

Organizational Work Factors among Workers and Supervisors in Export Processing Zones which Support Global Markets

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ABSTRACT

This is an investigation of the interaction between organizational and management factors at work for both workers and supervisors in the manufacturing sector. Survey was done in a sample consisted of 23 establishments, 630 workers, and 47 supervisors ,meanwhile 10 focus group discussions (FGDs) for workers, and 5 FGDs for supervisors. Workers and supervisors alike reported illnesses and job dissatisfaction. Survey showed that the most prevalent issues among workers were: the need to upgrade skills (76.3%), pressured in doing work (60.5%), fast paced work (60.5%), repetitive work (63%), and that work is both physically and mentally tiring (59.7%). On the other hand, supervisors described their work as challenging and stimulating (66%), needed regular upgrading of skills (46.8%), and needed literacy on information technology (31.9%). Focus group discussions showed that workers and supervisors were confronted with stress, fast-paced work, the need to upgrade skills due to accommodation of information technology into the work production, fatigue, re-engineering and downsizing by management, low job control and difficult worker-supervisor relationship. This study was able to show that health of workers and supervisors were affected by both organizational and management factors at work.

Key Words: Organizational and management factors, health hazards, workers, supervisors, information technology, globalization, export processing zones

INTRODUCTION

With the furtherance of the gains of industrial revolution and the technological application in various industrial sectors, competing theories have emerged in relation to how the new work organization and technological innovations in the workplace affect the working lives of the workers. There are three main perspectives based on literature review.

First, Braverman describes work as routine and repetitive that includes boring tasks in the labor process theory. Labor becomes very cheap, routinely monitored and supervised to

the last detail, and easily dispensable and replaceable ¹⁾. In this new industrial system, it is mainly the managers who control the work organization. Using Braverman's theory, the labor process can be analyzed in terms of four components: 1) nature of work tasks being that of routine and repetitive, 2) job autonomy- control over the method and performance of work content of the job 3) content of the job such as deskilling of particular jobs, and 4) the level and type of control exercised by management over labor ²⁾. The nature of task in this study was conceptualized as the subjective evaluation of work such as feelings of having boring and repetitive job, stressful jobs, feeling rushed, conflicting demands, pressured to meet deadlines, and the need to learn skills just to keep up. On the other hand, content of the job related to the evaluation of the physical aspects of work such as task that involves multiple skills, tiring visual inspection, requires physical exertion, requires awkward position, requires concentration like visual inspection, or requires use of chemicals, requires use of machines that emit radiation, noise, vibration or heat.

Second, as a polemic perspective, Taylorism or the "Postindustrial Theory" states that the new work organization that liberates work from repetitive and routine tasks produce a stable, well compensated, secure and autonomous labor force ²⁾. The new industrial sector requires a polyvalent and flexible workforce.

Third, the "decentralized management style" ³⁾ contends that assembly-line workers are increasingly involved in the production and decision making process. In management philosophy, this is referred as "democratic style" of management advocating for a participatory approach and a continuous redefinition of tasks through interaction among members. Examples of new organizational methods include: the Just-in-Time system (JIT) and the total quality management (TQM). ⁴⁾ For the workforce, this in turn demands managerial and technical skills, working in teams, and collaborative discussions.

This study focused on the export zones since many Filipinos are employed in this sector. Export zones host multinational companies that operate and hire Filipino laborers. This is a strategy adopted by the government to attract multinational investment in the country. Benefits given to transnational corporations (TNCs) in export zones in the Philippines include 100 per cent ownership, no duties, no taxes nor license fees on imports to the zone, the privilege to borrow from Philippine banks, no taxes on exports, no minimum investment requirement, and unrestricted repatriation of capital and profits ⁵⁾

The objectives of the study were: 1) to investigate the interaction of various organizational and management factors in the new work organization; 2) to look into possible interaction between organizational factors and perceived health of workers and

supervisors; and 3.) to look into the difference of management styles and organizational factors among industry sizes (small, medium and large).

METHODS AND MATERIALS

This was a cross sectional study conducted over a period of time including verification of data from 2002 to 2006. The sampling frame was taken from a list of 23 establishments in the electronics and garment industries in export zones in Cavite and Laguna. Only those who work in the electronics and garment industries were included in this study since application of information technology in work production is very apparent.

The entire population of workers from the sampling frame was based on estimation of workers, and using the corresponding equation below*, and a level of significance at 90%, set at 0.10, and the corresponding sample chosen was 630 women workers and 47 supervisors in 23 industries. level of significance at 90%, the alpha was set at 0.10, and the corresponding sample chosen was 630 women workers and 47 supervisors in 23 industries. The samples were selected through stratified random sampling based on the type and size of industry. Type of industry included the garment and electronic industries. For the size of industry, categories used by the Department of Labor and Employment were used such as small-scale, medium-scale and large-scale industries. The small-scale industries are those that employ less than 100 workers, medium-scale are those that employ between 100-199 workers, and large-scale are those that employ 200 or greater number of workers. Thus 6 strata resulted in the combination of these categorizations of type and size of industry. Based on a proportionate sampling, there were a total of 13 electronic industries and 10 garment industries.

*The sample size was calculated using the equation
$$n = \frac{NZ^2 \times p(1-p)}{Nd^2 + Z^2 \cdot p(1-p)}$$

Z= the value of the normal variable for a reliability level of .90. This means having a 90% reliability in obtaining the sample size.

P= .50 (the proportion of getting a good sample)

1-p= .50 (the proportion of getting a poor sample)

d= sampling error

N= population size

N= sample size

Based on the actual workforce at the time of survey. Males consisted of 18.8% of the

entire workforce while females comprised 81.1%. the sampling rate in the study was 8.5% when both males and females are considered. It is however 10.5% when only females are considered in the study.

The study focused on women workers for the assembly line type of job while both males and females were included for the supervisory type of jobs. This was done because women now dominate the workforce in export processing zones. At the supervisory level, males are now increasingly employed.

The organizational factors were operationalized in this study as nature of task, content of job, hazard exposures, nature of supervision and management styles, and job autonomy. Data on organizational factors and issues were taken using interviewer-guided survey questionnaires and focus group discussions. Health information, on the other hand was taken from the self assessment of the health status of the workers. The categorization of health self assessment was also based on the existing health form used by the Department of Labor and Employment (DOLE). Descriptive statistics were used. Data were encoded and analyzed using SPSS 13.0.

The focus group discussion (FGD) was composed of 6-7 women where a labor representative was invited. Focus group discussions were done to investigate on deeper issues that the survey questionnaire was not able to capture. A total of 10 FGDs were conducted for the workers and 5 FGDs for the supervisors.

RESULTS

A total of 23 industries (13 electronics industries and 10 garment industries) were taken from the list of semiconductor and garment industries located in export zones. For the industry sizes, 5 were small industries, 5 medium scale and 13 large scale industries. A total of 630 workers with a mean age of 27 years old and most were 24 years old (mode) showing a relatively young study population. All the respondents for workers were females since the labour force in export zones consists mainly of women. Employers prefer women as they are believed to be docile, ambidextrous, less unionized and more adept at minute and detailed work such as those required in garment and electronics industries. Majority of the respondents were single (64.4%) while only 32.1% were married.

For the 47 supervisors, 24 supervisors or 51 % belonged to the garment industry while 23 or 49% were in electronics industry. Majority of the supervisors were females, accounting for 31 individuals or 66 % of the population while only 16 or 34 % were males. Although

there were more female than male supervisors, it is the latter that held higher supervisory positions. More than half of the supervisors were married (57.4%).

For information technology (IT)-based devices and programs, the most common were microelectronic equipment (91.3%), controllable programmers (82.6%), computer aided design (82.6%), numerically controlled machine tools (73.9%) and robotics (60.9%). Microelectronic equipments are those that have integrated circuit for operation. Controllable programmers are equipments that can be programmed for the number of cuts in a garment, or the number of integrated circuits to be manufactured per unit of time. The computer aided design equipments were mainly used in the garment factories where computers assist in the varieties of designs and cuts of clothing and apparels for various sizes and population characteristics. The tools such as cutters and drillers can also be programmed for its operation and are called numerically controlled tools. Robotics were used for execution of some tasks that were traditionally done by labour power. The line of production where IT was introduced is in the assembly of whole parts and products (91.3%). This is followed by assembly of component parts (65.2%), fabrication of model parts (52.2%), and sales and marketing (60.9%). Design as well as research and development were the least at 39.1% and 30.4% respectively.

On the nature of task, the most prevalent issues among workers were the need to upgrade skills (76.3%), pressured in doing work (60.5%), fast paced work (60.5%), repetitive work (63%), and work entailed both physically and mentally demanding tasks (59.7%).

For job autonomy, the workers said that the autonomy to decide how to finish the job (76.5%), how fast to work (64.9%), and how much to accomplish (59.2%) were prevalent. On the content of the job, the workers reported that work requires much skill (87.3%), much concentration (81.7%), and strict visual inspection (59%).

For hazard exposures, workers in the electronics industry reported the following hazard exposures: high temperature (58.1%), intoxicating odor (42.9%), cold temperature (28.9%), and noise (33%). For illnesses and health problems among workers, the most prevalent were headache (76.2%), followed by body ache (73.2%), coughs and colds (68.6%) and eye problems (36.5%).

For the benefits of work, being able to assist or help their family was reported highest at 85.4% followed by having self worth (52.2%), gives personal strength (33.3%) and gives freedom to decide (31.4 %). With respect to task autonomy, supervisors said they gave reprimands to workers (63.8), sanctions or rewards related to salary and promotions (57.4%),

expulsion or suspension of worker (53.2%), contribution to organizational goals (38.3%), and participation in benchmarking (27.7%).

In the aspect concerning budget, only 46.8% had allocated budget for their departments. However, authority of where the budget will be allocated was minimal (19.1%). The supervisors described their work as challenging and stimulating (66%), needed regular upgrading of skills (46.8%), and needed literacy on information technology (31.9%).

For the frequency distribution of illnesses among supervisors (Table14), the most prevalent illnesses among females were anemia (100%), abortion (100%) and skin allergy (83.9%). For males, it is wounds (75%), eye problems and urinary tract infection (both at 31.2% each). The prevalence of anemia, abortion, skin allergy and urinary tract infection is higher among supervisors than workers. This can be attributed to the 'healthy worker effect' where pre-employment medical examinations are less stringent for supervisors than workers. Supervisors are primarily selected based on their previous supervisory training experience. While workers are selected based on their physical capability to work. The 'healthy worker effect' could have led to selection of healthy workers relative to the population of applicants for the job.

Results of Focus Group Discussions (FGD)

The results of the 10 FGDs among women workers showed that they are exposed to hazardous chemicals at work (100%), have work overtime (90%), have fast pace of work (80%) and have chronic sleep debt (50%). The results, on the other hand, of the 10 FGDs among supervisors showed that they have many responsibilities (80%), their companies have adopted benchmarking activities (70%), use re-engineering techniques (70%), adopted newer organizational strategies such as just in time production and zero inventories (70%), have adopted ICT in various aspects of production (60%), and their companies have undergone restructuring (50%).

ANALYSIS OF DATA

In the light of global industrialization, much attention has been focused on occupational factors and their influence on the health and welfare of workers. Previous studies have correlated such factors with a wide variety of physical and psychophysiological disorders that

impair human well-being and hamper one's ability to carry out responsibilities both at work and at home ^{7, 8)}. In particular, investigators have turned their attention to organizational variables and work hazards as possible sources of illness and distress among the working population. Both have been documented to be significant sources of occupational stress ⁹⁾ and predictors of the occurrence of occupational injuries ¹⁰⁾ both of which can lead to illness and disability. This study showed that there have been changes in the organizational structuring of industries such as in the content of job, physical work environment, nature of task, nature of job autonomy, and relationships with supervisors and management.

Good relationship among colleagues is considered a central factor in individual and organizational health. A study of workers in the offshore oil and gas industry found that 'teamwork' and good interpersonal relationship at work were rated as the most important quality in the job ¹¹⁾. It stated that feelings of security and confidence were generated by the sense of belonging to a stable work crew. In this study, the workers reported of strict supervision and close monitoring by supervisors which led to stress and lack of good interpersonal relationship.

This study confirms findings of other researches on dissatisfaction with the organizational structure, lack of job control and poor physical environment ¹²⁾. On the other hand, another study showed factors linked to well being and job satisfaction included skills utilization and good interpersonal relationships ⁽¹²⁾.

The combined effect of high job demand and low job control such as low decision latitude and low skill discretion could lead to feelings of fatigue and boredom. In the study of Sutherland and Cooper, monitoring was done over the entire working day among electronic assembly line workers to measure boredom. The continuous electroencephalograph consisted of deactivation episodes which points to boredom according to the authors ¹²⁾. Downsizing was also noted in the study. In the study of Nakashini et.al. negative attitudes towards the job and organization were manifest as a result of downsizing ¹³⁾.

Occupational stress has consistently been related to the incidence of psychosomatic disorders and mental stress ^{14, 10)}. It was seen that job-related demands and work organization (excessive work, strict supervision, dangerous work, unnatural positions, and intense and hard physical labor) were intimately linked to mental and psychosomatic disorders and fatigue ¹⁵⁾ Moreover, it was found that the ill effects of these occupational stressors were additive, and sometimes even synergistic. Other studies have also found occupational stress to be directly associated with state of health, and inversely associated with global constructive thinking and job satisfaction ¹⁶⁾. There are means of improving working

condition and lessening its undesirable health effects. Kato, et al. (2004) advised mental health check-ups, counseling and education on stress-coping skills in the early stages of psychological stress in order to retard the development of stress-related mental health disorders.¹⁷⁾

The health effects of work hazards and organizational factors span a wide variety of physical and psychophysiological disorders that impair human well-being and hamper his/her ability to carry out responsibilities both at work and at home. This was seen in the work of Tamez et al.¹⁸⁾ In other studies, it was reported that poor organizational factors are related to higher blood pressure (BP) and unfavorable cardiovascular profile¹⁹⁾. Long hours of working has also been found to cause hypertension among Japanese white-collar workers²⁰⁾.

Advances in computer technology have also had tremendous impact in the way management organizes its workplace and how workers organize themselves. Workers and supervisors reported that their tasks have been facilitated by IT, but it has also intensified their work and increased their production quota. There is also an added need to upgrade their skills to keep up with the demands of IT. Beutel, et al. (2004) has shown that a high degree of stress was associated with the introduction of computer technology at the workplace in older employees aged 50-59 years.²¹⁾ With the introduction of rapid technological innovations, many work organizations have 'streamlined, downsized or right-sized in order to meet the demands of a very competitive market. With this, many employees were made redundant. Contemporary work organizations now place a high level of demand on workers within the new framework of lean production.

CONCLUSION AND RECOMMENDATION

The study has shown that there are changes in the studied industries in regard content of the job, nature of tasks, level of job autonomy, and the type of supervision and management in the workplace. The health data of workers and supervisors in export zones in the Philippines were also shown.

The new work arrangements, organizational structure and new technological applications were seen in the study to affect health. This concern needs to be considered in the formulation of broader policy framework for women workers. The characteristics now of the new workplace include information technology intensive work, fast pace of work, the need for up-skilling, and super-speed communications. There are many new organizational strategies that management and supervisors have adapted such as "just in time production, zero inventory, re-engineering, use of information technology and flatter organizations to

reduce stress and waste in companies.

This study serves as a baseline data in understanding the health and working conditions of both workers and supervisors in a workplace that is IT dominated. It is important to come up with standards of work to address the issues raised here, especially as it represents workers' and supervisors' perceptions and experiences in a developing nation that accommodated economic globalization. It is important that new organizational strategies be developed and implemented to reduce the hazard exposures of workers and improve organizational and management factors, in order to achieve highest level of health in the workplace.

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