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## Understanding the effects of techno-stress on the performance of banking staff

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**Abstract:** The technological revolution has undoubtedly brought about many changes in the modern workplace. Although it has allowed work to be carried out faster and more efficiently, many employees are not comfortable with its implementation since it involves change and uncertainty. As a result, users experience technological stress (techno-stress), which may have negative consequences on work places like commercial banks. This paper aims at investigating the effects of techno-stress on employees in the banking sector. A survey methodology that involves self-administered questionnaires to solicit data from 400 banking staff of commercial banks was employed. The employees revealed that ICTs create mental pressure, sense of anxiety and pessimism, as they have to keep up with the fast advancing pace of the new ICTs. Our study reveals that techno-stress has a negative impact on employee performance. It is recommended that the management of commercial banks, and IT professionals provide a better environment, alternative power supply and adequate training programs.

**Keywords:** techno-stress; information technology; information systems; coping strategies.

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## 1 Introduction

Information system (IS) is at the centre of the fast-paced global change. Laudon and Laudon (2001) contend that managers cannot ignore information systems because they play a critical role in contemporary organisations. The authors pointed out that the entire cash flow of most *Fortune 500* companies is linked to complex information systems. The application of information technology concepts, techniques, policies and implementation strategies in banking services has become a subject of fundamental importance and concern to all banks and indeed a prerequisite for local and global competitiveness (Ayanda et al., 2011).

Innovations in technology do affect business operations in many sectors (Benamati, 2001). The efficient use of software applications by giant companies worldwide attracts many shareholders to put more capital in technology investment. As more and more products and services are being offered by banks (boosting competition), Ghanaian commercial banks cannot be exempted as far as challenges of using new computer applications are concerned. According to Maimunah et al. (2012), in spite of the presence

of these new applications, banking institutions still recruit more employees to learn and adapt to these new technological applications.

A study by Embi (2007) revealed that commercial banks are experiencing rapid changes in technology with the introduction of new computer applications over the past years and these have brought changes to the nature of work among the employees. With the innovations of new features in technologies and their capabilities to provide various services and transactions, many banks are investing money to gain advantages offered by these new computer technologies. It is true that all banks are completely dependent on new computer applications, especially in the processing and dissemination of vast amounts of information. It is impossible to process information without the presence of technology (Rosen and Weil, 1995).

According to Thomée et al. (2012), the widespread use of modern information and communication technology (ICT) in work and private life follows in the wake of rapid advances in technology and popularisation of different devices and applications, implying fast changes in exposure profiles in the population over the past few decades. Various groups have raised the issue of possible negative effects of exposure to information systems. The term techno-stress emerged more than two decades ago to describe stress reactions in relation to technology (Nakazawa et al., 2002).

With the implementation of the new technological features in the banking sectors, Rosen and Maguire (1940) identified that employees are responsible for learning and using these technological applications regardless of their gender, age, tenure and education. Although performing their tasks using computers is done daily in the workplace, many employees experience computer anxiety or techno-stress.

It has been suggested that the use of computers can lead to psycho-physiological stress reactions due to occupational strain, and that these reactions can become conditioned to the work environment, leading to symptoms associated with computer use (Berg et al., 1992). It is against this backdrop that this study examines the impact of techno-stress on the banking industry in Ghana.

A prior investigation in the study area revealed several stress symptoms including muscular skeletal symptoms and ergonomics in relation to computer use and different input devices such as mouse, keyboard, scanner and many others. A staff of a commercial bank further mentioned that mental health effects had been experienced. From this backdrop, the consequences of technology use included spending more time than planned on the computer (e.g., working, gaming or chatting), leading to time pressure, neglect of other activities and personal needs (e.g., breaks, physical activity, social interaction, sleep), exposure to bad posture and mental overload.

The increased use of computers in professional life has seen a shift in focus of more recent studies, even including towards academics (Jena and Mahanti, 2014), manufacturers (Odoh et al., 2013), accountants and among others. Staff of commercial banks are high users of ICT, with the vast majority using computers at work. Embi (2007), Johansson-Hidén et al. (2003) and Kumar (2012) opined that few studies have been conducted on the effect of techno-stress on the performance of banking staff. In the 21st century, business organisations, especially the banking industry operate in a complex and competitive environment characterised by changing conditions and highly unpredictable technological climate.

Based on the identified research gap, this study set out to test the following hypothesis:

- H0 There is no significant relationship between gender and techno stress among the staff of commercial banks.
- H1 There is a significant relationship between gender and techno stress among the staff of commercial banks.

## **2 Literature review**

### *2.1 The concept of techno-stress*

One noticeable disadvantage of the ICT revolution includes people being introduced to new and changing technologies resulting in ICT-related techno-stress. Tarafdar et al. (2007) and Ragu-Nathan et al. (2008) indicated that these experiences by employees in many organisations affect the productivity of staff negatively. The symptoms of ICT-related techno-stress include panic, anxiety, resistance, technophobia, mental fatigue, physical ailments, intolerance and perfectionism, headaches, joint aches and insomnia. From the afore explanation, we can conclude that commercial banks are thereby confronted with what is called today ‘techno-stress’ as a challenge inherent in the use of technology facilities in their routine banking activities.

A study by Jena and Mahanti (2014) on techno-stress among Indian academicians revealed that the inability to adapt or cope with information technologies in a hassle-free and healthy manner creates techno-stress. Enis (2005) indicated that stress is a non-specific reaction of the human body when exposed to an unfamiliar system like the human system could endanger lives if not properly managed. Stress has a measurable effect on the individual and has a direct or indirect effect on the individual’s work efficiency and relationship with others (Szilagyi and Wallace, 1980). Rowden and Conine (2005) also defined stress as a state of mental and physical imbalance, which has a measurable effect on an individual’s health, work and quality of life, which ultimately deprives him or her work satisfaction and quality working life. Against this background, techno-stress is the inconvenience faced by the banking staff as a result of adoption and use of new technologies by banking staffs.

Techno-stress affects a person’s physical and mental health. Frequent ailments among tech-workers are caused by technologically induced stress within the person’s working environment (Brillhart, 2004). Aside physiological effects such as mental fatigue, insomnia, and lack of rest, there can be other physical causes like headaches, heart attack and high blood pressure. Harper (2000) stated that hand and backache due to overuse of technology may cause techno-stress. Tu et al. (2005) also pointed out that declines in person’s professional efficiency might be a cause of techno-stress. The signs and symptoms associated with techno-stress may include a wide range of behavioural and physiological changes that are commonly recognised a part of human condition. These changes present themselves in the form of physical and emotional exhaustion that involve an ill self-concept and attitude as well as less concern or indifference towards others, especially those who are considered as the stressors. Long-term stress may cause psychosomatic illness (Nawe, 1995). While the banking industry is not in doubt as among the major industries globally where ICT is a bedrock tool increasing staff productivity, the benefits of ICT use are evident. Thus, the current study seeks to fill the gap from past

studies by exploring the relationship between educational levels; age, gender and computer use on techno-stress and as well extend knowledge in the banking industry.

## *2.2 Types of techno-stress*

Extensive review has focused on the factors that induce techno-stress among staffs. Generally there are two main groups of factors causing techno-stress.

Firstly, environmental factors: these refer to poor working conditions, poor lightening, inadequate equipment, inadequate security measures, user incompatibility, noisy equipment, software limitations, lack of funding, electrical issues, risk of accidental data loss, insufficient maintenance knowledge and insufficient senior staff may cause people to suffer technology-related stress.

Secondly, social factors: these refer to conflict of interest caused by the use of technology, power struggles, work and role changes, anxiety over loss of employment, work fragmentation and hierarchal changes may cause people to suffer technology-related stress. For example an administrator who is decisive on the use of technology may press employees on their use of technology.

Enis (2005) also listed six main factors of techno-stress and gave suggestions on how to avoid them. The factors include rapid changes, lack of education, increased workload, lack of standardisation in work, reliability of technology and the role alterations. Enis further added that rapid technological developments such as rapidly changing mobile technologies increase techno-stress in this age. Despite varying approaches regarding the reasons behind techno-stress, the effects of psychological pressure with regards to the affliction of techno-stress is common to them all.

## *2.3 Causes of techno-stress*

Clute (1998) gave some reasons as possible causes of techno-stress. They included inexperience with computers, performance anxiety, lack of training, organisational factors, insufficient staffing, information overload, fast pace of change, language intimidation, multiple interfaces among others. He further explained that organisational factors reflect poor management and management-staff communication. Miller (2002) made suggestions that employers can do much to reduce the impact of techno-stress on staff. For instance the introduction of the CD-ROM database also presents its own challenges because each system will have a different interface and may need different search protocols. The CD-ROM system comes with little or no documentation except internally embedded documentations like F1 help screen or hypertext help menu.

Hudiburg (1996) also made some observations regarding the use of internet. He stated that the internet is a major cause of techno-stress due to the fact that many of the new sites have no standards as to how they are designed, maintained and updated. Dealing with information overload poses a real challenge (Kupersmith, 2003). More so, end users should learn how to download and save information from computers to external discs due to the limitation of hard disc storage space and also learn what they can email among themselves and to others (Hudiburg, 1996).

#### *2.4 Impact of techno-stress on job satisfaction*

Job satisfaction has been defined in several different ways and an objective definition for the term is unlikely to appear. Based on Joo and Park's (2009) explanation, job satisfaction is distinct as constructive psychological or job-related results or accomplishments that a person builds up because of work skills. Job satisfaction relates with how well our personal objectives at work are in line with outcomes (Margolis and Walsh, 2003). Based on Khan's research, the words 'satisfaction' and 'morale' are comparable words referring to the level which the organisation meets the needs of employees and the indicators of job satisfaction consist of employee attitudes, absenteeism, turnover and grievances (Khan, 2006).

Joo and Park (2009) also stated that career satisfaction is frequently evaluated subjectively as job success and can be defined by a person's satisfaction with their job accomplishments. Performance appraisal may be a structured, formal interaction between a subordinate and supervisor, that usually takes the form of a periodic interview (annual or semi-annual, etc.), in which the work performance of the subordinate is examined and discussed, with a view to identifying weaknesses and strengths as well as opportunities for improvement and skills development. In many organisations – but not all – appraisal results are used, either directly or indirectly, to help determine reward outcomes. That is, the appraisal results are used to identify the better performing employees who should get the majority of available merit pay increases, bonuses, and promotions (Joo and Park, 2009).

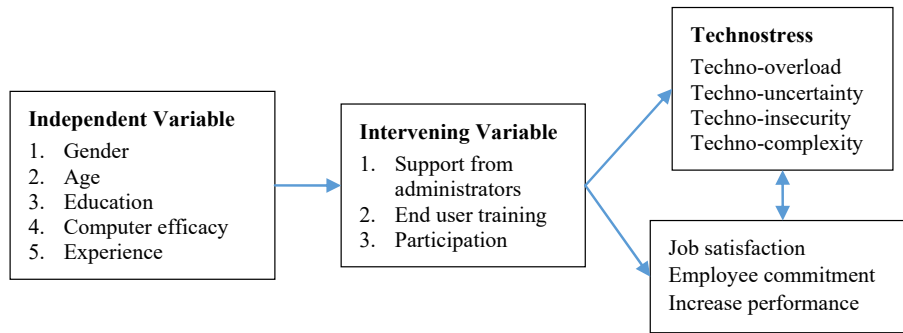
With reference to techno-stress, job satisfaction can be defined as “a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences” (Jex and Beehr, 1991). The choice of job satisfaction as a behavioural strain variable has been considered appropriate for three reasons. First, behavioural strain variables are also considered germane to the study of working environment related outcomes of stress (Cooper et al., 2001). Second, job satisfaction stands out as an important and well-studied outcome variable on research based on stress (Igbaria and Guimaraes, 1993). This is because of its impact on employee functioning, and resulting substantial costs to the organisation. Third, job satisfaction among ICT end users is considered one of the desired results from the implementation and use of ICTs. Vasilecas et al. (2005) predicated on its importance as possible outcomes in numerous studies on the work-related effects of physical, technological and social conditions.

Hence, any change in job satisfaction because of stress stemming from ICT use is clearly an important outcome to be measured. As explained in the transaction-based model in the next subsection, different aspects associated with the construct techno-stress creators lead to dissatisfaction at work. Therefore, it is expected that techno-stress creators will decrease job satisfaction. Easterby-Smith et al. (2002) reported that users of visual display units (VDU) reported high dissatisfaction in their work environment because of stress. Corbett et al. (1989) also discovered that frequent work changes, resulting from the use of computer-based manufacturing technologies, are also associated with decreased job satisfaction. The construct techno-stress inhibitors, as described in Figure 1, represents organisational mechanisms such as end user training, support from system administrators, and participation, which are relevant in the context of ICT implementation and use. These mechanisms make ICTs easier to use and leads to positive job appraisals, among other benefits, for end users.

2.5 Theoretical and conceptual framework

Figure 1 indicates a conceptual framework for the study.

**Figure 1** Transaction-based model (see online version for colours)



Source: Glanz et al. (2002)

Figure 1 illustrates the conceptual framework for the study. In applying the transaction-based model to this study, gender, age, education, computer efficacy and confidence and experience using computers represent the independent variable, while techno-stress and increase staff satisfaction and commitment to the bank, show the dependent variable. On the other hand, the intervening variable is represented by support from administrators, end user training and stakeholder-user participation through effective communication.

2.6 Overcoming techno-stress in organisations

Using technology in 21st century organisation is simply inevitable and that technology helps improve, enhance the banks’ resources and services via production, interaction or services, operative activities, automated dispensing of cash, investment control/monitoring, acquisition systems and above all personal life activities. Today, paper work has been replaced with a technological environment defined as the array of institutional networks, hardware, and application needed to provide users with access to resources and services in diverse setting. Notwithstanding this environment, the personnel are affected (Okebaram, 2013). Thus, the need for appropriate coping strategies to minimise the effect on personnel. Coping is the process of managing external and internal demands that are perceived as tasking or exceeding an individual’s resources. Coping may include behavioural or cognitive responses aimed to reduce, overcome or identify the demands placed on the individual, a phenomenon known as coping strategies (Hudiburg, 1996). Two major categories have been suggested by Okebaram (2013) in coping with techno-stress; emotion-focused strategies and problem-focused strategies. Problem-focused coping refers to efforts to improve the affected person’s environment relationship by changing certain things for example, technical support provision, and technology involvement facilitation and among others. On the other hand, emotion-focused (or palliative) coping refers to thoughts or actions whose goal is to relieve the emotional impact of stress. These strategies of coping only make the person

feel good for using technology. These may include avoiding thinking about the trouble, creating jokes to feel distressed (Okebaram, 2013).

Clark and Kalin (1996) offer the very practical suggestion that employees will only use print resources when they are faster and user friendly. Huwa (2005) stated that, “even though he gets little organizational support he makes it a priority to invest in thinking time and self-training” and that this self-style discipline helps him respond more effectively to the incubators of techno-stress. Meichenbaum (1997) developed the stress management techniques called stress inoculation technique (SIT). SIT is a three-stage process: education, rehearsal and application.

During the first stage, education is given as a framework for understanding his or her response to stressful events. During this phase, the individual collects data; these data could be collected in the form of a diary as suggested by Greenberg (1990). The person should pay more attention to the ‘internal dialogue’ that accompanies response to stressors. This will educate librarians by making them more aware of their responses to stress. During second stage (rehearsal), the user learns how to make cognitive self-statements as a coping and problem-solving skill. According to Greenberg (1990), examples of coping self-statements can be placed into the following categories. It is appropriate to evaluate the use of the skill in low stress situations and then move on to higher situations. During the evaluation of these new skills, changes can be made so the librarian can develop a set of self-statements to effectively respond to most stressful situations.

### **3 Research methodology**

Using the quantitative methodology, a survey design was adopted in this investigation and that questionnaires were distributed to staff of commercial banks. Quantitative method takes its starting point from the researchers’ point of view of what is studied and focuses on numbers as a central unit (Creswell, 2009). The sample of this study comprises four commercial banks in Ghana; Ghana Commercial Bank (GCB), Agricultural Development (ADB), National Investment Bank (NIB) and Fidelity banks. The first three selected commercial banks are the only three (3) public banks in Ghana and also the oldest established commercial banks in Ghana. More so, these banks have larger employee base than all other private owned banks. It is therefore worth investigating technology application and its stress effect on gender within such banking environments, which earlier studies failed to evaluate.

In all, 400 staff were selected out of an estimated 4,000 staff representing 10% of the population size. From the sample size, quota-sampling technique was used to assign quotas to the chosen branches depending on the population size of these areas. Data collected from the questionnaire was analysed using Statistical Package for Social Science (SPSS) and with significance level of 5%. The SPSS was used to create tables, chi-squares, correlation and t-test of some variables. The ethical issues considered in the fieldwork were informed consent, anonymity, confidentiality and respecting the privacy of respondents.

## 4 Data analysis and findings

The study was conducted using four commercial banks in Ghana. A self-administered questionnaire was distributed to the various banks staff and a 100% response rate was recorded.

### 4.1 Respondents' profile

About 61.1% of the respondents were male and 38.9% were female. In this study, 21.1% were in the age bracket of 18–25, 23.3% in 26–35 ages' distribution, 27.8% are within the distribution age of 36–45. About 45.6% respondents were degree holders while 28.9% respondents were at the post degree holders.

### 4.2 Results of the study

#### 4.2.1 Descriptive analysis

Staffs of commercial banks were required to use a 5-point Likert scale anchored on 1 = *highly significant*; 2 = *significant*; 3 = *neutral*; 4 = *non-significant*; 5 = *highly non-significant* to measure the construct of perception of impact of technological tools. The means and standard deviations are presented in Table 1:

**Table 1** Perception of employees with technological tools/facilities

<i>Perception of employees with technological tools/facilities</i>	<i>N</i>	<i>Mean</i>	<i>Standard deviation</i>
Technology facilities in commercial banks minimises the cost of transactions	400	3.67	0.400
The use of technological facilities in commercial banks saves time	400	3.45	1.14
The use of technological facilities minimises inconvenience	400	3.76	1.20
The use of technological facilities provides up-to-date information	400	3.98	1.11
The use of technological facilities increases operational efficiency	400	4.56	0.73
The use of technological facilities minimises the risk of carrying cash	400	4.00	1.37
The use of technological facilities improves service quality	400	3.80	1.54
Continuous software upgrades is extremely worrying	400	4.00	1.67
Prior training experience before introducing new technology or software	400	3.50	1.56
I am familiar with generalised technological tools within the bank	400	3.68	1.78
I am unfamiliar with specialised technological tools within the bank	400	3.98	1.08

The results in Table 1 shows that amidst perception of technological tools/facilities, what employees of commercial banks perceived as highly significant was the use of technological facilities that increases operational efficiency.

From the value of means generated, the 'use of technological facilities increases operational efficiency' has the highest mean (4.56) per staff was significant in commercial banks. This is followed by 'continuous software upgrades is extremely worrying' and 'the use of technological facilities minimises the risk of carrying cash' (mean, 4.00), 'I am unfamiliar with specialised technological tools within the bank and

the use of technological facilities provides up-to-date information’ (mean, 3.98), the use of technological facilities improves service quality (mean, 3.80), ‘the use of technological facilities minimise inconvenience’ (mean, 3.76) and ‘technology facilities in commercial banks minimises the cost of transactions’ (mean, 3.86). ‘Using technological facilities in commercial banks saves time’ as perceived by staffs was identified as non-significant. It is worth indicating that not many staffs supported the assertion that prior training experience before introducing new technology or software existed within the banks (mean, 3.76).

4.2.2 Factors affecting computer anxiety of staff

The subjects in the study answered questions relating to their level of computer anxiety when interacting with technology.

**Table 2** Level of computer anxiety

Responses	Feeling anxious F (%)	Feeling stress after using computer F (%)	Feeling uneasy when using computer F (%)	Feeling stress after using computer F (%)	Acceptance of using technology F (%)
Yes	53 (58.9)	52 (57.8)	48 (53.3)	52 (57.8)	52 (57.8)
No	37 (41.1)	38 (42.2)	42 (46.7)	38 (42.2)	38 (42.2)
Total	400 (100)	400 (100)	400 (100)	400 (100)	400 (100)

On the question of the level of computer anxiety, the results show that, majority of commercial banks staff (58.9%) confirmed that they felt anxious when using computers since upgrades are very frequent. About (57.8%) agreed to the fact that they were stressed up after using computers due to work overload. Most the staffs of commercial banks (53.3%) identified that using computers makes them feel uneasy. In summary, the level of computer anxiety in commercial banks was more than average of the total respondents of the study, indicating that computer anxiety was high. However, staffs confirmed that often times, IT staffs were available to solve technical issues that came up in during routine operations (see Table 2).

4.2.3 Effect of techno-stress on employee performance in commercial banks

In this study, the factors used to determine the employee performance included Inefficiency to perform, Inadequate training, Computer anxiety and Handling of technological facilities.

**Table 3** Effect of techno-stress on employee performance in commercial banks

Responses	Inefficiency to perform F (%)	Inadequate training of staff F (%)	Computer anxiety F (%)	Handling of technological facilities F (%)	Technological stress F (%)
Yes	30 (40)	51 (56.7)	53 (58.9)	52 (57.8)	15 (16.7)
No	70 (60)	39 (43.3)	37 (41.1)	38 (42.2)	75 (83.3)
Total	400 (100)	400 (100)	400 (100)	400 (100)	400 (100)
Mean	3.24	3.40	4.00	3.60	3.87

On the question of the effect of techno-stress on employee performance in commercial banks, the results showed significant findings. It was identified that majority of commercial banks staff (83.3%) stated that indeed technological stress had negative effects on employee performance. More so, most staff of commercial banks (56.7%) identified that inadequate training of staff on the use of technological facilities was a reason for increased inefficiency. Thus, management of banks need to decrease the inhibiting factors by management to reduce the effect of techno-stress since it cannot completely be done away with.

Techno-stress causes serious mental and physical health issues. Considering the increase in frequency of these ailments in our daily lives, it can be said that technologically induced stress is having great impact. Champion (1988), in arguing for the findings in this study on the gross effect of techno-stress, contends that techno-stress is a serious illness, and lists several of its symptoms: panic, anxiety, resistance, technophobia, mental fatigue, physical ailments, intolerance and perfectionism of staff of which commercial banks are no exception. Additionally, warning staff to work efficiently and limited utilisation of technology are mentioned as preliminary symptoms.

Brillhart (2004) also stated that in addition to psychological causes such as mental fatigue, sleeping trouble, lack of rest, also lists physical causes in the form of headaches, furor, stomach and intestinal problems, heart attack and high blood pressure. Harper (2000) states that head, hand and backaches from overuse of technology may cause techno-stress. Tu et al. (2005) stated that recession in professional efficiency is a symptom of techno-stress.

#### 4.2.4 Gender by techno-stress level

Table 4 is the summary of means, standard deviation and results of the independent t-test of male and females on their techno-stress level (statistical significance at the 0.05 level).

**Table 4** Gender by techno-stress level

<i>Gender of staff</i>	<i>N</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>T</i>	<i>Df</i>	<i>Sig</i>
Male	245	2.0877	1.02673	1.252	82	0.012
Females	155	1.8500	1.05125	N/A	N/A	N/A

From Table 4, it is evident that the mean score of staff with male status ( $M = 2.0877$ ) was greater than that of those with female status ( $M = 1.8500$ ) on their level of techno-stress. This was therefore subjected to the independent t-test and the table above shows that there was a significant difference between male and female staff in commercial banks [ $t(152) = 1.252, p = 0.012 < 0.05$ ]. The findings did support that staff of commercial banks who are males were more likely to be stressed up by use of technology than female bankers.

Two demographic factors; gender and computer confidence have a major influence on techno-stress. The finding of Tarafdar et al. (2011) was not consistent with the findings in this study. According to Tarafdar et al. (2011), men experience more techno-stress than women. In general, women find IS less easy to use than men. However, women tend to use IS when they have to whereas men are more inclined to use IS when they want to. Where use was voluntary, men were more inclined to use IS and hence experienced a higher intensity of techno-stress-creating conditions than women

experience. On the other hand, professionals or staff with greater computer confidence experience less techno-stress because they are likely to have more faith in their ability to handle the disruptions arising from techno-stress-creating conditions.

All the subjects in the study admitted that they faced one challenge or the other when using technology at work. In their view, they stated the following:

- frequent breakdowns of the technological facilities
- inconsistent power supply is one of the greatest challenges
- internet supply for daily online services really affects staff of commercial banks
- constant and frequent upgrading of ICT facilities are really threats to staff in commercial banks
- time constraint to adopt and fully handle ICT facilities posed challenges to the staff.

## **5 Recommendations**

Based on the findings of the study, the following recommendations have been made to reduce techno-stress among the staff of commercial banks.

### *5.1 Provision of enabling environment*

The symptoms associated with technology such as fear of losing autonomy, short training forum, losing control over one's work environment due to upgrade of software, intimidation of new hardware technology and inability to keep up with new technologies. This induces stress on the staff. It is recommended that the management of commercial banks should provide an enabling environment for staff by providing enough open communication to enjoy the use of ICT facilities in commercial banks. This may reduce stress and frustration encountered by the staff.

### *5.2 Providing alternative power supply*

Management of commercial banks must provide alternative sources of power, e.g., solar energy, generator, or inverter and batteries, which will prevent frequent server breakdowns and improve access. They must recognise the need for adequate power supply so as to provide ICT access and use to all banking staff, to reduce the "the stress" that comes with power outages. There seem to be power plants all over the banks' branches in Ghana; however, power cuts keep on increasing day by day, thus, affecting the use of technology in commercial banks. Here, the question is whether these plants are just for decoration sake or not. Especially in Ghana where load-shedding is ongoing, the management must ensure that the appropriate authorities are mandated to provide uninterrupted power supply at all times, courtesy the plants. By so doing, the management reduces significantly the techno-stress among the staff.

### 5.3 Adequate training programs

The reasons causing techno-stress among staff of commercial banks included: inexperience with computers, unfamiliar with hardware or software, performance anxiety, lack of training/insufficient training, organisational factors, overwork/insufficient staffing among others. These can be considered as one of the biggest factors at play in the levels of techno-stress felt by bankers. Many banking staff did not have sufficient training time when technologies are first introduced. The IT department must create adequate training programs for staff to enable them render adequate and effective IT services to customers who are desperate for improved services.

### 5.4 Provision of financial and technical assistance

Management of commercial banks should provide financial and technical assistance, especially in the areas of increasing bandwidth, sufficient computer units and maintenance of the facilities. Such assistance will, to some extent, positively affect the attitude of staff towards computers and sensible coping management strategies will ease techno-stress, hence, benefit.

### 5.5 Management should be sensitive to individual differences

The survey analysis revealed that differences exist in some of the relationships across age and gender. For example, it was suggested that, there was a difference between male and female techno-stress level, thus, females were more prone to techno-stress than male staff. It is possible that individuals in younger and older age groups have differences in coping strategies. Therefore, managers need to be aware of these sensitive differences, to develop effective policies for such groups.

## 6 Conclusions

Based on the objectives of the study, the following conclusions can be drawn:

Techno-stress is becoming a new nightmare caused by our advancements in this technological age. This is a type of anxiety experienced when interacting with the upsurge of newly improved and technological gadgets and computer upgrades invading our work, home and leisure time activity. As was identified in the study, the introduction of technological facilities in commercial banks minimises the cost of transactions, saves time, minimises inconvenience, provides up-to-date information, minimises the risk of carrying cash and improves service quality.

It however, appears that headaches, mental fatigue, panic, anger and feeling of helplessness were the effects of the use of these facilities. Research about techno-stress in the Ghanaian banking sector is relatively a new concept and can be extended to other cultural settings too. Different marketing strategies, under different ownership types, can be explored on the bases of how employee perceive and respond to techno-stress. As it is now becoming a high up-in-work culture for both the system users and IT professionals. The results of this study should be useful for IT-driven organisations like commercial banks managing the issues of techno-stress from the perspective of organisational behaviour. Additionally, it will help the managers to formulate the best strategy in

striking a balance between innovations/centralisation and level of techno-stress, so as to alleviate its level.

In conclusion, this study was limited to commercial banks and based on the employees' opinions on technological stress in the workplace. Therefore, the findings of this study cannot be generalised to represent all employees in all commercial banks in Ghana. Overall, these banking employees have a very good attitude toward technology (computer) and the results revealed their level of acceptance when using technology was very high.

### 6.1 Future research

In the future, it will be recommended that the sample size be increased to a representative size and, staff opinions taken across the entire ten regions of Ghana. This will give a much clearer picture about the immediate factors determining consumer purchase decision leading to a better generalisation.

The researchers propose that IT professionals in commercial banks must be sampled to critically look at how techno-stress is managed by the bank. Since this study provided initial evidence about stressful impacts of technology, future research might focus on exploring the stressful effects of one very specific technology that might be relevant from technology context or from the organisational context. For example, future research might explore questions like – is the use of mobile phone stressful? Alternatively, is the use of laptops stressful?

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