

Librarians and Technology in Academic and Research Libraries in Kuwait: Perceptions and Effects

CHARLENE L. AL-QALLAF

Department of Library & Information Science, College of Social Sciences, Kuwait University, Keifan, Kuwait

This study investigates the effect technology has on librarians working in academic and research institutions in Kuwait. The study addresses six job-related dimensions: (1) affective/philosophical reactions, (2) personnel changes, (3) performance, workload, and rewards, (4) training and learning activities, (5) management issues and (6) sources of stress. A questionnaire distributed to 147 individuals yielded a 66 percent (n=97) response. Most of the participants are employed in public institutions, female and work in the information services area. The findings show that the re-

spondents are optimistic about technology, believe that it improves their job performance and are up to the challenges that technology brings. However, they feel there is a lack of positive feedback from management acknowledging their effort and performance. Lack of technically oriented professional staff and technological breakdowns are the most frequently checked stressors. Insufficient formal training programs create the highest level of stress. Several recommendations are made for improving the workplace in a techno-environment. Suggestions for future research are also given.

Introduction

Twenty years ago, technology revolved around library automation. The use of technology in libraries was simply a means for improving and enhancing library services and resources via automated cataloging, circulation and acquisitions systems. Today, automation has been replaced with a technological environment defined as the array of institutional networks, hardware and applications needed to provide users with access to resources and services in diverse settings. This environment is supported by an infrastructure impacted by personnel- and- organizational-related issues. Amidst this technological evolution, the traditional library mission of service and access to resources is still relevant. These services and resources, however, are taking on new meanings and constructs. Today, librarians provide access to eclectic e-collections, create and maintain digital content, support e-learning, provide real-time e-reference, negoti-

ate contracts and licensing agreements and struggle with the economics of electronic information.

Library and information personnel in academic and research libraries work incessantly in networked environments. Having bigger, better and more technology remains one of the constants in the ways that they manage their jobs. As new technologies evolve, library operations are changing rapidly and library personnel need to adapt to new plans, tasks, and activities. How do librarians working in academic and research libraries react to these technological challenges? What are their perceptions, beliefs and opinions regarding the implications of technology in the work environment? As librarians interact with technology what are the psychological, personal and organizational issues that they encounter? Research on these and other questions will help academic and research libraries in planning and developing effective strategies for managing and supporting systems and services in a techno-environment.

Charlene L. Al-Qallaf, Ph.D. Department of Library & Information Science, College of Social Sciences, Kuwait University, P.O. Box 68168 Keifan, Kuwait 71962. E-mail: charlene@kuc01.kuniv.edu.kw or c_alqallaf@yahoo.com

Literature review

Library personnel reactions to technology in the work environment

A search of the literature dealing with library personnel opinions and perceptions of technology in the workplace revealed several studies. In the late 1980s when libraries were on the edge of a technological revolution, Jones (1989) surveyed academic support staff at three university libraries in the United States. By means of a questionnaire, she sought to analyze the attitudes and opinions of library support staff towards technological change in the library. Her instrument consisted of 25 multiple-choice questions followed by several personal background questions. Specific areas addressed were personal reactions to new technologies, staff training, personnel issues and management issues. The results showed that although most participants had a positive attitude toward technology, responses also indicated undercurrents of personal frustration and irritation.

Ten years later, Jones (1999) published a follow-up study. She administered an updated version of the original questionnaire to the same population. This instrument contained 34 multiple-choice questions followed by several personal questions regarding library experience and educational background. In addition to surveying support staff perceptions and opinions from the original study, Internet usage, health issues and two questions related to stress were included. The overall results of the survey showed that the opinions and reactions of support staff to working with new technologies generally remained positive but with more reservations than those found in 1989. Their primary interest, however, shifted from automation in technical services departments to technological progress in reference/research areas. In spite of improvements in staff training, it remained an issue ten years later. Although in the 1989 study, there was a variance in opinion among the three libraries regarding their involvement in the decision-making process, collectively the majority checked no involvement, which was also reflected in the 1999 study. Likewise, most participants from both studies believed that they should have more involvement in technological planning and decision-making. In the 1999 survey, the impact of technology on one's health became a growing concern among those surveyed and more than

one-third of all participants felt that their jobs had become more stressful.

A similar study by Palmi (1994) studied the effect computerization had on support staff in academic libraries in Wisconsin. Particular areas addressed were library background, working conditions, attitudes towards computerization of their positions and sources of job satisfaction and frustration. Sixty-two percent of support staff believed that primary sources of job frustration were computer-related (e.g., computer is down, slow response time, lack of computer support, not enough terminals). The remaining 38.0 percent felt that job frustration came from people-related problems and understaffing in libraries. Another finding showed that when respondents were asked "What part of your job gives you the most job satisfaction?", 60.0 percent of the respondents felt that their primary source of job satisfaction was people-oriented while only 11.0 percent stated that computers provided a primary source of satisfaction. Other findings included an increase in overall job effectiveness due to automation and when asked about timesaving issues, 39.0 percent reported that the portion of their jobs that was computerized had made their jobs less-time consuming, 36.0 percent said it was more time-consuming and 26.0 percent reported it had remained the same.

Winstead (1994) also examined staff reactions to library automation in three academic libraries covering all library personnel. She administered the survey in 1987 during various phases of library automation, and again in 1993 after the automated system was fully implemented. Both surveys yielded similar findings. The author found that educational level had no bearing on the acceptance of automation, almost all employees welcomed automation and the reason most frequently cited was for faster operations, library staff felt that good communication skills were essential in the implementation of automation, and automation did not cause changes in the hierarchy of the library. Results from both studies also showed that the majority of library personnel were concerned about ergonomic factors. Two repercussions from computer usage not reported in the 1987 survey, however, were carpal tunnel syndrome and electromagnetic field radiation emitted from the monitor.

Poole and Denny (2001) used Jones' (1999) instrument to survey professional and paraprofes-

sional library resources personnel in Florida community colleges. The objective of their study was to see if the same questions distributed to library personnel in a community college setting would render results similar to those found in the university group. Of the 665 surveys administered, 302 were returned with a response rate of 45.4 percent. They found that the similarities between community college and university personnel were a positive attitude towards learning and using new technologies. Both groups also felt left out of the decision-making process and wanted a more participatory involvement. Differences included the impact of technology on health and personnel related issues. Results showed that community college personnel were quite satisfied with training programs, that they were treated fairly during various phases of technological change and that the work environment was stable while in the Jones (1999) study, the opposite was true.

Technostress in libraries

A by-product of working in a technological environment is stress. Stress is inevitable and constant because the world is continuously changing. Bunge (1987) studied stress in the library over a decade ago and identified 15 categories of stress, one of which was technology and equipment. Based on Bunge's article, Ostler and Oon (1989) studied stress in the library at Brigham Young University. Their primary goal was to identify and analyze sources and causes of stress and satisfaction. They found that technology and equipment was a high source of stress among both faculty librarians and support staff.

Known today as technostress, several meanings have evolved for this phenomenon. An organizational psychologist originally defined technostress as "... an inability to cope with new technologies in a healthy manner" (Brod 1984, 16). Weil and Rosen (1997, 5) proposed a more contemporary view of technostress as "any negative effect on human attitudes, thoughts, behavior, and psychology that directly or indirectly results from technology." In a paper related to libraries, Kupersmith (1992) described technostress as having four distinct components: performance anxiety, information overload, role conflicts and organizational factors.

Although a wealth of data has been collected on determining and measuring technostress in

multi-disciplinary areas, one research area that has not been extensively pursued is technostress in libraries. A perusal of the literature on how technostress affects libraries revealed that most of the papers were commentaries, opinions or discussions concerning symptoms, causes and solutions to technostress in libraries (Bichteler 1987; Kupersmith 1992, 1998; Bartlett 1995; Clark 1996; Pitkin 1997; Harper 2000; Gorman 2001). As pointed out by Fisher (1996) the term technostress is used regularly but there is a lack of hard evidence that actually supports that librarians suffer from this phenomenon. He argued that the existing literature is based on problematic definitions that jeopardize the information technology scene. He does agree, however, that one of the few positive ideas coming out the literature is the improvement in organizational structures and information management.

Only one article reported an informal poll on technostress among library staff. Kupersmith (2005) posted a questionnaire on the Web for ten days and collected 92 responses, most coming from academic library personnel. Some of the questions allowed for open-ended responses. He found that 59.0 percent of the participants reported an increase in computer-related stress in the last five years, 34.0 percent felt it had not changed much, and 4.0 percent stated it had decreased. When asked how serious this type of stress was, 65.0 percent felt it was somewhat serious, 8.0 percent stated it was very serious, while 27.0 percent said it was not at all serious. Major causes of technostress were information overload, networking problems, computer hardware, ergonomics, and vendor-produced databases. Strategies for managing and coping with technostress most recommended by library personnel were for organizations to provide training and support and for individuals to be more flexible.

Very few research studies have examined the effect of technology on librarians working in academic and research libraries and no study of this type for any Arabic-speaking country has been reported in the professional literature. Thus, the present study responds to the need to investigate the effect of technology on librarians in academic and research libraries in Kuwait. It is also believed that this study will have significance for other Gulf Cooperation Council (GCC) countries taking into consideration their social, cultural and educational similarities.

Research objectives

The purpose of this research is to explore the effect technology has on librarians working in academic and research libraries in Kuwait. Specific questions addressed are:

1. How do librarians perceive the impact of technology in the workplace? Five specific areas examined are: (a) affective/philosophical perceptions, (b) personnel changes, (c) performance, workload, and rewards, (d) training and learning activities and (e) management issues.
2. What are the sources of technostress? How do librarians rate such sources?
3. Do demographic variables such as gender, institution type, age, library background, education and training affect a librarian's response to technology?

Methodology

The survey instrument consisted of a slightly modified version of the questionnaire used in a study by Jones (1999). Dorothy E. Jones granted permission to use her questionnaire in March 2005. Items in the original questionnaire that did not belong within the context of this culture were either reworded or deleted. A new statement that reflected specific areas of technostress was added. The first part of the survey instrument contained twenty-nine statements concerning the effect of technology in the work environment addressing six job-related dimensions. They are:

- Affective / philosophical perceptions
- Personnel changes
- Performance, workload, and rewards
- Training and learning activities
- Management issues
- Sources of stress

Statements 1–28 solicited opinions towards and perceptions of technology in the work environment. Statement 29 consisted of a 16-item scale that listed sources of technostress. Participants were requested to rate the level of each stressor on a four-point scale where 0 = Not-at-all, 1 = Low, 2 = Moderate, or 3 = High. There was provision where respondents could include a stressor not on the list.

The second part of the questionnaire asked respondents for demographic information about gen-

der, age, library background, education and training. The instrument was prepared in English and then translated into Arabic by a translation agency. A second agency was used for back translation. Finally, bilingual information professionals examined both versions of the questionnaire in order to ensure the integrity of the translation.

The population consisted of librarians working in academic and research libraries in Kuwait. 'Librarians' in this study were defined as those individuals who were designated as such and were working in a professional capacity irrespective of their educational background. Eight institutions were targeted, however, two were eliminated because one institution did not have any technological facilities in their library and the other was an e-learning university with no physical library. During the spring and summer of 2005, 147 questionnaires along with an explanatory cover letter were distributed to the six participating libraries. Librarians were informed that they would remain anonymous and results would not reflect negatively on any particular institution. The questionnaires were in English and Arabic and participants had the option of choosing their language of preference. Of the 147 surveys distributed, 97 responded with a return rate of 66.0 percent.

Collected data were coded and processed using SPSS. Descriptive statistics were used to analyze the data. Chi-square tests were applied to determine if there were significant relationships between variables. ANOVA and *t* tests were conducted when the data represented a scale. The level of significance was 0.05.

Results

Demographic profile

Table 1 displays a demographic profile of librarians working in academic and research libraries in Kuwait. There were 97 subjects who responded to this survey, 61 females (62.9%), 32 males (33.0%) and four (4.1%) undetermined. The majority (n=87, 89.7%) worked in public institutions and 10 (10.3%) worked in the private sector. Almost half (n=46, 47.7%) of this group were between the ages of 35–44 and similarly 45 (46.4%) participants reported 11 years or more of library experience. Most of the librarians (n=66, 68.0%) worked in information services. Those working in library

Table 1. Demographics of Participants (N = 97)

Demographic Variable	Frequency	Percentage
Gender		
Male	32	33.0
Female	61	62.9
No answer	4	4.1
Institution Type		
Public	87	89.7
Private	10	10.3
Age		
Under 25	3	3.1
25-34	25	25.8
35-44	46	47.4
45+	18	18.6
No answer	5	5.1
Library Experience		
1-5	27	27.8
6-10	20	20.6
11+	45	46.4
No Answer	5	5.2
Area of Work		
Technical Services	19	19.6
Information Services	66	68.0
Library Administration	12	12.4
Education		
High School Diploma	18	18.6
Bachelors in LIS	22	22.7
Other Bachelor Degree	33	34.0
Masters in LIS	9	9.3
Other Masters Degree	8	8.2
No answer	7	7.2
Training/Workshops		
Yes	47	48.5
No	50	51.5

administration (n=12; 12.4%) included directors, assistant directors, and heads of sections. The majority of the respondents (n=72, 74.2%) held a bachelor's degree or higher. Of this group only nine (9.3%) had a professional degree and eight (8.2%) others had a master's degree in another discipline. Slightly less than half (n=47, 48.5%) had taken at least one technology-related training course.

Opinions and perceptions of technology

The first twenty-eight statements asked participants their opinions towards and perceptions of

Table 2. Affective/Philosophical Reactions to Technology

Statement	Frequency	Percentage
My feelings about working with computers are described by the words* ...	51	52.6
competency	48	49.5
excitement	48	49.5
enjoyment	34	35.1
pleasure	27	27.8
irritation	14	14.4
tolerance	4	4.1
inadequacy	2	2.1
frustration	1	1.0
dislike		
Do you think that library automation basically ...		
leaves people more free to be creative	66	68.0
restricts creativity	6	6.2
dehumanizes people	4	4.1
does none of the above	2	2.1
no opinion	19	19.6

* Multiple response

technology in the work environment. Two statements were eliminated because they yielded ambiguous results. Responses to the 26 statements are organized into five areas: (1) affective/philosophical perceptions, (2) reactions to personnel changes, (3) performance, workload, and rewards, (4) training and learning activities and (5) management issues. The findings are grouped accordingly. Analysis of the results generated few significant differences between these statements and the demographic variables. Three statements when cross-tabulated with type of institution, library experience and area of work showed a dependence on one or more of these variables. Significant relationships for chi-square tests are reported in the appropriate section. Gender, age, level of education and training had no effect on how participants responded to the statements.

Affective / philosophical perceptions

This section reports the results from three statements that sought to determine personal feelings and philosophical attitudes towards technology in the workplace. Respondents were given nine terms to describe their feelings about working with computers (see Table 2). Positive feelings dominated

Table 3. Perceptions of the Reassignment or Replacement of People by Technology (Multiple response)

Choices	Frequency	Percentage
There has been no reassignment or replacement of people by technology	41	42.3
We have a better organization	40	41.2
I feel good about the changes	33	34.0
People have been treated fairly	18	18.6
Overall, personnel adjustments have been good	18	18.6
We are no better off than we were before	13	13.4

their answers with "competency," "excitement," and "enjoyment," being the most frequently checked words. "Irritation" was the most-checked negative term. Three additional negative terms "inadequacy," "frustration," and "dislike" were the least-checked with a less than five percent response.

As for perceptions on philosophical implications of library automation, the majority of respondents reacted optimistically (see Table 2). Most (n=66, 68.0%) were of the opinion that automation "leaves people more free to be creative." Very few felt that automation neither "restricts creativity" nor "dehumanizes people." Nineteen had "no opinion" and two individuals did not agree with any of the choices.

When asked about the impact of technology on their health, an equal number of respondents were on opposite ends of a positive-negative spectrum. Twenty-four respondents (24.7%) believed that their health had been affected positively and 24 (24.7%) felt they had suffered some negative consequences because of technology. Thirty-two (33.0%) respondents checked "no opinion" and 17 (17.5%) answered "not significant." This can indicate that for some individuals there is not enough evidence yet to draw any conclusions about health-related problems.

Reactions to personnel changes

The questionnaire contained five statements dealing with participants' reactions to personnel changes. Participants were asked to respond to a number of items regarding their perception of the reassignment or replacement of people by tech-

Table 4. Perceptions of the Impact of Technology on Work Performance (N=97)

Statement	Frequency	Percentage
As the development of technology progresses my work gets ...		
Easier	88	90.8
Harder	1	1.0
No change	8	8.2
As new technology is added, the speed with which I accomplish work ...		
Almost always increases	83	85.6
Almost always decreases	6	6.2
Stays about the same overall	8	8.2
Computers make my production ...		
More accurate	88	90.8
Less accurate	1	1.0
Neither more nor less accurate	8	8.2

nology. They were given six choices and could check as many that applied (see Table 3). Overall, less than half (n=41, 42.3%) of those surveyed believed that people had not been reassigned nor replaced by technology. Items checked the most that reflected a positive outlook were 'We have a better organization' (n=40, 41.2%) and 'I feel good about the changes' (n=33, 34.0%). Respondents, however, reacted more negatively to items that had a direct impact on them. Answers such as 'personnel adjustments have been good' and 'people had been treated fairly' yielded a low response of 18 (18.6%) respectively.

When asked how they perceived the size of library personnel during the last five years, 48 (49.5%) felt there was a reduction in the number of staff, 26 (26.8%) stated no changes had been made, only 18 (18.6%) believed that library staff had increased and five individuals (5.2%) did not respond. Although the number of personnel decreased over the last five years, half of the respondents (n=47, 50.5%) did not believe that technology was responsible. Twenty (21.0%) felt technology was partially responsible and 25 (26.9%) participants had no opinion.

In a related statement, participants were given four choices to describe their feelings about personnel stability in their library. According to 41 (42.3%) individuals, personnel stability did not

Table 5. Perceptions of the Impact of Technology on Job Responsibility and Rewards

Statement	Frequency	Percentage
Technological advances have ...		
Added more responsibility to my job	56	57.7
Diminished the responsibilities of my job	23	23.7
Had no effect on the amount of responsibility I carry	18	18.6
When additional responsibility is assigned at the library, it is reflected in (my)*...		
More respect is shown to me	26	26.8
Job description	26	26.8
Salary	4	4.1
None of the above	50	51.5

* Multiple response

change, 26 (26.8%) stated that the staff situation had become ‘progressively more stable’, 17 (17.5%) felt it had become ‘progressively less stable’ and 13 (13.4%) had no opinion. When asked for their opinion as to whether technology was partially responsible for staff stability 41 (42.3%) respondents did not feel that technology was responsible for the staff situation and 32 (33.0 %) felt that technology had influenced the situation. The remaining 24 (24.7%) were unable to determine one way or the other and checked ‘no opinion’.

Performance, workload, and rewards

Seven statements addressed participants’ perceptions of technology in the workplace with respect to performance, workload, and rewards. The overall positive reactions to a set of statements about the ease, speed, and accuracy of job tasks revealed that respondents perceived technology had made their work easier, the speed of accomplishing a task increased, and their work productivity had become more accurate (see Table 4). Given these positive responses, most participants (n=80, 82.5%) also believed that technology allowed them more control over their workday, while five (5.2%) felt they had less control and 12 (12.4%) individuals remained neutral. When it came to the accuracy of library records, the majority (n=73, 75.2%) agreed that technology had improved the accuracy of library records, nine (9.3%) disagreed and 15 (15.5%) had no opinion.

Table 6. Perceptions about Learning New Technologies (N=97)

Statement	Frequency	Percentage
Feelings towards learning a new technology ...		
I look forward to learning it	72	74.2
I want to learn it, but feel uneasy	18	18.6
I feel irritated because I do not have time	5	5.1
I am hesitant to learn it	2	2.1
Preferred learning style ...		
Workshop	41	42.3
Structured class	25	25.8
Supervisor	17	17.5
Manual	7	7.2
Friend	5	5.1
Not at all	2	2.1

In the opinion of most respondents (n=56, 57.7%), technological innovations had added more responsibility to their jobs, 23 (23.7%) felt that technology diminished their workload, and 18 (18.6%) stated that technology had no effect on the amount of responsibility that they incurred. In line with added responsibilities, participants were asked to identify from a series of choices how increased responsibilities were rewarded. Possible choices given were salary increase, more respect shown by colleagues and patrons, improved job description, or none of these rewards. From the responses indicated in Table 5, participants believed that they were not adequately rewarded for increased workload and responsibilities due to technological changes. Very few (n=4, 4.1%) had been rewarded by monetary means and 51.5 % (n=50) stated that they had not experienced any of these rewards.

Training and learning activities

Training and learning activities are an important element of technological change. Five statements addressed this concern. As displayed in Table 6, overall responses about learning new technologies were very positive. Seventy-two (74.2%) respondents looked forward to learning new technologies and an additional 18 (18.6%) wanted to learn but had some reservations. A small number (n=5, 5.2%) felt irritated by the prospect of learning new things. In a related question, participants were

asked which learning style they preferred to use when introduced to new technologies (Table 6). Most (n=66, 68.1%) favored a more formal learning environment such as a structured class or workshop. 'From a manual' or 'From a friend' was the least chosen methods. Surprisingly, two (2.1%) individuals showed indifference to the learning process.

In the opinion of many, the expectations of management have been overwhelming. When asked if they were expected to learn too many new things too fast 63 (64.9%) responded yes, 19 (19.6%) responded no, with 15 (15.5%) having no opinion. Participation in training courses did effect how individuals responded to this statement. Those attending seminars and workshops felt much more comfortable when introduced to new technologies.

With regards to a statement on how respondents felt about the quality of their own personal training experience in technology, 47 (48.4%) replied in the positive, 'very good' to 'excellent'. An additional 28 (28.9%) felt they had received a 'moderately good' level of training. Almost a quarter of the responses, however, were negative. Twenty-two (22.7%) persons perceived the quality of their training experience to be 'poor' to 'nonexistent'. When this statement was cross-tabulated with years of experience, it was found that respondents who reported more than 10 years of library experience showed less satisfaction with the quality of training programs than those with less experience ($\chi^2=16.557$, $df=8$, $p < .05$). As a person acquired more work experience, their satisfaction with training programs decreased.

Participants were also asked to respond to a statement on the overall quality of their library's technology training programs. Only 19 (19.6%) respondents felt that library-wide training programs were 'excellent', 44 (45.3%) checked 'adequate' while 31 (32.0%) believed their programs were 'inadequate'. Three (3.1%) individuals did not respond.

Management issues

This section reports participants' responses to six statements addressing the impact on management-related issues with respect to technology in the workplace. As for opinions regarding the availability of technical support in libraries, more than

Table 7. Departments Where the Greatest Technological Advancements Have Been Made (Multiple responses)

Department	Frequency	Percentage
Cataloging	43	44.3
Reference / research	32	33.0
Periodicals	22	22.7
Circulation	19	19.6
Acquisitions	14	14.4

half (n=57, 58.8%) stated that technical support was either 'moderately good', 'poor', or 'nonexistent', 33 (34.0%) believed support was 'very good', and only seven (7.2%) checked 'excellent'.

Librarian involvement in the decision-making process concerning the incorporation of new technology in their work area was low. More than half (n=58, 59.8%) of the participants stated that they were not involved in decision-making, while 39 (40.2%) were involved. Contrary to this, interest in more staff participation in technological planning and decision-making was very high (n=85, 87.6%), only three (3.1%) individuals believed that staff should not be involved, and nine (9.3%) did not respond. When the area of where participants worked was compared to their involvement in the decision-making process, those working in information services were more likely to be left out of the decision process ($\chi^2=7.368$, $df=2$, $p < .05$) than their colleagues from technical services and library administration.

As indicated in Table 7, when asked which departmental area had made the greatest technological advancements, participants ranked cataloging first, followed by reference/research, periodicals, circulation, and finally acquisitions.

The majority of respondents (n=84, 86.6%) believed that libraries should move into the latest technological environments as quickly as possible, seven (7.2%) stated that libraries should not, and six (6.2%) had no opinion. A related statement queried participants' reaction to their institution's progress in the implementation of technology. A little more than half of the respondents (n=51, 52.6%) felt that their organization's progress was at an even pace, 27 (27.8%) replied that their organization was moving too fast and 19 (19.6%) felt they were moving too slowly. Further analysis showed a strong association between type of institution and this statement. Librarians working in the private sector showed more satisfaction to-

Table 8. Causes of Technostress in the Workplace

Stressor	n (%)	Rank	M (SD)
Too little formal training (1)*	73 (88.0)	1	1.86 (.933)
Lack of technical support (2)	72 (86.8)	2	1.82 (.983)
Lack of professional staff (7)	75 (90.4)	3	1.77 (1.034)
Not enough equipment such as computers and printers (9)	73 (88.0)	4	1.75 (1.152)
Not enough involvement in the decision-making process (13)	66 (79.5)	4	1.75 (1.152)
A slow network (response time) (6)	70 (84.3)	5	1.69 (1.084)
Technological breakdowns (8)	75 (90.4)	6	1.65 (.951)
Growing user demands (14)	67 (80.7)	7	1.63 (1.153)
Information overload (15)	60 (72.3)	8	1.52 (.983)
Increased management expectations (12)	59 (71.1)	9	1.39 (1.145)
Health-related problems caused by technology (16)	67 (80.7)	10	1.36 (1.040)
Older technology (software, hardware) (4)	72 (86.8)	11	1.29 (1.080)
Lack of access to the latest (newer) electronic resources (5)	65 (78.3)	12	1.25 (1.046)
Things are too complicated (overall work environment) (3)	67 (80.7)	12	1.25 (1.035)
The rate of change is too slow (11)	65 (78.3)	13	1.17 (1.009)
The rate of change is too fast (10)	72 (86.8)	14	1.14 (1.011)

* Position on the original questionnaire

wards how their organization was implementing technology than did librarians working in government institutions ($\chi^2 = 10.056, df = 2, p = >0.05$).

Sources of technostress

The final statement on the questionnaire solicited data about sources of technostress. Participants were provided with 16 sources and asked to rate the level of stress for each item based on a four-point scale where (0) = not-at-all, (1) = low, (2) = moderate, or (3) = high. Of the 97 participants in the study, 83 completed this statement. The scale yielded a 0.898 cronbach alpha coefficient supporting its reliability.

Table 9. Reliability Analysis of the Groupings of the Categories

Category	Stressors	Cronbach Alpha
1. Management-related	1, 2, 3, 7,10, 11, 12, 13	0.787
2. Equipment-related	4, 6, 8, 9, 16	0.744
3. Information-related	5, 14, 15	0.666

The number of stressors to which a subject responded to, ranged from 1 to 16. An average of 10.2 items caused some type of stress for each respondent. More than half (n=43, 51.8%) of the respondents checked from 11 to 16 stressors. Furthermore, six (7.1%) individuals stated that an inadequate reward system was a source of stress, even though this was not listed as one of the stressors.

Table 8 lists the frequencies of the stressors checked, with the percent of individuals responding to the stressor. The most frequently checked items that participants rated as causing them the most stress were 'lack of professional staff' (n=75, 90.4%), 'technological breakdowns' (n=75, 90.4%), 'too little formal training' (n=73, 88.0%), and 'not enough equipment ...' (n=73, 88.0%). Stressors less frequently checked were 'increased management expectations' (n=59, 71.1%) and 'information overload' (n=60, 72.3%).

Mean scores were also determined for each stressor as indicated in Table 8. An examination of these scores showed that this group of individuals perceived their level of stress to be low to moderate. As illustrated in the table, not enough formal training caused the highest level of stress in the work environment closely followed by lack of technical support, lack of professional staff, not enough equipment, and noninvolvement in decision-making. Items causing the lowest level of stress concerned change in the workplace. Respondents were not very concerned about the rate of technological change.

For further analysis, the sixteen stressors were grouped into three categories. Internal consistency of the categories was estimated using the Cronbach coefficient alpha. Table 9 displays the categories, their reliability coefficient, and the stressors belonging to each group. Presented below is a description of the three categories:

1. Management-related category: assesses sources of stress regarding organizational policies and personnel issues.

2. Equipment-related category: measures how participants feel about the appropriate provision of equipment, telecommunications problems, and health concerns.
3. Information-related category: measures stressors concerned with information overload and users' abilities in a continuous changing environment.

The coefficients alpha, were respectively, 0.787 for the management-related category, 0.744 for the equipment-related category, and 0.666 for the information-related category. As Table 9 shows, categories one and two were in a highly acceptable range while category three had a coefficient that was slightly lower.

In order to understand whether levels of technostress differed across individual characteristics, the seven demographic variables were cross-tabulated with the three categories. The type of institution was significantly associated with management-related stressors ($t = 3.45, p = .001$), with equipment-related stressors ($t = 3.40, p = .001$) and with information-related stressors ($t = 2.59, p = .012$). The test indicated that participants working in private institutions experienced less technostress than those working in public institutions. For age, years of experience, work area and level of education, there were no significant differences observed. Tests results also indicated no significant relationship between the three categories and gender or the availability of training programs.

Discussion

The purpose of this research is to explore the effect technology has on librarians working in academic and research libraries in Kuwait. Consistent with prior research (Winstead 1994; Jones 1999; Poole & Denny 2001; Ennis 2005), this study affirms the position that library personnel in Kuwait, like their counterparts in American institutions, are optimistic about technology in the workplace. They appreciate technology, have no doubt that technology improves their job performance and are positive about the challenges that technology brings. In line with earlier works (Jones 1999; Poole & Denny 2001), however, participants also believe that there is a lack of positive feedback from management acknowledging their effort and performance. Despite an increase in the speed and accuracy in productivity that technology provides, most respondents feel the pressure of expanded workloads, while receiving minimal rewards for

their efforts. Almost all do not receive financial compensation and more than half of the participants do not benefit from any form of recognition. Failure to show appreciation for well-performed tasks can lead to low morale, dissatisfaction, and job lethargy.

From the respondents' reaction to stressors in the work environment and related statements, five common themes emerged, all related to management practices. Insufficient technology-related formal training programs are the single-most item causing the highest level of stress. In addition, very few individuals rate the quality of their institutional training programs as excellent. Furthermore, as librarians acquire more experience, they become less satisfied with the number and quality of training programs offered. The respondents in this study do participate in training activities and are strongly interested in formal programs; however, they believe that training opportunities do not keep abreast of technological advancement and the unprecedented expanding volume of available information. In the Poole and Denny (2001) study, the opposite was true; most staff expressed extreme satisfaction with training activities. Kupersmith (2005) reported, however, that lack of training sources is a cause of technostress and Jones (1999) found that very few library personnel perceived the quality of training programs to be excellent.

Inadequate technical support service is the next cause of higher stress levels. More than half of the respondents feel technical support in their institution to be average at best. Accordingly, inadequate technical support could be one of the reasons why the majority of the participants become frustrated by technological breakdowns. These results corroborate Bunge's (1987), Palmi's (1994), and Ennis's (2005) observation that the reliability of hardware and software is a major source of job frustration. Organizations require better than adequate technical assistance. The availability of qualified specialists and troubleshooters is essential to maximize systems accessibility and to provide a level of comfort to the staff.

In terms of personnel issues, respondents expressed concern about the lack of sufficient professional library staff in the workplace. This concern caused the third highest level of stress rated by participants. As stated by Kupersmith (1992), insufficient library staff levels will inhibit

the library's ability to provide little more than rudimentary services. It may likely lead to a workforce that is evasive and careless rather than involved and proficient. Academic and research libraries have a responsibility to provide a cadre of information professionals with strong competencies in public service, reference, and technical skills. In addition, staff loss is another concern. Half of the participants, however, do not feel that this situation is the result of technological change. Patterns of personnel loss in Kuwaiti academic and research libraries, however, are difficult to conclude from this study. If technology is not the cause in staff reductions, what is? Further exploration is needed to determine the what, who, and why of staff retention or attrition.

The institution's provision of equipment such as computers and printers is a relevant issue with academic and research librarians in Kuwait and ranks the fourth element causing technostress. Insufficient equipment affects the librarian's ability to provide efficient services and interrupts the workflow. Furthermore, not enough workstations and printers to meet patron needs causes frustration for the users. Overall, this situation creates rising tension and stress for both librarians and users.

Finally, librarians feel extreme disappointment when their involvement in the decision-making process is nearly nonexistent and their opinions are ignored. Respondents rate this as being the fifth highest cause of technostress. The results appear consistent with other studies (Winstead 1994; Jones 1999; Poole & Denny 2001). Being left out of such a process produces a feeling of dissatisfaction and malcontent. Participants, however, are emphatic that they want a larger active role. More involvement in the decision-making will create a more congenial work environment and produce greater satisfaction among staff. In addition, participation gives a sense that one has a form of control over policies imposed. It also encourages commitment that stimulates thinking and promotes cooperation in communication and planning.

The demographics of this group did not have any significant effect on how they rated the sources of technostress, except for type of institution. This suggests that those working in the private sector experience less technostress and therefore, are more satisfied. Similarly, the results also indicated, with only a few exceptions, that a per-

son's background was independent of his/her perceptions of and opinions towards technology in the workplace. What is surprising is that the participants' level of education is not significantly related to their stress level or their perceptions of technology. In developing societies, and Kuwait is no different, you will find a cataloger with a bachelor's degree working alongside a cataloger holding a high-school diploma. Likewise, someone with a bachelor's degree will be in a supervisory position over someone with a graduate degree. Yet, it does not matter the educational level or position of the participants, these individuals experience similar positive and negative feelings and attitudes when it comes to technology in the work environment. This finding emphasizes the importance that academic and research libraries in Kuwait need to address all issues in order to sustain and support the growth of technology in work processes, operations and services.

Conclusion and recommendations

Considering the ramifications of technology in an information environment, Kuwaiti academic and research libraries need to focus on strategies and plans that will produce a dynamic culture for both librarians and users. They must take practical measures to provide a stable, mutually respectful work environment and to ensure a technological infrastructure that facilitates the provision of fundamental library information systems to the academic and research communities. As presented in the discussion, overall contentment with technology exists; yet, several significant areas remain of concern to participants. Recommendations for improvement in these areas are the following:

1. Maintain a sufficient, skilled workforce; provide more and better technology-training to library personnel at all levels; design and implement training curricula that will empower librarians with the skills and abilities to benefit fully from the myriad of library information systems;
2. Expedite measures to provide timely technical support, collaboration with technical staff and regular upgrading of equipment and software;
3. Cultivate stronger communication mechanisms between all levels of employees;
4. Implement well-structured reward systems; librarians have genuine reward expectations, this should be reflected in commensurate financial compensation, written appreciation, and verbal recognition; and

5. Involve staff in choosing and integrating technology into work processes and practices; the trend is toward flatter organizations and hierarchy; decentralize the decision-making process thereby encouraging participative management.

Results from this study also indicate several areas where future research will have positive implications on technological advancement and improve the information center as a workplace. One area for further research might be to conduct the study using a larger sample and a broader geographical base. Another possibility is to replicate the study to include other types of personnel such as paraprofessionals. More attention needs to be directed toward how library personnel in this part of the world cope with technostress.

The sharp variation in responses to a statement on health-related issues linked to technology leaves the impression that librarians in this study are not quite sure of the repercussions. Therefore, an area for further study would be to investigate how technology affects the physical well-being of information professionals.

Finally, there is a need to develop and validate a sound measure of technostress for information professionals. Little research has been carried out in this area and such an instrument would identify the sources of technostress, thus contributing to the development of appropriate strategies for the integration of technology into the work environment. Researchers could use the instrument to examine differences among information professionals according to gender, level of education, area of work, and library experience. Furthermore, researchers could adapt the scale to use as a comparative measure of technostress in libraries from different cultural backgrounds.

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