

Psychological assessment of IT personnel for investigating employee preparedness for disaster recovery operations

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Abstract: - Disasters are relatively common occurrences, but their impact on the psychological state of the victims in relation to job performance is still controversial. The operational importance of certain business units, such as IT departments, requires that the most tolerant individuals be identified and assigned critical positions. This will maximize the probabilities for a successful disaster recovery plan and ensure business continuity. The purpose of this study was to research IT technical personnel for their eligibility to perform high reliability tasks in disaster recovery assignments and posts in the next twelve months. In order to come up with an index that would predict employee predisposition and responsiveness to stress related situations the Social Readjustment Rating Scale (SRRS) has been adopted as the instrument of measure of the current psychological state of IT personnel. The findings provide guidelines for early detection of individuals at risk for developing emotional and physical symptoms during a disaster. This will guide the development of selection criteria and procedures that should be established for screening personnel and evaluating their potential effectiveness in crisis management.

Key-Words: - Disaster recovery, psychological assessment, information technology personnel

1 Introduction

Business organizations have been dealing and preparing for disasters as part of their regular operations. To develop successful responses to disruption events, organizations dedicate much time and effort in developing Business Continuity Plans (BCP). Further, due to the importance of business continuity especially in sensitive sectors such as banking, governments have imposed specification requirements [1], [2], [3], that organizations need to comply with. As is always the case with business organizations, the bureaucratic, operational and management aspects of business continuity planning are affected by employee perception and behavior. Past experiences show that technical people tend to overestimate the value of a technical BCP, and

underestimate the crucial human factor involved in applying BCP. Continuity planning crosses several organizational role boundaries, and responsibility for its performance may fall on people who declare "ready" to take on any role in disaster recovery, but prove to be inadequate to do so in time of crisis.

A previous research initiative [4] has shown that the effect of disasters in different individuals varies and is a situation influenced by many parameters. The operational importance of certain business units requires that the most tolerant individuals be identified and assigned critical positions [5], [6], [7], [8]. This will maximize the probabilities for a successful recovery and ensure business continuity.

When it comes to evaluating human responses to disaster situations the rule of thumb is that *everybody* is affected by a disaster. Victims tend to

primarily develop symptoms of Acute Stress Disorder (ASD) or Post-traumatic Stress Disorder (PTSD) [9]. The risk factors for developing ASD or PTSD can be summarized in the following pre-traumatic factors: Ongoing life stress, lack of social support, pre-existing psychiatric disorder; other pre-traumatic factors including: female gender, low socioeconomic status, lower level of education, lower level of intelligence, race (Hispanic, Japanese, other Ethnic minority), reported abuse in childhood, report of other previous dramatization, report of other adverse childhood factors, family history of psychiatric disorders, poor training or preparation for the traumatic event.

2 Business Continuity Requirements

Continuity business planning demands several organizational role boundaries and responsibility for its performance that do not usually fall on any one role. Commitment to the process is vital and a key figure needs to direct and sustain the whole process. The focus of risk assessment in organizations most of the time is on potential business exposure to disasters and often fails to evaluate the organizational risk environment [6]. This process is limited in providing enough information to identifying salient hazard characteristics (e.g. threat nature and duration, perceived control, communication and co-ordination problems, exposure to traumatic stimuli, lack of opportunity for effective action, equipment failure, resource inadequacy; media coverage; higher than usual responsibility, and inappropriate management practices [10], [11]. These demands, act on staff and operational systems to influence, rather than prescribe, the risk status of staff.

Based on the ISO 2000, Paragraph 6.1.2 standard [1] a formal process of personnel screening involves simple verification checks that are primarily take place at the time of job applications. These include the following controls:

- a) availability of satisfactory character references, e.g. one business and one personal;
- b) a check (for completeness and accuracy) of the applicant's curriculum vitae;
- c) confirmation of claimed academic and professional qualifications;
- d) independent identity check (passport or similar document).

Where a job, either on initial appointment or on promotion, involves the person having access to information processing facilities and in particular if these are handling sensitive information, e.g.

financial information or highly confidential information, the organization should also carry out a credit check. For staff holding positions of considerable authority this check should be repeated periodically.

Further, the ISO standards suggest for managers to be aware of personal circumstances of their staff that may affect their work. Personal or financial problems, changes in their behavior or lifestyle, recurring absences and evidence of stress or depression might lead to fraud, theft, error or other security implications. Extending this notion it is evident that stressful events that can lead to physical or emotional distress would minimize the personnel's ability to effectively handle disaster situations.

3 Research Methodology and Results

The aforementioned presentation indicates that there is no formal procedure or test to evaluate personnel for disaster preparedness in the IT sector. The need for such a tool becomes more critical for personnel involved in high reliability operations. Based on the above observations we carried out a survey of IT personnel in order to identify possible groups with the potential to become ill during the next year from the time of administration of the test. A great number of screening tests exists for the identification of stress prone individuals. These include but are not limited to Primary Care PTSD Screen [12], PTSD Brief Screen [13], Short Screening Scale for DSM IV PTSD [14] and Social Readjustment Rating Scale (SRRS) [15].

For our purposes we selected for administration the SRRS which is a well documented and validated test that gives some indication as to whether the subject will predisposed to develop some kind of illness due to life stress. For the development of the scale Holmes and Rahe [15] asked subjects to estimate the social readjustment induced by life changes. This scale has been used to study the correlation between stress and health. The sum of life changes in a certain interval can be correlated with health changes following that interval. Although such correlations may or may not be due to causal effects of stress on health, the predictive possibilities alone stimulate great interest in the measures. These scales and empirical correlations have been discussed from different viewpoints by a number of authors [16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26].

The scale was distributed to a group of 60 IT professionals that were attending the CCNA [27]

and CCNP [28] Cisco certification courses at the Hellenic American University during the Fall and Winter terms of 2005 and 2006 respectively. All of the professionals are or were going to have positions as network technicians and administrators. Those positions are considered critical in the event of a disaster and the personnel's ability to maintain operational or shut down critical network structures is vital.

The SRRS score of the questionnaires was calculated using Microsoft Excel. According to the interpretation provided by Holmes and Rahe [15], if someone gets a score of 300 or more they stand an almost 80% chance of getting sick in the near future (next year). If someone scores between 150 to 299 the chances are about 50% while at less than 150 the chances are about 30%. The scale seems to suggest that change in one's life requires an effort to adapt and then an effort to regain stability. For our purposes we've set up an upper limit of 500 to eliminate extreme or erroneous cases.

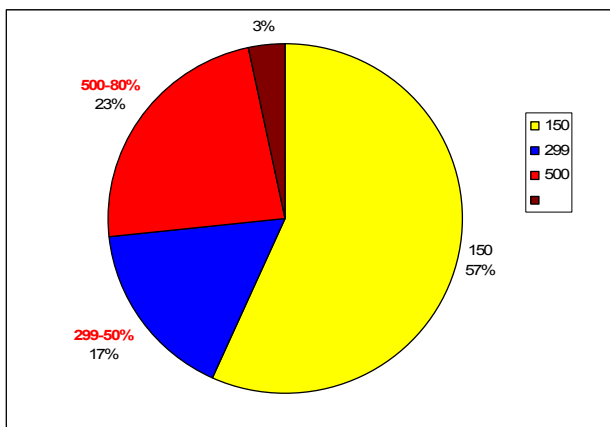


Figure 1. Distributions of SRRS score results

As shown in Fig. 1, 23% of our sample population scored above 300 which can be interpreted as that 23% of them are experience stressors at the time of test administration that increase by 80% their potential of becoming ill during the next year because of those stressors. As is natural, illnesses will lower the performance levels expected for people in high reliability positions with the results that ineffective responses to disasters are possible.

4 Conclusions

It is evident, from the initial analysis that organizations have seriously considered business continuity and disaster recovery plans from the technical system point of view by arranging for substitute or backup systems and procedures, while the staff capability to operate under adverse disaster

conditions has not been addressed with equal importance.

The research that was conducted and the results obtained indicate that a percentage of the IT personnel that took the test are exposed to stressful life events that could lead to the development of some kind of illness over the next year. The onset of the illness will have a probable effect on their ability to perform exposing in this way the business to potential dangers and the ineffective implementation of a BCP.

In an HR context, continuity planning can use vulnerability data for screening staff. On one level, this involves considering the "multicultural" demands staff are likely to experience. For instance, older staff, ethnic minorities, single parent families and staff with young children could face increased demands [29] making them less suitable for filling key response roles. On another level, screening can use vulnerability data to anticipate the post-disaster capabilities of staff [30], [31]. Finally, screening can identify individuals that could benefit from appropriate therapeutic support and understanding that will better help them to cope with stressful life events and maintain their job performance and responses to the required level of their job positions. Assessments should include diagnosis of emotional disorders and assessments of past and present vulnerabilities and strengths which compound with current stress and trauma consequences. Continuity planning has to evaluate the vulnerability data from the screening of the staff on dispositional factors to develop ASD/PTSD that may affect the vulnerability of the crisis intervention staff. In the same manner, a BCP concerning critical staff roles must be established in order to ensure the existence of this minimal critical staff in indispensable roles for the operation of the BCP. Because of the high prevalence of psychiatric co morbidities in the PTSD-prone population, assessment for depression and other psychiatric co morbidities is warranted. Also, substance use patterns of persons with trauma histories or PTSD should be routinely assessed to identify substance misuse or dependency (alcohol, nicotine, prescribed drugs, and illicit drugs).

5 Recommendation for Future Research and Practice

While developing the administrative and technical resources required for disaster, business continuity is a priority item for organizations, ensuring the availability of staff capable of operating high reliability systems as part of a crisis management

plan. Given the difficulty in predicting the nature of the hazard likely to affect an organization, these issues should be considered within an all-hazards framework designed to facilitate an adaptable response capability.

The future focus of research in this area will be in identifying attributes of the different roles and factors which influence staff ability to manage or supervise disaster recovery activities. Selection criteria and procedures should be established for screening personnel and evaluating their potential in crisis management. Investigation of reliable approaches such as semi structured interviews and personality testing for disaster recovery personnel should be pursued at an academic and practical level. Both academic research and practical field testing must be part of developing and establishing any disaster recovery personnel testing protocol.

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