

Stress Level on the Organization of Woman Engineering Supervisors of Selected Electronics Manufacturing Industry in Laguna

Josephine A. Villamin

josephinevillamin@lspu.edu.ph

Laguna State Polytechnic University, Brgy. Bubukal, Sta. Cruz, Laguna, 4009, Philippines

Abstract

A scrutiny of the stress level on the organization as perceived by some woman engineers in the selected electronics manufacturing industry in Laguna was undertaken. This research aims to determine the stress level on the organization of woman engineering supervisors of selected electronics manufacturing industry in Laguna. The sample consisted of seven (7) establishments; sixty-six (66) supervisors were taken. Among them belonged to 20-27 years old age bracket, they are mostly single, and almost all of them earned their Bachelor's degree in Engineering, had a length of service of 1- 5 years, Junior and Senior Engineer, 1-5 number of employees undertaken, 4-6 years as Engineer in the company, and 8-12 hours average of actual work. The work content assessment of the respondents revealed that workload and work pace, participation and control, role in organization, interpersonal relationship and organizational culture had a low stress response; while, working hours category had a moderately high stress. There was a significant difference on the level of organizational stress of woman engineer supervisor in terms of age, civil status, highest educational attainment, number of employees under direct supervision, number of working hours in the company and length of service; consequently, there was no significant difference on the level of stress of the respondents in terms of their level as engineer and number of years as engineer in the company. The effects of organizational stressor to the respondents were increased irritability; whereas, serious illnesses such as heart disease were seldom experienced.

Keywords: stress of woman engineering supervisors, electronics manufacturing industry, work content, organizational factors

1. Introduction

Industrial engineers devise efficient systems that integrate workers, machines, materials, information and energy to make a product or provide a service. Apply their skills to many different situations, from manufacturing to healthcare system to business administration such as evaluating job performance.

Throughout the world, women make a vital contribution to industrial output. Over 200 million women are employed across industry sectors, with half of this number in developing countries. Their work not only sustains their families, but also makes a major contribution to socio-economic progress. Most women are employed in low-skilled, poorly paid positions, where they are often exposed to health hazards. On the other hand, people are seeing the advance of an increasing number of highly educated women into senior decision-making positions. The creativity and talents of all women are an invaluable resource, which can and should be developed both for their own self-realization and for the benefit of the society as a whole (Asenbauer, p.2.).

According to the National Institute for Occupational Safety and Health (NIOSH) survey, 60% of employed women cited stress as their most serious problem at work. Working outside the home and balancing a family create conflicts between work and family obligations which become a likely cause of stress for women. While stress may be a problem among working women in general, it seems highly probable that women who function in leadership positions may experience additional stressors. Consequently, this study focused on investigating the stressors of women who currently function in leadership positions and the coping strategies they use to combat stress within corporate America, education, and government agencies.

Work stress is a major cause of stress for many people. The causes of stress at work, the signs and symptoms of workplace stress and what one can do about job stress are examined. A person got an irate boss hounding for yesterday's report. One is working long hours and taking work home - under pressure with tomorrow's deadline. No wonder job stress is one of the fastest growing causes of stress. Approximately 25% of employees found that workplace stress was the number one cause of stress in their lives (Infobuzzpedia: Beating work Stress: Health Tips, 2016).

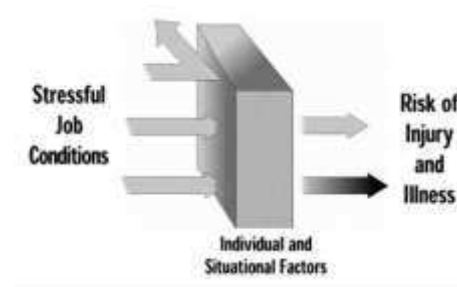


Figure 1. NIOSH Model of Job Stress (Source: NIOSH, 2014)

There are power dimensions to all this, such as those found in gender. Contrary to stereotypes about women being more expressive, Filipinas are actually more prone to dealing with stressful situations through *tiis* (endurance) and *kimkim* (repression) (Tan, 2006).

Number of female workers in manufacturing also rose in 2010 from 438 thousand in 2009 to 447 thousand in 2010, representing a growth of 2.1 percent (Gender Fact sheet: Literacy of Men and Women in the Philippines, 2013).

Four decades ago, women who worked as managers and executives belonged to the minority. Today, there is a growing figure of women who have started their own businesses and are positioned in local and national seats of government (Perez, 1998).

"A Study Of Job Stress Level Among Engineering Professionals Working In Manufacturing Sector In India" by Dikshit (2014) stated that about 26% of respondents showed "moderate job stress", 68% were having "very stressful occupation" and 5% had an "extremely stressful" occupation. The mean job stress levels of female and male professionals were 134 and 123 respectively. 91.5 % of respondents did not participate in stress management courses. About 70% of respondents were suffering from very stressful occupation (VSO) or extremely stressful occupation (ESO). This will give an idea about conducting stress reduction programs among engineering professionals.

Another study was undertaken to discover working public thoughts about the roles of United States women in leadership positions and to test the relationship between managerial leadership styles and organizational effectiveness (Elmuti, Jia and Davis, 2009).

About 35% of the participants experienced some type(s) of work-related musculoskeletal disorder(s), which were more prevalent in Vietnamese women than in Thai and Filipino women. Women who preferred to maintain their own heritage and to reject the host country heritage were at risk for work-related musculoskeletal disorders (Lee, 2011).

Female retention in engineering continues to be a problem. Even after overcoming hurdles to enter the profession, women leave at much higher rates than men. One reason for this is that, on top of their typical work tasks, women also often feel stress related to being female in a male-dominated field (Cardador et al 2018).

Stressed women engineers have low tolerance of staff's misconduct, have suffered from estrangement, physical and emotion defenselessness, have reduced commitment to that organization, and have thought a lot about learning the position. It is for these reasons that this study was conceptualized.

1.1. Method

Descriptive method of research was employed in this study. Purposive sampling was applied in this study. The sample consisted of seven (7) establishments in selected electronics manufacturing industry in Laguna; sixty six (66) woman engineering supervisors were taken. A survey questionnaire was the primary tool in data gathering. It was referenced from the Management Standards Indicator Tool produced by the HSE (Health and Safety Executive) protecting workers' Health Series No. 3, 2004 by the World Health Organization. The Management Standard defines the characteristics, or culture, of an organization where the risks from work-related stress are being effectively managed and controlled. The questionnaire consisted of the following parts: Part I pertains to personal data sheet which was used to assess the woman engineers' profile on age, civil status, highest educational attainment, length of service in the company, level as engineer in the company, number of employees under direct supervision, number of years as engineer in the company and average number of actual hours spent at work; Part II is the questionnaire proper and contains the Work Content Situation, and each was measured using five items on a 5-point Likert scale ranging from 1 (never) to 5 (Always); and Part III is about the Effects of Organizational Stressor. Table 1 presented the demographic characteristics of the respondents.

Table 1 Demographic Characteristics of the woman engineering supervisors

Characteristics	Category	Frequency	Percentage
Age (years)	20-27	28	42.43
	28-35	18	27.27
	36-43	18	27.27
	44 above	2	3.03
Civil Status	Single	43	65.15
	Married	21	31.81
	Widow	1	1.52
	Separated/Divorce	1	1.52
Highest Educational Attainment	Bachelor's Degree Holder	63	95.45
	Master's Degree Holder	3	4.55
Length of Service (years)	Less than one	7	10.61
	1-5	29	43.94
	6-10	18	27.27
	11-16	5	7.58
	More than 16	7	10.61
Level as Engineer in the Company	Junior Engineer	27	40.91
	Middle Engineer	13	19.70
	Senior Engineer	26	39.39
Number of Employees under supervision	1-5	42	63.64
	6-10	12	18.18
	11-15	1	1.52
	More than 15	11	16.67
Number of years as Engineer in the company	Less than one	10	15.15
	1-3	21	31.82
	4-6	23	34.85
	7-9	7	10.61
	10 years and above	5	7.58
Average Number of Actual Work (Hrs.)	8 or less	9	13.64
	8-12	50	75.76
	More than 12	7	10.61

1.2. Data Analysis and Results

Using descriptive and inferential statistics to analyze the data, with the help of Microsoft Excel Software. Descriptive statistics were used to analyze the characteristics of the respondents using frequency and percentage, while the work content assessment scores through mean comparison. In terms of inferential statistics, t-test analysis and ANOVA analysis was utilized to measure the significant difference of two and three or more samples respectively.

Based from table 2 it was confirmed and examined the work content assessment as perceived by the woman engineering supervisors, the working hours were the tensest as compared to other parameter like workload and work pace; participation and control; Role in the organization; interpersonal relationship and organizational culture. In addition to this, the overall mean was verbally interpreted as Low stress.

The results in table 3, shows the comparative analysis on the work content assessment in terms of the respondent's demographic profile. The "Level as Engineer in the company" and "Number of years as Engineer in the company" has no significant difference as perceived by the respondents to the work content variables with the p value of 0.54 ($p \text{ value} < 0.05$). However, the "Age", "Civil status", "Highest Educational Attainment", "Length of Service in the company", "Number of

Employees under direct supervision”, and “Number of Actual Work in the Company” were all has significant difference to the work content parameter with the p value of 0.000, 0.000, 0.0001, 0.001, 0.031, and 0.000 respectively (p value < 0.05).

Table presents the effects of organizational stressor, the respondents experienced seldom serious physical problems like “heart disease”, “Disorders of the digestive system”, “Increases blood pressure”, “Headache” and “Musculo-skeletal disorders (such as low back pain and upper limb disorder)”. Moreover, the other effects were sometimes experienced by the respondents were “Become increasingly irritable”, “Less concentration”, “Have difficulty thinking logically and making decision”, “Less committed to work”, “Feel tired, depressed, anxious”, and “Have difficulty in sleeping”.

Table 2 Work Content Assessment as perceived by the Woman engineering supervisors

Work Content	Weighted Mean	Standard Deviation	Verbal Interpretation
Workload and Work pace	3.58	0.89	Low Stress
Working Hours	3.29	1.05	Moderately Stress
Participation and Control	3.60	1.03	Low Stress
Role in the Organization	3.68	0.90	Low Stress
Interpersonal Relationship	3.70	1.03	Low Stress
Organizational Culture	3.73	0.98	Low Stress
Grand Mean	3.60		Low Stress

Table 3 Comparison Analysis on the Work Content Assessment in terms of Respondents demographic characteristics

Characteristics	F-value	P - value	Interpretation
Age	34.63	0.000000	Significant
Civil Status	8.33	0.000860	Significant
Highest Educational Attainment	5.56	0.000120	Significant
Length of Service in the company	6.25	0.001248	Significant
Level as Engineer in the Company	0.65	0.535481	Not Significant
Number of Employees under direct supervision	3.59	0.031834	Significant
Number of years as Engineer in the company	0.91	0.474489	Not Significant
Number of Actual Work in the Company	122.79	0.000000	Significant

Table 3 Effects of Organizational Stressor

Effects of Organizational Stressor	Weighted Mean	Verbal Interpretation
1. Become increasingly irritable	3.36	Sometimes
2. Less concentration	3.14	Sometimes
3. Have difficulty thinking logically and making decision	2.95	Sometimes
4. Less committed to work	2.91	Sometimes
5. Feel tired, depressed, anxious	3.38	Sometimes
6. Have difficulty in sleeping	2.76	Sometimes
7. Experience serious physical problem such as:		
7.1 Heart disease	1.65	Seldom
7.2 Disorders of the digestive system (Pagsakit ng tiyan)	2.18	Seldom
7.3 Increases blood pressure	1.98	Seldom
7.4 Headache	1.95	Seldom
7.5 Musculo-skeletal disorders (such as low back pain and upper limb disorder)	1.75	Seldom
8. Absenteeism	2.55	Sometimes
Grand mean	2.99	Sometimes

1.3. Conclusion

Based on the statistical results of the study. Most of the respondents were 20-27 years old, single, bachelor's degree, 1-5 length of service, junior and senior level as engineer, 1-5 numbers of employees undertaken, 4-6 years as engineer in the company and 8-12 hours average of actual works. The work content assessment of the respondents revealed that workload & work pace, participation & control, role in organization, interpersonal relationship and organizational culture have a Low stress response, and only the working hour's category had a moderately high stress. There was a difference on the level of organizational stress of woman engineer supervisors. In terms of age, civil status, highest educational attainment, number of employees under direct supervision, the number of years as an engineer, number of years as an engineer, number of working hours in the company and length of service. There are no differences on the level of stress of the respondents in terms of their level as an engineer in the company. Serious illnesses as the effects of stress were less experienced by the respondents. The emotional, behavioral and psychological effects were more common experienced by the woman engineer supervisors.

1.4. Recommendations

In the light of the findings and conclusions made, there should be a regular assessment on the workload and working hours so as not to work fast thus manage stress and minimize compromising the productivity and illnesses related to the organizational stressor. The best strategy is to have a work redesign focusing on the demands, knowledge and abilities of the employees, support and control and include: a.) Changing the demands of work (e.g. by changing the way the job is done or the working environment, sharing the workload differently). b.) Ensure that employees have or develop the appropriate knowledge and abilities to perform their jobs effectively (e.g. by selecting and Training them properly and by reviewing their progress regularly). c.) Improve employees' control over the way they do their work (e.g. introduce flexi-time, job-sharing, more consultation about working practices). d.) Increase the amount and quality of support they receive (e.g. Introduce 'people management' training schemes for supervisors, allow interaction among employees, encourage cooperation and teamwork). e.) Stress Management Training f.) Ask employees to attend classes on relaxation, time management, assertiveness training or exercise. Training topics are suggested to include awareness and recognition of the problem, psychological and economic consequences of bullying, definition and clarification of dysfunctional behaviors, prevention, and effective and fair responses at individual, team, organizational and other relevant levels. Employee assistance programs (EAPs) can provide counselling or support to staff affected by stressors. Further study on the stress on working hours for women as well as men engineers with a higher position in a workplace must be established by experts for better measurement of manufacturing company's human resources development programs and practices in the provision of quality of life.

Acknowledgements

Acknowledgement to my professor in graduate school for the comments and suggestions for the development of this paper. Additionally, the woman engineering supervisors in the electronics company in Laguna province.

References:

- ABC of women workers' rights and gender equality, Copyright © International Labour Organization 2007 First published 2000 Second edition 2007, Geneva
- Ajala, E. M. (2012), The Influence Of Workplace Environment On Workers' Welfare, Performance And Productivity , University of Ibadan, The African Symposium: An online journal of the African Educational Research Network 141 Volume 12, No. 1, June 2012 The African Symposium (ISSN# TX 6-342-323)
- Anonymous. (2012). Weaknesses in South Africa's progress with women's equality in the Millenium development goals. Agenda: Empowering women for gender equity, 26(1),
- Bentley, T., Catley, B. Cooper, T. H., Gardner, D., O'Driscoll, M., Trenberth, L. (2009) Understanding Stress and Bullying in New Zealand Workplaces, Massey University, The University of Auckland, The University of Waikato, Birbeck University of London. Retrieved from: <http://www.massey.ac.nz/massey/fms/Massey%20News/2010/04/docs/Bentley-et-al-report.pdf>
- Damaske, S. (2011). A 'major career woman?' How women develop early expectations about work. Gender and Society, 25(4), 409–430. <http://dx.doi.org/10.1177/0891243211412050>

- Dewe, P. J., O'Driscoll, M. P., & Cooper, C.L. (2009) Theories of Psychological Stress at Work, University of London, London
- Dimitrios B. & Konstantinos V. (2014) Organizational Culture And Job Burnout – A Review” University of Thessaly, Karyes, Trikala, Greece, IMPACT: International Journal of Research in Business Management (IMPACT: IJRB) ISSN(E): 2321-886X; ISSN(P): 2347-4572 Vol. 2, Issue 1, Jan 2014, 43-62 © Impact Journals
- Gatchel, R. J. & Schultz, I. Z. (eds.) (2012), Handbook of Occupational Health and Wellness, 23 Handbooks in Health, Work, and Disability, DOI 10.1007/978-1-4614-4839-6_2, © Springer Science+Business Media New York 2012
- Gender Equality in the Labor Market in the Philippines, 2013 Asian Development Bank All rights reserved. Published in 2013. Printed in the Philippines. ISBN 978-92-9254-403-4 (Print), 978-92-9254-404-1 PSN RPT136187-3
- Harrington, R (2013) Stress, Health, and Well - Being., Thriving in the 21st Century, Printed in the United States of America ISBN-13: 978-1-111-83183-7
- Hasnol, S. N. U. B. (June 2013) A Study On Stress Level And Its Implication On Productivity Among Women Engineers In Organizations, Asian Journal of Business and Management Sciences ISSN: 2047-2528 Vol. 1 No. 7 [38-47] © Society for Business Research Promotion | 38
- Health and Safety Executive (HSE), Self-Reported Work-Related illness and Workplace Injuries in 2007/08: Results from the Labor Force Survey, Sudbury, HSE Books, 2009, available online at <http://www.hse.gov.uk/statistics/lfs/lfs0708.pdf>.
- HSE. Health and Safety Executive. Managing the Causes of Work-related Stress :vA Step-by-Step Approach using the Management Standards. Crown copyright 2007
- Kumar, K. S., & Madhu, G. Madhu2, (2010) Analysis and modelling of work stress in manufacturing industries in Kerala ,India, International Journal of Modern Engineering Research (IJMER) www.ijmer.com Vol.1, Issue2, pp-552-558 ISSN: 2249-6645
- Latha, C. J. (March 2015) A Marital Status Based Study Of Work Life Balance (WLB) And Organisational Role Stress (ORS) Among Women Employees In Information Technology (IT) Industry In Chennai, IJMSS Vol.03 Issue-03, (March, 2015) ISSN: 2321-1784 International Journal in Management and Social Science (Impact Factor- 3.25) A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories International Journal in Management and Social Science <http://www.ijmr.net.in> email id- irjmss@gmail.com Page 323
- Lewis-Enright, K., Crafford, A., & Crous, F. (2009). Towards a workplace conducive to the career advancement of women. South African Journal of Industrial Psychology, 35(1), 9 pages. <http://dx.doi.org/10.4102/sajip.v35i1.832>
- Lu, J. L. (2005). Perceived job stress of women workers in diverse manufacturing industries. Human Factors in Ergonomics & Manufacturing, 15(3), 275-291. (retrieved from: <https://sci-hub.hkvisa.net/10.1002/hfm.20026>)
- Lu, J. L. (2009) Effect of Work Intensification and Work Extensification on Women's Health in the Globalised Labour Market, Journal of International Women's Studies Vol. 10 #4 May 2009: Retrieved from: http://www.atria.nl/eazines/web/JournalofInternationalWomensStudies/2009/10_4/bridgew/JinkyLu.pdf
- Mariam Imran, Nazia Shan, Syed Ali Raza, Wajeeha Mazahir Khan (2011). Job Stress Among Employees At Statebank Of Pakistan (SBP), an exploratory study, in Karachi. Business Research Project Report. January 10, 2011
- Masih, P. P., & Gulrez, N. K. (2006). Age and Gender Differences on Stress. In A. Husain & M. I. Khan (Eds.), Recent Trends in Human Stress Management (pp. 97-104). New Delhi, India: Global Mission Publishing House
- Michie, S., & Nelson, D.L. (2006). Barriers women face in information technology careers. Self-efficacy, passion and gender biases. Women in Management Review, 21(1), 10–27. <http://dx.doi.org/10.1108/09649420610643385>
- M. Coetzee & M. de Villiers. Sources of Job Stress, Work Engagement and Career Orientations of Employees in a South African Financial Institution. Southern African Business Review Volume 14 No.1 2010
- Nandini, B. N. (2013) Stress in Women Employee; A study on influence of Age (With reference to Insurance Sector) IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 12, Issue 3 (Jul. - Aug. 2013), PP 60-68 www.iosrjournals.org www.iosrjournals.org 60 | Page Stress in Women Employee
- N-Mohan K. & Paavai, J. A. (2011) Stress And Depression Experienced By Women Software Professionals In Bangalore, Karnataka, Global Journal of Management and Business Research Volume 11 Issue 6 Version 1.0 May 2011 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Print ISSN: 0975-5853
- Olatunji, S.O. & Mukuolu, B. O. The Influence of Sex, Marital Status, and Tenure of Service on Job Stress, and Job Satisfaction of Health Workers in a Nigerian Federal Health Institution, An International Multidisciplinary Journal, Ethiopia Vol. 8 (1), Serial No. 32, January, 2014:126-133 ISSN 1994-9057 (Print) ISSN 2070--0083 (Online)
- Olpin, M. & Hesson, M. (2010) Stress Management for Life, A Research –Based, Experiential Approach Second Edition, Printed in U.S.A. ISBN-13:978-1-439-042821-4
- Penceliah, Y. (2011). Gender mainstreaming with special reference to senior Management in local government. Journal of Public Administration, 46(1), 868–880.
- Reedy, G. L. & Poornima, R. (2013) Occupational Stress, Professional and Job Satisfaction of University Teachers, First Edition, ISBN: 978-93-5056-286-4, Tilak Wasan, Discovery Publishing House PVT. LTD. 4383/4B, Ansari Road, Darya Ganj, New Delhi-110 002 (India)

- Santiago, C. (2008) PHILIPPINES: Country Gender Profile , Retrieved from:http://www.jica.go.jp/english/our_work/thematic_issues/gender/background/pdf/e08phi.pdf
- Seaward, B. L. (2008). Managing stress: Principles and strategies for health and well-being (5th ed.). Sudbury, MA: Jones & Bartlett Learning.
- Van den Berg, H.S., & Van Zyl, E.S. (2008). A cross-cultural comparison of the stress experienced by high-level career women. South African Journal of Industrial Psychology, 34(3), 17–21.