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Measuring Ergonomic Implementation from the Perspectives of Job Security, Job Stress and Job Satisfaction in Automotive System Industry

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Abstract

The desire to improve working conditions is gaining momentum as organizational performance strategy among firms operating under competitive market. Most firm particularly the large companies are involved in Ergonomic implementation to reduce employee attrition rate and also to improve organizational performance. This study aims to measure organizational performance from the perception of operator's job security, job stress and job satisfaction. About 300 questionnaires were distributed to sampled respondents but only 225 representing 75% useable questionnaires were used for this analysis. SPSS version 17 was used to test for demographic, reliability, descriptive, correlation and multiple regression analyses. The result show positive relationships for the three variables to Ergonomic implementation. The implication support management initiatives to strengthen performance through good work environment. Management theory will also be enriching from the findings of this study. The study limitation and future study were recommended.

Keywords: Ergonomic; Job security; Job stress; Job satisfaction; Organizational performance

Introduction

Automotive industries are complex organizations that require a lot of human-utilities-equipment-systems-processes interactions [1]. In order to compensate with the complexity trends, many businesses will need to change their internal operations. The integration of employee productivity, employee safety and wellness and employee efficiency are the important elements of a company's success [2]. Therefore, changes of internal operations have been performed by the business communities using variety of techniques such as Kaizen, Total Quality Management, 5S, Lean Management, Safety Management, Six Sigma, Kanban and etc. Sometimes all of these techniques will be integrated to achieve company's success. Ergonomic is measured as the next generation working environment where its implementation is considered to be helpful towards a company's success [3]. Ergonomic implementation is considered to be a challenge because it is only a practice based on recommendations. So, successful ergonomic implementation depends on the management leadership, employee participation, training, hazard analysis and hazard control, medical management as well as evaluation [4].

Challenges in the industry

A study conducted by Morioka et al. [5] relate towards occupational health on manufacturing workers that exposed to neglect of ergonomics applications at workstation. The research brings about the impact of bad working condition which encouraged manufacturing workers to experience physical stress, lack of job security, dissatisfies behavior, injuries and illness as well as no comfort. For example manufacturing workers exposed to cold environment will significantly result in the Musculoskeletal Disorder (MSD) around the shoulder because it is natural for the body responses to shrink when it is cold. Besides that, studies also show that cognitive stress and workers dissatisfaction can cost organization few hundred of billion by reducing the productivity, increase worker absenteeism and disability. Therefore, it is essential for organization to find ways to maximize job security among workers in order to reduce job stress and job dissatisfaction [6].

Furthermore, relevant research indicates that safety and wellness factors are important compare to compensation for retaining staff among higher education IT professionals as recently confirmed by Bischel (2014). It means that the higher professionals are pursuing job satisfaction rather than compensation. The research is also similar to the other researchers who have suggested that the impact of great recession and heightened expectations of IT workers has contributed to the deterioration of safety and wellness due to stress accumulated and deterioration of employee efficiency signaling a looming turnover or job security crisis for higher education IT leaders [7,8].

Application of ergonomic

In the early stage a British Scientist named Murell had defined ergonomic as ensuring human factors towards safety and engineering efficiency implanted in the design of work system. It means that ergonomic is ensuring human factors such as physical work capacity, fatigue and body posture method are structured towards safety and engineering factors such as industrial design, workplace design and machine design met in the design of work system. Indirectly, ergonomic defined by Murell is able to improve human safety and wellness as well as human comfort and performance by using ergonomic method.

Ergonomic defined by Meister [9] acknowledge that any definition of ergonomic must accept the complementary between fundamental understanding of people and their interactions and practices of improving those interactions. Based on the definition by Meister [9], it is to be believed that ergonomic is a discipline that relates the human to technology. For example, human behavior is being research to design a technology such as ergonomic tool for lifting that will help the human to

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perform their work system efficiently. Meanwhile, Shackel [10] stressed the view of ergonomic as both a science which provides fundamental understanding and also a technology applying that understanding to problems of design in their widest sense. Shackel [10], further stressed that ergonomic is a discipline that relates the science to technology. For example, human's anthropology is being research to design a technology such as ergonomics chairs that helps the human to perform their work system efficiently.

International Ergonomics Association (IEA) [11] defined ergonomic as the scientific discipline concerned with understanding of interactions among human factors towards safety and other elements of a system as well as the profession that applies theories, principles, methods and data to design in order to optimize human wellbeing and overall system performance. Indirectly, International Ergonomics Association [11] involved human factors such as human limitation towards human safety and wellness as well as human overall performance on certain work systems. International Ergonomics Association [11] also takes account of the ergonomic procedures that applies theories, principles, methods and data to design for the optimization of the contribution factors such as human wellbeing and overall system performance towards certain work systems.

Similarly, Erik defined ergonomic as relation between human beings, their work and their work life environment, where it explained that better design of work systems taken into account the human physical, psychological abilities limitations and needs and better design in order to optimize human wellbeing and overall system performance. Erik differentiated three types of ergonomics and they are physical ergonomic and cognitive ergonomic which leads towards organizational ergonomic.

The relationship of job security towards ergonomic implementation

Employees are valuable asset of every company because objectives of an organization can only be met with the help of its employees. Besides that, employees have strong connection towards job security. Therefore, the relationship of job security towards ergonomic implementation has been investigated by many researchers where the employee performance has been the measurable item for ergonomic implementation.

The research paper topic "Influence of extrinsic and intrinsic motivation on employee performance" performed by Akanbi [12] investigated about two types of motivation. They are extrinsic motivation and intrinsic motivation. According to McCormick and Trifflin [13], intrinsic motivation is inherent in the job itself. For example the employees enjoy a successfully completing task or attaining goals while extrinsic motivations are external to the task of the job. For example work condition and work environment. In this case, the result gained for extrinsic motivations is the main concentration because it is related to the ergonomic implementation. Akanbi [12] findings perceived there exit a significant relationship between extrinsic motivation and workers performance. Pearson Product Moment Correlation was used and indicates that r>tv (i.e., 0.42>0.197).

Besides that, Cemile and Turan [14] investigated the relationship between job insecurity towards burnout. Burnout is one of the examples of cognitive ergonomic. The main hypothesis from the journal perceived that there is a significant relationship between job insecurity towards burnout. According to Pearson correlation analysis, there is a moderate relationship between job insecurity and burnout but the main hypothesis is accepted as significant. It is because according to the Bosnian et al. study, it has been identified that the relationship between job insecurity towards burnout occurs as a result of long term. Similar study conducted by Tilakdharee et al. (2010) with 87 people of unit sample stated a relationship was found between cognitive job insecurity towards burnout. It means that, the increase of job insecurity as a stress inducing factor related to the level of burnout.

Moreover, Probst [15] revealed the literature review for a few hypotheses. One of the hypotheses is "There will be a negative relationship between job insecurity and job satisfaction". This hypothesis is supported by the study done by Dunbar [16] who found that job insecurity causes negative job attitudes if the personal protective equipment is not applied as one of the approaches from ergonomic implementation. It causes wariness towards safety which would reduce the satisfaction with other facets of the job. Therefore, Dunbar (1993) [16] study stressed there is job insecurity because of the dissatisfaction shown. Other than that, the decreased perception of job security have consistency been found to be related to decreased job satisfaction in many studies causing job turnover and increased absenteeism [17].

A study conducted by Hur and Perry [18], investigate the relationship between job security and work attitude. One of the hypotheses being explained in their study is the job security increases positive work attitudes. The results of the analysis suggest job security tends to increase job satisfaction (true score correlation ρ=0.22) and organisational commitment (true score correlation ρ=0.26). Indirectly, the result accepted the good work attitude contribute by the implementation of ergonomic such as applying back safety belt during lifting weight items could increase job security because employees that followed the good attitude on applying the back safety belt able to gain job satisfaction in term of comfortability during lifting the weight item. So, this indulges in encouraging job security to the employees causing strong organizational commitment where employee's productivity, employee's safety and wellness as well as employee's efficiency can be achieve. Therefore, the hypothesis job security increases positive work attitudes has significant homogeneity as indicated by the homogeneity statistics.

Rabia et al. [19] explored the hypothesis which stated that employee job security is positively associated to organizational productivity. The research proves that there is a positive and significant relationship between job security and organizational productivity with the value of (r=0.599, p<0.01). Therefore, the hypothesis is accepted as it indicates the positive relationship between two variables. Based on the literature review from Valletta [20], job security is an important variable that affected employee's level of commitment. Therefore, implement ergonomic as one of the management approach which would be similar to implement lean approach or 5S approach into the organization will increase employee's level of commitment. Employees with high level of commitment contribute towards the increase of employee's productivity and employee's efficiency.

Moving on to the next research explored about the relationship between job securities towards external motivational tool. External motivational tool is an administrative process that tries to find correct tools of motivation which can change employees' behaviors to bring them in line with the organization's targets. Examples of motivational tool are wage, status and promotion, hierarchical structure, relationships between employees, job safety, profit participation, organizational culture, talent and etc. In this case, ergonomic implementation is related to the external motivational tool liked job safety and organizational culture. The result of the research conducted by Senol

[21] indicates that there is a significant positive and high (r=0.539) correlation between job security and organizational structure. It is because there is a good relationship between superiors-subordinates and among coworkers. The research by Senol [21] also indicates the same result between job security and job safety (r=0.501). It is because job safety reveals employee opinions about employees' safety, physical conditions of work environment, sufficient equipment to do their jobs, proper architectural design enabling service flow, occupational hazard and similar situations are at positive levels. Automatically, the contributions are towards employee performances such as employee's productivity, employee's efficiency and others.

The relationship of job satisfaction towards ergonomic implementation

Job satisfaction is a complex concept which is influenced by many factors. Job satisfaction also shows how much an employee likes their work and the level of the employee fixation with work. This creates a strong connection between job satisfaction and the employees. Therefore, the relationship of job satisfaction towards ergonomic implementation has been investigated by many researchers where the employee performances have been the measureable item for ergonomic implementation.

The research paper topic "Relationship between Working Conditions and Job Satisfaction: The Case of Croatian Shipbuilding Company" performed by Bakotic et al. (2013) investigated that in the case of workers who work under difficult working conditions, the working conditions will be important factor of their overall job satisfaction. The results of the research from the correlation between satisfaction with normal working conditions (in the administration) and with difficult working conditions (in the facility) are being observed. The result perceived the correlation coefficient between satisfaction with working conditions and overall job satisfaction in the case of workers who work in difficult working conditions (in the facility) is higher (0.527) compared to those who work in normal working conditions (in the administration) (0.374). Thus, it can be conclude that working conditions are important factor of overall job satisfaction for workers who work at the facility. Therefore, ergonomic implementation considered as one of the element which creates working condition potentially will bring about the similar results. The research done by Bakotic et al. (2013) is supported by a study conducted in a Malaysian Automotive Manufacturing firm stated that employees working under poor working conditions with ergonomic issues such as machine vibrations which were above the safety margins causing employee to be unsatisfied because the interruption of employee performance happen [22].

Besides that, a study by Ikonne and Chinyere [23] investigated there is no significant relationship between the suitability of workstation and equipment designs and the job satisfaction of the librarian. The result revealed there is a significant positive relationship between job satisfaction and workstation and equipment designs in the Federal and State University libraries in Southern Nigeria (r=0.46, P0.05). The null hypothesis is rejected as there is no sufficient evidence to accept it. Ikonne and Chinyere [23] also investigated that there is no significant relationship between the condition of work posture of the librarians and their job satisfaction. The result show that there is a significant positive relationship between condition of work posture of librarians and their job satisfaction (r=0.15, p 0.05). The null hypothesis rejected as there is no sufficient evidence to accept it. The result here implies that adequate work posture could increase the job satisfaction of the library workforce in the Federal and State University Libraries in Southern Nigeria. Indirectly, workstation designs, equipment designs and work posture are examples of ergonomic implementation which lead towards job satisfaction.

Moreover, Ana et al. [24] revealed workspace as a factor of job satisfaction in the banking and ICT industries in Macedonia. The hypothesis of this study is to help understand the various aspects of workspace satisfaction among workers in the ICT and banking industries in the Republic of Macedonia. Aspects of workspace taken measured are storage space and lighting which are considered as independent variable. The testing of the hypothesis was performed using regression analysis. The analysis showed that 54% of the variance in the dependent variable workspace satisfaction was explained by the independent variables. The finding is in line with findings from different studies by Knight and Haslam (2010) as well as Veitch et al. [25]. Indirectly, stated that storage space and lighting are examples of ergonomic issues. These ergonomics issues are able to determine the workspace satisfaction such as safe and comfort among workers in the ICT and banking industries in the Republic of Macedonia which could improve employee performance.

Furthermore, similar study by Rozlina et al. [26] discussed (1) the reliability of ergonomic awareness towards implication and improvement, (2) the reliability of ergonomic awareness towards sustainability of job to the workers and (3) the reliability of ergonomic awareness towards ergonomic basic considerations. Reliability test are used for testing the reliabilities of the ergonomics awareness towards the three factors. The result display that all three factors have high reliabilities where the Cronbach's alpha value for the three tested factors are respectively (1) 0.926, (2) 0.915 and (3) 0.804. These findings are important to show the level of ergonomic awareness and its role in shaping safety culture. By practicing this culture, most employees will end up being satisfy since their safety and comfort ability is taken care. Turnover, injuries, absenteeism and other cases can be minimizing. Besides that, the satisfaction demonstrate by the employee indirectly will encourage the employee performance. This statement is supported according to the Victor [27] research where a happy staff is a productive staff and this often involves strong relationships among the various member of a working team. For example, when employer puts forth efforts to ensure health and safety, employees notice and it often boosts morale. This research also supported by studies conducted by Bridger [28] and Karwowski [29].

The relationship of job stress towards ergonomic implementation

Job stress can affect workers from lowering resistance to illnesses and depriving them of sleep to interfere their concentration so that more injuries and accidents occur. Therefore, the relationship of job stress towards ergonomic implementation has been investigated by many researchers where the employee performances have been the measureable item for ergonomic implementation.

The research paper topic "Ergonomics Design on the Work Stress Outcomes" by Zafir et al. [30] investigated the following: (1) there is a significant relationship between chair/office seating of the organizations and the outcomes of job stress, (2) there is a significant relationship between working hours of the organizations and the outcomes of job stress and (3) there is a significant relationship between humidity level of the organizations and the outcomes of job stress. Regression analysis is used to test those hypotheses. Based on the analysis, hypothesis (1), (2) and (3) were tested to be supported where independent variable

(chair/office seating, working hours and humidity) have significant relationship with dependent variable (outcome of job stress). The result of hypothesis (1) was supported by the research done by Cook et al. [31] where the researcher accepted that uncomfortable chair/office seating encourage job stress. The hypothesis (2) result supported by Lacovodes et al. (2003). The researcher agreed that the longer working hours will affect the job stress outcome. Meanwhile, hypothesis (3) was supported by Martin et al. [32]. The researcher pointed out that a good indoor air quality will minimize the outcomes of job stress. Indirectly, all these three independent variable are the examples of ergonomic application. So improvise the ergonomic application by using ergonomic implementation would give a positive relationship towards reducing job stress in workplace. At the same time, it will improve health and performance of workers and leads to higher organizational productivity.

Besides that, a study by Zafir et al. [33] investigated the relationship of the independent variables, ergonomic workstation factors such as health with the dependent variable, stress outcomes which includes somatic complaints, job dissatisfaction and intention to quite. The research claimed that there is a significant relationship between an ergonomic workstation factor on health and stress outcomes at workplace. Based on the Pearson correlation analysis, depicts that there is a significant relationship between ergonomic workstation factor on health and the stress outcome at workplace. As a conclusion, this research which focused on job stress in the workplace at the Banking Supervision Department proved that ergonomic workstation factor on health influence the stress outcomes at the workplace. Weaknesses in this independent variable brought about somatic complaints, job dissatisfaction and intention to quit. This research finding also gives implications onto the employee performance.

Moreover, Angelise et al. [34] revealed job stress is positively related to the degree of ergonomic difficulty experienced in performing task. Ergonomic difficulty is the work required for production tasks. For example is the product of the force required or the distance through which the force acts. Job performing task is supported. The relationship has high coefficient (beta=0.147, $p<0.01$). It is because lean production is mostly a short cycle and high repetitive stressful results, m short, ergonomic difficulties must be addressed at the design stage by integrating ergonomic implementation into products and processes design. All products should be subjected to periodic ergonomic audits with worker participation in order to maximize organizational and employee performance.

Furthermore, research article produced by Wen et al. [35] discussed about the relationships among role stress, job satisfaction and organizational commitment. The authors tested the hypotheses thus: (1) Nurses' role stress has a negative influence on job satisfaction. (2) Nurses' role stress has a negative influence on organizational commitment.

The result showed that there is a significant negative correlation between role stress and organizational commitment. It is because role conflict, role haziness and role overload have the most notable influence in the construct of role stress. On the other hand, found that the tension at work caused by role haziness, role conflict and role overload has a significant negative correlation with job satisfaction. This explained that role haziness, role conflict and role overload are categorized as bad cognitive ergonomic. As proven by the research article results, practicing bad ergonomic implementation such as role haziness, role conflict and role overload able to encourage the employee to indulge into role stress which would" impact the job satisfaction and organizational commitment causing employee performance and organizational performance to drop.

Theoretical Framework

Theoretical framework are created to explain, predict and understand phenomena and in many cases to challenge and extend existing knowledge within the limits of critical bounding assumptions. A theoretical framework consists of concepts, scholarly literature and existing theory. The framework must demonstrate an understanding of theories and concepts that are relevant to the topic of the, research paper. Theoretical framework is constructed based on the described strategies (Figure 1).

Hypotheses development

This research is aim to present an active analysis on the effect of the ergonomic perception towards employees' performance. In order to determine independent variable and dependable variable for the research, a lot of searching from journals, previous research papers, online books and articles were critically reviewed and hypotheses constructed. The relationships of the ergonomic implementation in term of job security, job satisfaction and job stress were hypothesized thus:

- **H1:** Job security has a positive relationship towards ergonomic implementation in Draeximaier Automotive Systems Industry Operation [36].
- **H2:** Job satisfaction has a positive relationship towards ergonomic implementation in Draeximaier Automotive Systems Industry Operation [36].
- **H3:** Job stress has a positive relationship towards ergonomic implementation in Draeximaier Automotive Systems Industry Operation [36].

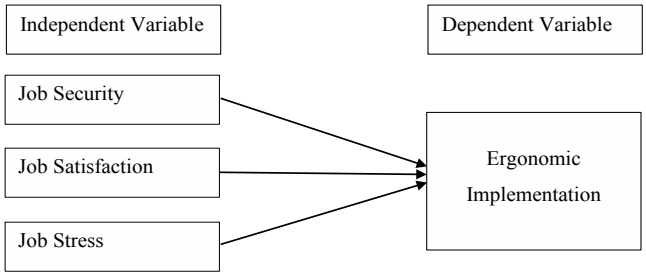

Figure 1: Theoretical framework model.

Data Analysis

Data for the study was collected from Draeximaier Automotive Industry [36] in Kulim Hi-Tech Malaysia. The sample covers both senior and junior operators irrespective of gender. A total of 300 questionnaires were distributed, however, only 225 were return and used for the analysis. SPSS version 17 was employed to run demographic, descriptive, reliability, correlation and regression analyses. Frequency analysis is usually used to present the main characteristic of the samples. According to Sekaran (2010), frequency analysis is the nominal variable of interest obtained for the independent variable. This analysis produces a frequency table that shows frequency counts and percentages of the demographic factors values. The demographic information used in this research includes age, gender and years of work experience in the organization (Table 1).

The results from the demographics section are represented in the Table 1 shown in frequency and percentage to demonstrate the demographical data. The table shows the segment for age, gender and years of working. The total respondents in the research are 225 respondents. In the research, higher distributions of the age of respondents are between 25 and 34 years old represented by 43.1%. Draeximaier Automotive Industry [36] Operation Organization Plant prefers to hire employees within the age of 25–34 years old because employees within these ages are believe to be productive.

In the aspect of gender, the majority of the respondents are the males with a percentage of 140%. Draeximaier Automotive Industry [36] Operation Organization Plant has high percentage of male employees compared to female employee's heavy industry in Kulim. Most of the respondents have worked in the Draeximaier Automotive Industry [36] Operation Organization Plant from 1-5 years with a percentage of 39.1%. It is because of the basic perception of every employees and hiring officers believes that average duration for an employee to master a particular field is within that period of time frame before the employee pursue a different career path (Table 2).

The results of reliability analysis for the each item of independent variables and dependent variable are represented in the table above through the value of Cronbach's Alpha coefficient. As shown in the table, the Cronbach's Alpha value for job security is 0.848, job satisfaction is 0.815 and job stress is 0.837 under independent variables portion meanwhile ergonomic implementation is 0.860 under dependent variable portion. Summaries from the results, all the independent variables obtained are good and reliable because the value

Demographics	Frequency	Percent
Age		
16-24	55	24.4
25-34	97	43.1
35-44	45	20
45-54	20	8.9
55-64	8	3.6
Gender		
Male	140	62.2
Female	85	37.8
Years of working		
<1 year	25	11.1
1-5 years	88	39.1
6-10 years	58	25.8
11-15 years	46	20.4
>15 years	8	3.6

Table 1: Demographic information of the respondents.

No of items	Study variables	Cronbach's Alpha	Remarks
5	Job security	0.588888889	Good
5	Job satisfaction	0.815	Good
5	Job stress	0.837	Good
5	Ergonomic implementation	0.86	Good

Table 2: Reliability analysis results.

of Cronbach's Alpha coefficient obtained was above 0.8. Convincingly to be stated that the items from the independent variables is positively correlated to each other.

Ergonomics Implementation which is the dependent variable in the research corresponds to 0.860. Based on Sekaran (2009), the value display for the dependent variable is good because the independent variables used were reliable. In this research, job security is consider as one of the independent variable has the highest reliability value which is 0.848 explains that it has the highest reliability with the dependent variable. It is because the respondents accept that ergonomic implementation creating job security able to be one of the effective elements which could contribute towards employee performance of Draeximaier Automotive Industry [36] Operation Organization Plant.

Descriptive statistical analysis

Descriptive statistical analysis examines general statistical description of variables in the study. A descriptive analysis use minimum, mean, maximum and standard deviation of all variables. It could provide some representation on how each of those variables is perceived by the respondents. The minimum shows the lowest responses from the respondents, maximum shows the highest responses from the respondents and mean shows the average responses from respondents.

The results of reliability analysis for the each item of independent variables and dependent variable are represented in the table above through the value of Cronbach's Alpha coefficient. As shown in the table, the Cronbach's Alpha value for job security is 0.848, job satisfaction is 0.815 and job stress is 0.837 under independent variables portion meanwhile ergonomic implementation is 0.860 under dependent variable portion. Summaries from the results, all the independent variables obtained are good and reliable because the value of Cronbach's Alpha coefficient obtained was above 0.8. Convincingly to be stated that the items from the independent variables is positively correlated to each other.

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from the respondents, maximum shows the highest responses from the respondents and mean shows the average responses from respondents (Table 3).

Table above represents the minimum, maximum and mean of the variables which include independent variables such as job security, job satisfaction and job stress and also dependent variable such as ergonomic implementation. The number of cases in the database is recorded under the column labeled N. Illustration on the range of the variables is represented in the maximum and minimum columns.

Summaries from the result shows that job security, job satisfaction and job stress has minimum value of 2.00 indicating that there are no respondents that strongly disagree with the questions on the variables. Besides that, the study of this research concludes that maximum value of these five variables is 5.00. The average answer is representing in the mean column where for job security is 4.4744, job satisfaction is 4.2677, job stress is 4.3476 and ergonomic implementation is 4.5760. All the means are initial 4 where it indicates that respondents are generally agree with the questions in the questionnaire. Job security has the highest mean which indicates the job security has a big effect in the organization compared to job satisfaction and job stress. This is primarily because job security brings along the feeling of job satisfaction and job stress. Realistically, the respondents see job security as an important element in carrier and financial stability.

Pearson correlation analysis

Pearson correlation analysis is used to find a correlation between at least two continues variables. Davis (1997) proposed the rule of thumb which stated that 0.70 and above is very strong relationship, 0.50-0.69 is strong relationship, 0.30-0.49 is moderate relationship, 0.10-0.29 is low (Table 4).

Based on the table above, the relationship between first independent variable (job security) with the dependent variable (ergonomic implementation) is 0.881 representing a very strong relationship. The relationship between second independent variable (job satisfaction) with the dependent variable (ergonomic implementation) is 0.852 represent a very strong relationship. The relationship between third independent variable (job stress) with the dependent variable (ergonomic implementation) is 0.874 represent a very strong relationship.

Job security is the first independent variable has the highest correlation value with the dependent variable stated as ergonomic implementation which is 0.881 because practically job security is the key or motivational factor which encourages employees to perform well to ensure their job being conserved.

Variables	N	Min	Max	Mean
Job security	225	2	5	4.474
Job satisfaction	225	2	5	4.268
Job stress	225	2	5	4.348
Ergonomic implementation	225	2	5	4.576

Table 3: Descriptive analysis results.

Variables	Job security	Job satisfaction	Job stress	Ergonomics implementation
Independent variables				
Job security (IV1)	-	-	-	-
Job satisfaction (IV2)	-	-	-	-
Job stress (IV3)	-	-	-	-
Dependent variables				
Ergonomics Implementation (DV)	0.881*	0.852*	0.874*	1

*Correlation is significant at the 0.01 level (2-tailed).

Table 4: Pearson correlation result.

Multiple regression analysis

The purpose of multiple regression analysis is to evaluate relationship between several independent variables and dependent variable. Normally, how much of the variance in dependent variable is explained by independent variables in the model is articulated in the correlation coefficient square root of R-square. In multiple regressions, R^2 can assume values between 0 and 1. In order to interpret the direction of the relationship between variables, the signs of positive (+) and negative (-) of the Beta coefficient is being viewed. If the Beta coefficient is positive so the relationship of the measured variable with the dependent variable is positive. If the Beta coefficient is negative so the relationship of the measured variable with the dependent variable is negative. If the Beta coefficient is zero then there is no relationship between the measured variable with the dependent variable (Tables 5a-5d).

Based on the table above, the standardized coefficient is 0.747 for job security, 0.463 for job satisfaction and 0.577 for job stress. R-Square is the proposition of variance in dependent variable which could be predicted from independent variables which is 0.862. The adjusted

Model Summary

Model	R	R square	Adjusted R square	Std. error of the estimate
1	.947[a]	.862	.831	.30520

[a]Predictors: (Constant), MeanJS, MeanJSA, MeanJST.

Table 5a: Multiple regression analysis result.

ANOVA[a]

Model 1	Sum of squares	df	Mean square	F	Sig.
Regression	79.476	4	13.126	126.404	.000[b]
Residual	16.324	163	0.098	-	-
Total	95.689	167	-	-	-

[a]Dependent variable: MeanEI.

[b]Predictors: (Constant), MeanJS, MeanJSA, MeanJST.

Table 5b: Multiple regression analysis result.

Coefficients[a]

Model 1	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	0.312	0.2		1.559	0
MeanJS	0.643	0.058	0.747	4.209	0
MeanJSA	0.447	0.05	0.463	4.416	0
MeanJST	0.463	0.041	0.577	4.109	0

[a]Dependent variable: MeanEI.

Table 5c: Multiple regression analysis result.

Independent Variables	Dependent Variables
Job security	0.747*
Job satisfaction	0.463*
Job stress	0.577*
R^2	0.862
Adjusted R^2	0.831
F change	126.404

*Correlation is significant at the 0.01 level (2-tailed).

Table 5d: Multiple regression analysis result.

	Hypothesis	Results
H1	Job security has a positive relationship towards ergonomic implementation in Draeximaier Automotive Industry Operation Organization Plant.	Supported
H2	Job satisfaction has a positive relationship towards ergonomic implementation in Draeximaier Automotive Industry Operation Organization Plant.	Supported
H3	Job stress has a positive relationship towards ergonomic implementation in Draeximaier Automotive Industry Operation Organization Plant.	Supported

Table 6: Hypothesis testing results.

R-Square value indicates 0.831 where it tries to yield an honest value to estimate the R-Squared for the population. The F-Value from the study done indicates 126.404. The p value associated with the F Value is very small less than 0.01, therefore it could be said that the independent variable reliably can predict the dependent variable. Since the p value is less than 0.01, it indicates that there is significant positive relationship between the independent variables and dependent variable (Table 6).

Table above show the results of the tested hypothesis made earlier. From the p value which is less than 0.01 shows there is a significant positive relationship between the independent variable includes job security, job satisfaction and job stress with the dependent variable includes ergonomic implementation.

Ergonomic Implementation Implications

Positive managerial implications or contributions from the implementation of ergonomic in Draexhnaier Automotive Systems Industry Operation Organization Plant are as follows.

Safety and well-ness

Implementing ergonomic in Draeximaier Automotive Systems Industry [36] Operation Organization Plant could improve both physical and other resources used in a workplace which can leave the feeling of less uncomfortable. Using ergonomically designed tools can help reduce the risk of contracting problems such as backaches, neck pain and eye strain of the employees. From the mental perspective, an efficient and organized work environment that specifically caters to the daily tasks at work can give the employees some relief in terms of stress. Even its changes are minutes; ergonomic implementation can make a world of difference towards the employees feeling as they do not have to expand energy on small or sometimes unnecessary tasks. Those small amounts of saved energy can leave the feeling less drained at the end of the day.

Productivity

Ergonomically enhancing the resources in the work environment can indeed improve the physical comfort and mental wellbeing of employees. Gratitude to the comfort that user-friendly software, comfortable chairs and other ergonomics tools enable employees to focus better. Not only can this improve the quality of the work produce by the employees but it can also improve the pace of work. Apart from that, productivity can be fostered in the workplace depending on the elements of the workplace being arranged. For example, activity based office spaces are divided into many areas for different kinds of work. Some areas may be quiet and isolated for those who require a lot of focus. Other areas in the office space can be open to encourage collaboration among employees. Office spaces that are flexible can help each employee accommodate in a way that is comfortable for them to work productively.

Efficiency

Ergonomic implementation in Draeximaier Automotive Systems [36] Industry Operation Organization Plant can improve the organization of the workplace environment. Efforts can be made to arrange things such as important documents and tools in a way that makes the documents to be easily accessible by the employees. Things can be organized in a way that can follow an employee's flow of tasks throughout the day which can reduce the time needed for them to prepare for a new task once the previous one is accomplished.

Limitations

Firstly, this research was carried out by self-administered questionnaires which contain 20 questions. These 20 questions are related to problem statement faced by Draeximaier Automotive Systems [36] Industry Operation Organization Plant. Therefore, before distributing the questionnaire to the respondents a little explanation need to be done on the fundamental of ergonomic because ergonomic is considered one of the new industrial management approach where it is only an ad-hoc within the industrial and most of the employees will not understand thoroughly about ergonomic.

Secondly, when the explanation on the fundamental of ergonomic is being explained in the first page the respondents need to spend a few minutes to understand about ergonomic before answering the questionnaires whereas to understand the concept of ergonomics requires some time. There is the potential where the respondents would not answer the questionnaire as required. Thirdly, the study is based on a single industry that is the Draeximaier Automotive Systems Industry [36] in Kulim. Therefore, the research is not a large pool of Draeximaier employee and employer.

Finally, the term ergonomic is still new and is a field that is yet to be investigated widely, so there are very limited literatures reviews regarding the topic. Besides that, this field of research is sometimes integrated with other research related to safety at workplace. Occupational Safety and other fields of research thus causing more time and effort required to extract the information.

Recommendations for Future Research

It would be valuable to follow up this research to extend its result and address its shortcomings. The responses of the research should be examined by longitudinal studies of a sample of firms embarking on ergonomic behavior. This would add to the understanding of the implementation cycle ergonomic pattern and to the net change in job security, job satisfaction and job stress over the complete cycle. Replicating the research in other countries would examine the effects of cultural differences on job security, job satisfaction and job stress towards ergonomic implementation responses in a similar sample of respondents in production sites. This could help to identify work practices most susceptible to cultural influences. More potential relationships between independent variables such as job security, job satisfaction and job stress with dependent variable such as ergonomic behavior should be pursued further to better understand the underlying causes and develop avoidance and coping practices for managers and workers.

Conclusion

Sometimes, it is the little details that tend to be overlooked. These minor points in overtime can affect our comfort, productivity, efficiency, and even our motivation. This is why it is important to be aware of these little things. By educating ourselves about ergonomics, employees can understand more about the way to work and how things can be change to better suit own personal working styles.

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