et al. (2013) and Ali et el. (2009) whose research findings confirmed that stress and technostress both have effect on the employees job satisfaction.

Limitations of the study

Keeping in view limitations and delimitations of any research studies, it is deduced that one research result can neither claim completeness nor one research study can answer all the research questions. Moreover, one research study cannot solve all sub-problems associated with the central issue. Thus the present had few limitations. Firstly the study was limited by population i.e. the study

considered university librarians in one provinces of the Pakistan. Secondly the study was limited by the number of dimensions i.e. this study only considered three important dimensions of the stress caused by technology. Nevertheless, the findings of this study are equally significant for the university librarianship in other province of Pakistan. A similar study can be carried out with a bigger sample size covering other university librarians serving in other provinces or parts of Pakistan. Also further research can be carried out by considering more technostress creators to expand the study and generalization of results at national level.

Conclusions

This empirical study explored a relationship between technostressers and job satisfaction of KPK university librarians in Pakistan. Pearson correlation analysis was employed to examine the relationship between these constructs. Multiple regression analysis was utilized to test the hypotheses and indentify which dimension of technostress is the strongest and weakest predictors of job satisfaction.

The correlation analysis indicated a negative but statistically significant relationship of three dimensions of technostress with general job satisfaction. Thus findings of the study indicated that technostress decreased job satisfaction of university librarian in KPK, Pakistan. It is further deduced that increase in technostress decreases job satisfaction while decrease in technostress increases job satisfaction.

Overall results implied that technostress creators are the predictors of job dissatisfaction and thus all the three hypotheses are supported. Further, multiple regression analysis indicated techno-uncertainty ($\beta=0.710$) as the strongest contributor of variance in job satisfaction while techno-invasion ($\beta=0.281$) as the weakest contributor of variance in job satisfaction in the overall model.

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