Work Stress Among Information Systems Professionals In Manitoba

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ABSTRACT

The purpose of this research in progress is to assess the degree of reported job stress among IS professionals in Winnipeg, Manitoba, Canada and other Manitoba centres, and to determine which hypothesized factors are reported by a majority of employees as being major contributors to their stress. Analyses are currently being carried out to investigate a significant relationship between reported degrees of experienced stress, perceived stress factors, and personal characteristics of the employee, the computing environment (technical and managerial) and the employing organization. Preliminary results were reported in 1999; now, further results are presented and discussed.

INTRODUCTION

After a literature survey and a series of interviews with selected local IS workers, a "Stress Assessment Questionnaire".was developed, tested and administered to over 200 Information Systems professionals in Winnipeg.

Insights from this exploratory research should be of significant value to IS managers as well as to Human Resource staff. In today's competitive environment, organizations should indeed be interested in maintaining a work atmosphere conducive to creative effort. Some have taken rather 'radical' approaches , such as nap or meditation rooms, to help the employees remain contented and productive. Should such efforts be seen as experimental, or long overdue? Is there an 'epidemic' of work stress among IS professionals or does the workers' enjoyment of their work counteract stressful factors? This research attempts to provide initial answers as a springboard for discussion and further research.

MOTIVATION FOR RESEARCH

There is considerable reason to believe that the IS professional (applications programmer, data or systems analyst etc.) today is significantly more at risk of serious "burnout" than his counterpart of 20-25 years ago. In his 1984 effort, Technostress [2], Craig Brod points out that "high performance (requirements) with high technology can exercise a dangerous influence on the human personality... anyone who is constantly working or playing with computers is at risk". Psychologist Mary Riley points out dysfunctional behaviours arising when "high touch has not kept up with high tech". Khosrowpour and Culpan[11] have published a stress-related study applied to individuals working in computer-related fields. In it, they remark: "Information processing professionals see change in technology as a pre-requisite for their existence, yet the speed of this change can have profound psychological and physiological effects". In their survey with 231 responses, "a large majority agreed with the statements that change in computer technology creates pressure". The authors conclude that " the men and women who plan, design, and monitor these systems have experienced greater technostress in their jobs and environments". Such technostress is not at all likely to disappear in the foreseeable future.

Recently, an April, 1997 article by Robert Glass in Communications of the ACM [5], reports programmer stress as being "extremely common and extremely problematic" and points out that ".. *deep thinking is easily affected by stress*". Locally, a

number of IS professionals have echoed concerns about rising stress levels in their jobs and have indicated their willingness to be part of a concerted effort to provide stress relief. However, it is felt that before such a problem can be addressed with adequate, practical assistance, the existing problem must be better understood. Although considerable stress research literature exists in the context of organizational management in general, specific stress studies applied to the computer field are not abundant. In addition to the above quoted study, Ivancevich, Napier, and Wetherbe reported on "An Empirical Study of Occupational Stress, Attitudes, and Health Among Information System Employees"[8]. Stress management articles, such as the one by Kleiner and Geil[12], Engler[3], and Fujigaki[4] have appeared in computer professionals' journals.

RESEARCH METHODOLOGY

This research attempts to expand on the work of Khosrowpour and Culpan in analyzing not only the stress effects of rapid technological change, but also of factors such as re-structuring and / or downsizing of the IS department, apparent obsolescence of skills, stringent user deadlines, and lack of management support. As well, the research attempts to elicit information on attempted coping strategies and their degrees of success. Also, information on desirable resources and work condition improvements for stress management is gathered from the participants.

Literature review

The first phase of this project has involved a survey of stress-related research literature, particularly as applied to work in business organizations. Relevant articles have been collected, classified, and summarized (e.g., Igbaria et al.[6], Li and Shani[13], Singh[16], Sonnentag et al.[17], and Weiss[19]). Attempts were made to extract information as to: i) perceived causes of work stress (e.g. Jick and Burke[10]), ii) personal factors related to experienced work stress, iii) categorization of identified stressors (e.g. Ivancevich and Matteson[9]) and iv) effectiveness of efforts initiated to reduce occupational stress (e.g. Newman and Beehr [14]). Such a preliminary orientation provides an initial frame of reference for current work and could also initiate a Web-based catalogue, of occupational stress related literature. Such information could assist in specific stress management programs for IS professionals in the future.

Stress models applied to IS

In literature attempting to analyze stress within the IS profession, it is accepted that occupational stress is related chiefly to the interaction of the person factors with work environment factors. Ivancevich et al. [7] propose a model which first identifies Work Environment Stressors as related to i) Job (time pressures, job scope, obsolescence), ii) Role (ambiguity, conflict) iii) Career (development) and iv) Organization (rewards, change, communication). They then identify Person (Individual) Factors such as self-confidence, decisiveness, tolerance of ambiguity and locus of control. Stress ("the physical or psychological condition of a person that puts him or her under strain, and that threatens the person by stimulating him or her beyond their limits"[1]) arises from the interaction of Work Environment and Person Factors and results in Outcomes which can be classified as i) Psychological (satisfaction, commitment, tension), ii) Physical / Behavioural (blood pressure, cholesterol, smoking, drinking) and iii) Organizational (absenteeism, turnover). Young [20], in his study, has also applied an adapted version of this model. Wastell and Newman [18] present an eclectic model of work-related stress and organizational behaviour similar to the one above, cast in cause-effect terms. It identifies Sources of Stress at Work (physical working conditions, role factors, interpersonal conflict, over/under promotion, job insecurity and organizational change). These sources interact with Individual Characteristics, Organizational Context, and Work Group Factors, yielding Individual Symptoms (e.g., poor health, absenteeism, resistance to change, ego defense mechanisms) as well as Group Symptoms (e.g., groupthink, internecine strife).

Stress questionnaire

The second phase of the research involved the development of a "Stress Assessment Questionnaire" which was distributed to different types of IS workers in Winnipeg, Manitoba, Canada. The questionnaire, answered anonymously, is motivated by an adaptation of the model of Ivancevich et al. Work Environment factors considered include full or part-time work, and type of organization / industry, as well as rapid change in technology and methodology. Person factors include highest level of formal education, motivation factors related to the Enneagram personality types [15], and degree of emotional dependency on the job. Outcomes consider common physical symptoms as well as commonly experienced feelings. There is an opportunity for the person to assess (on a 7-point Likert scale) the degree of his / her experienced job stress, the degree of severity of common symptoms, and the degree of perceived contribution to this stress of commonly identified factors. Some of these factors are general enough to apply to a variety of occupations, while others are related specifically to facets of IS work.

In addition, respondents are asked for an assessment of their decreased productivity due to excessive work stress and for an identification of four most prominent stress factors. Respondents are also asked to identify and assess stress-relieving techniques which they have tried seriously. As well, they are asked to rank working condition improvements which would likely reduce their stress significantly and to identify most desirable IS stress relief efforts which could be undertaken by employing organizations and professional associations.

RESULTS IN PROGRESS

Questionnaire distribution has been ongoing since January, 1998. In the 1999 reported research-in-progress, 60 responses had been received and preliminary tabulations had been done. This (year 2000) second-stage report results from 191 responses. Following are highlights from both periods:

How stressful is your current position?

	1999 N=60	2000 N=191
Stressful	- 34%	53%
?	- 17%	15%
Not that stressful	- 49%	32%

How close to burnout are you?

Not close	- 70%	63%
?	- 11%	10%
Close	- 18%	23%

How reasonable are your deadlines?

Reasonable	- 45%	34%
?	- 11%	45%
Not reasonable	- 43%	51%

Is rapid change a characteristic of your job?

Yes	- 67%	57%
?	- 11%	10%
No	- 22%	33%

Has IS stress level increased in the last 8 years?

No	- 10%	8%
Moderately	- 23%	29%
Significantly	- 47%	45%
Dramatically	- 20%	18%

Why has it increased?

Rapid changes, need to perform more with less, increase in computer use, unrealistic expectations of users...

Commonly experienced feelings:

frustration
pride in accomplishments
being overwhelmed
anxiety

Common stress symptoms:

decrease in energy
anxiety
muscle tension
headaches
upset stomach
negative thinking
insomnia

Are IS managers not aware enough of employee stress?

	1999	2000
Yes	- 39%	38%
?	- 28%	26%
No	- 33%	36%

Is there significant absenteeism due to stress?

Yes	- 54%	51%
?	- 30%	30%
No	- 16%	19%

Should there be a specific effort to combat stress in the IS profession?

Yes	- 50%	54%
?	- 31%	33%
No	- 19%	13%

In addition to reporting response frequencies for several key questions, a number of cross-tabulations have been performed. Following are noteworthy results:

Crosstabulations:

1. A: Foresee having major health problems within:

   A1: Don't foresee health problems
   A2: within 2 years
   A3: in 2-5 years
   A4: in 5-8 years

   B: Have difficulty to stop thinking about job at the end of the day:
   B1: No
   B2: Neutral
   B3: Yes

1.	B1	B2	B3
A1	44%	39%	17%
A2	17	17	67
A3	0	50	50
A4	21	43	36

Clearly there is a association between having difficulty "turning off" and expecting to have a significant health problem (chi-square <.001)

2. A: How productive are you as compared to how productive you would be without excessive job stress?

A1: 90-100% as productive
A2: 70-89%
A3: 50-69%
A4: <50%

B: How satisfied are you with your work?

B1: Not satisfied
B2: Neutral
B3: Satisfied

2.	B1	B2	B3
A1	9%	34%	67%
A2	8	63	30
A3	21	54	25
A4	0	75	25

An association between job satisfaction and perceived productivity decrease due to stress seems evident (chi-square .004)

3. A: How stressful is your job?

A1: Not stressful
A2: Neutral
A3: Stressful

B: IS managers are not aware enough of excessive stress among their subordinates.

B1: Disagree
B2: Neutral
B3: Agree

3.	B1	B2	B3
A1	38%	38%	24%
A2	40	25	35
A3	15	24	62

It appears that as the degree of job stress increases so does the perception that IS managers are not aware enough of such stress (chi-square .013)

4. A: Gender

A1: Female
A2: Male

B: Experience of decrease in energy on the job

B1: Little or no decrease
B2: Moderate decrease
B3: High decrease

4.	B1	B2	B3
A1	22%	52%	26%
A2	32	58	11

It would appear that more females suffer a high degree of energy loss on the job (chi-square .041)

5. A: Rapid change is a characteristic of the job

A1: No agreement
A2: Moderate agreement
A3: High agreement

B: Degree of commitment to employer

B1: Low
B2: Moderate
B3: High

5	B1	B2	B3
A1	3%	27%	70%
A2	4	48	48
A3	7	52	41

Here, as the amount of change on the job increases, the degree of commitment to the employer seems to decrease (chi-square .091).

The above are samples of interesting, though exploratory insights regarding work stress issues among IS professionals. Work is ongoing to establish more apparent relationships.

An important question, of course is: "how representative are these results of the population of IS workers, at least in the Winnipeg area?" Only 53% said they found their jobs stressful. *Is this representative or are the results considerably biassed because of non-response by many significantly stressed workers*?

To gain insight, a short poll was conducted on the Web, as part of a recently established IS Wellness Web site. With only 23 respondents to the poll question "How stressful is your job?", 74%, as compared to the survey's 53%, responded with agreement. This result seems more intuitively appropriate. If such is the case, a number of additional considerations arise and the concerns highlighted in this research may be even more widespread and more worthy of the profession's attention.

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