

Retaining Malaysia's Blue Collar Workers in Competitive Manufacturing Industry

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Abstract: - The roles of factory technicians who are responsible and accountable for advance equipment maintenance and uptime in the E&E factory has intensified enormously. Substantial researches on turnover issues focused on white collar workers instead of blue collar workers has instigated the need of the study. There is also needs to identify factors which influenced factory technician's turnover because the training required to develop skillful and competent technicians is costly and lengthy. The hypothesis was tested and validated via quantitative statistical analysis which identified the influential factors and determined the connection between independent variables and turnover intention as dependent variable. Descriptive statistic, reliability test, mean comparison, and correlation test were utilized in the analysis. The results indicated that career growth, discriminatory treatment and further education are influential factors and have significant association with turnover intentions. The most influential and significant factor was career growth followed by discriminatory treatment, and further education was the least significant factor. The outcome of this research was used in developing retention plans and strategies to retain the factory technicians who play crucial role in manufacturing industry performance.

Key-Words: - Factory Technicians Turnover, Costly and Lengthy Training, Career Growth, Discriminatory Treatment, Further Education, Retention Plan and Strategy

1 Introduction

Malaysia aims to join the ranks of industrialized nations by year 2020 and is nurturing industries that can produce high value-added goods and services. Ministry of Human Resource Malaysia [1] reported that manufacturing industry recorded 39 percent new job placement which was the biggest amount of new employment generated compared to other sectors. Manufacturing sector was the second highest contributor in terms of value as reported by Malaysia Gross Domestic Product [2]. The main sector in manufacturing assembly is Electrical & Electronics (E&E) sector which accounted for 24.5 percent of the manufacturing industry based on the report published by the Statistics Department of Malaysia on May 15, 2013.

The highest number of workers in the E&E factories are the Manufacturing Operator and Technicians. They are the direct labor who performed the value add works and execution of E&E product assembly and test. This industry is currently undergoing a transformation from labor intensive to automated and advance manufacturing technology. The manufacturing technician role is

becoming more critical because they are the one who set up, sustain and maintain the equipment in factory and their contributions have direct and immediate impact to the factory operation performance. The technicians require high technical skill, knowledge and years of hands on experience to be effective in their role.

This study conducted is intended to test the theoretical idea that describes the relationships between career growth, further education, discriminatory treatment and turnover intentions among the group of manufacturing technicians in Electrical and Electronic (E&E) factory at Kulim Hi-Tech Industrial Park. The hypotheses are derived based on theoretical background and Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis academic construct. The hypothesis was tested and validated by conducting a survey and quantitative statistical analysis to determine the influential and significant factor that affects turnover intentions.

2 Problem Statement

Employee turnover is one of the crucial issue facing organizations today, especially if the employee holds main position or possessed a special skill in the firm. Training and skill development programs were very costly and require the right people to be developed to perform certain task. Additionally, it takes valuable and extensive time of job experience in order for the employee to acquire the exceptional abilities and competencies. A study from Society of Human Resource Management (SHRM) has discovered that direct employee replacement costs reached up to 50% to 60% of employee's annual salary [3].

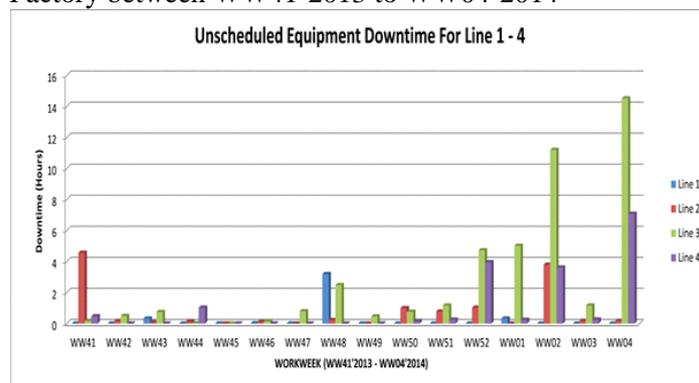
Besides losing costly knowledge intensive base when worker quit, the company needs to re-organize its resources, so that the operation plans and goals will not be put at risk. In manufacturing industry, the resources and headcount are structured to be very lean.

The employee's turnover will cause many problems such as loss of operation target; snowballing cost of overtime claim incurred, ballooning work pressure to the remaining employees and plunged in employee motivation. Malaysia suffers from serious employment problems consist of high demand of skilled employees and shortage of talent in year 2015 [4].

Employee turnover cost the company in term of time, money, and other resources. Previous research suggested that direct replacement costs can reach as high as 50-60 percent of an employee's salary per annum, with total costs directly related to turnover ranging from 90 to 200 percent of the employee annual wages [5][6]. For examples, the actual study on turnover cost for senior machinist was \$102,000, turnover cost for an HR manager at an automotive manufacturer was \$133,000, and turnover cost for an accounting professional was \$150,000 [7]. Manufacturing technicians are accountable for sustaining and supporting the production equipment and their key performance indicator (KPI) is unscheduled equipment downtime.

The E&E Factory is driving manufacturing cost reduction to improve competitiveness and contribute in achieving higher product gross margin. The E&E Factory in Kulim, Kedah is also competing with other MNC's sites in Vietnam and China to accomplish lowest manufacturing cost. According to [8] since equipment breakdown is costly and fewer standby equipment are available, maintenance employees or factory technicians feel the intensity of increased responsibility for the productivity of factory equipment.

Table 1: Weekly Unscheduled Equipment Downtime (Hours) in Assembly & Test E&E Factory between WW41'2013 to WW04'2014



2.1 Research Scope

The scope of this research is to concentrate on voluntary turnover and omitting involuntary turnover. Voluntary turnover has many adverse consequences; therefore, it is obligatory to discover and remedy it as early as possible. In this case, the factory technicians may have initial thought about resigning. He or she then explore job alternatives, assess possible alternatives against their current job, evaluate the advantage and disadvantage, trigger turnover intention and execute the orchestration to quit as soon as the desirable opportunity is available and committed.

The context of this research was on one of the multi-national company E&E factories currently operating in Kulim Hi-Tech Park (KHTP) industrial area. The company commenced the Assembly and Test factory operation in Penang, Malaysia since 1972 and Kulim since 1996. KHTP was formally started up in late 1996 and located in the district of Kulim, in the state of Kedah which is situated in the North-West region of Peninsular Malaysia. The E&E Factory operated continuously 24 hours a day and 7 days a week throughout the year. Factory shutdown for facilities maintenance work is very rare and normally conducted once per year. The manufacturing operation is running even during public holidays and the shift workers are paid double of their daily wages during public holiday overtime works.

2.2 Research Significances

The research output of this study will provide a clearer understanding and validating the factors that influence factory technician turnover intention which will eventually lead to actual voluntary turnover. Losing employees lead to work disruptions, loss of organizational memory along with critical tribal knowledge, loss in productivity,

loss of customer services, loss of mentors or senior personnel, diminished diversity and even turnover contagion where other valued employees might follow the foot step of the leavers [9].

The demand for technical workforce is increasing for well-developed knowledge workers. Manufacturing technician can easily move to other industry such as telecommunication, IT services or even oil and gas which offers more attractive salaries and remuneration package. Treating manufacturing workers as knowledge workers guaranteed considerable change not only in recruiting and retention practices, but also in labor-management relations, career growth opportunities and other aspects of the working model [10]. Malaysia like many other emerging countries, is facing a new economic developmental challenge due to globalization. The world's economies are increasingly interconnected through financial investment, human resource investment, competition and cooperation [11].

3 Literature Review

3.1 Turnover Definition

[12] classified types of turnover as 'voluntary' and 'involuntary'. Voluntary turnover is employee initiated while involuntary turnover is initiated or triggered by organization. Turnover Intention was not just expected as a significant determinant of turnover but also provided the important message for management to control the avoidance behavior of employees [13]. The scope of this research is focusing on voluntary turnover since involuntary turnover due to employee's discipline issue or company right-sizing is desirable. The involuntary turnover could also due to company restructuring or outsourcing some of the functions in the organization. For example, factory employees are offered 'Voluntary Separation Package (VSP)' and upon agreement with the package terms and conditions leaves the company.

This case is considered as involuntary turnover because it was indeed initiated by the company. [14] developed the theory of organizational equilibrium which explained that the employee will stay in the organization if the enticements the organization offers, such as career development and conducive working environment, are equal or better than the contributions such as time and effort, required by the employee. Majority of employees who wanted to quit devote substantial amount of time initially before finalizing the decision, gauging their existing job against possible option, developing their

intentions about what is the right move and also involving in many types of job examining behaviours [15].

3.2 Past Studies on Turnover

Studies on turnover attracts many interests due to its psychological dimension, organizational significance and economic dimension [16]. Researchers have developed a number of theoretical models to better understand employee turnover. These frameworks include [17] model of voluntary turnover. The model primarily researched structural variables that referred to pattern social interaction. These variables are autonomy, distributive justice, job stress, pay, promotional chances, routine works, and social support. Job stress and routine work increase turnover through their negative impact on job satisfaction. The voluntary turnover model also identified three types of social support which are supervisory, peer and kinship. Promotional chances and supervisory support decrease turnover indirectly through their positive impact on job satisfaction and organizational commitment.

In this research, 'turnover intention' is studied and used as dependent variable instead of 'actual turnover'. Turnover intention has been proven previously to be highly correlated with actual turnover and researchers have examined turnover intent rather than actual turnover [18].

According to [19] who reviewed the antecedents to turnover, stated that many studies use turnover intention rather than actual turnover as the outcome variable due to two main reasons. Firstly, there is evidence to indicate that workers normally make a conscious decision to do so before actually leaving their jobs. This relationship is supported by the attitude-behaviour theory [20] which proved that individual intention to perform a specific behaviour is the immediate determinants of that particular behaviour. Secondly, it is more practical to ask employees of their intention to quit in a cross-sectional study compared to actual tracking of the employee who has left via a longitudinal research. Furthermore, the effectiveness of exit interview for the employee who want to quit is questionable because lack of motivation to provide the actual reason. In the examination of the predictors for turnover intention to leave a job [21] observed that emotional exhaustion, lower levels of intrinsic job satisfaction, dissatisfaction with salary and promotional opportunities were the main predictors. One of the recent studies done on manufacturing workforce that includes manufacturing

operators and technicians revealed that all four of human resource management practices have positive relationships with intention to stay [22]. Compensation and benefits, career development, training and development and performance appraisal have positive relationships with intention to stay. Researches done by [23] and published in the Journal of Vocational Behavior showed that the organizational career growth factor was negatively related to turnover intentions. The results proven that greater opportunities provided by an organization for employees to meet their career goals, acquire additional professional skills, and the degree to which the organization rewards those activities, make the employee less likely to think about leaving the organization.

3.3 Academic Construct

3.3.1 SWOT and TOWS Matrix Analysis on E&E Factory

SWOT analysis was carried out as part of the situational analysis in order to analyze the current state or current situation in the E&E Factory and its ability to retain Manufacturing Technician workforce. The SWOT analysis evaluate the internal factors which are strength and weakness and the external factors which are opportunities and threat in the E&E Factory.

The outcome of the SWOT Analysis concluded that the E&E factory has a strategic advantage of having majority of their manufacturing technicians who have a lot of working experiences and have served in the factory and manufacturing industry for more than ten years. This factor could also become a setback or disadvantage to the organization because these technicians are highly employable and can easily obtain a job outside especially if there is a new factory open around Kulim Hi-Tech Park industrial area or in Penang Free Trade Zone.

The Factory has operated in Kulim Hi-Tech Park since 1996 and the Manufacturing Technicians who were part of pioneer start-up team has grown to become Senior Technician and their basic salary is inside or approaching ceiling pay range. The adverse consequence of reaching ceiling pay is basically there will be no pay increment in the future years unless the senior technician grow to the next level executive job category that has much higher salary ranges. Lack of technical career path is a key weakness and the management should craft and develop new career growth opportunity for manufacturing technician as part of an effort to retain the technical workforce in shift operation.

The organization has a good opportunity to collaborate with local educational institution to develop and provide a conducive program for factory technician to enhance their education level and obtain technical degree. Currently, there are limited further education programs for working people designed specifically for those who work in rotating shift pattern. This effort will benefit for both, employee who can acquire new knowledge and also to the organization that will have more knowledgeable and competent technical workforce align to future technology requirement and challenges.

Discrimination and harassment issue are against organizational justice. The E&E Factory who has a diverse workforce should not take the discrimination issue lightly. Human resource officer should create proper channel for employee to report any discrimination case and appropriate action should be taken on the employee involved. Ensuring working environment and culture free of discrimination is important to retain workforce and creating a great place to work.

3.3.2 Employee Retention Program

The E&E Factory retention program is focusing on four elements; which are employee development, empowerment, recognition and teamwork. Development is one of effective way of motivating employees in the organization. Employees, who have done routine works for so many years, will be excited and energized if they are given an opportunity to learn and doing something different. It is important to ensure employees across all levels that include operator and technician to focus on developing new skills and planning for the on-going career development.

Workers who are empowered demonstrate higher energy, passion and commitment. This energy produced extra effort and initiative to improve performance continuously without being supervised closely or directly. The working environment and culture that promote empowerment provides a conducive workplace for the employees to learn, which increases their capability, knowledge and influence. It also enables and encourages employees to manage the scope of their work. Management is encouraged to immediately acknowledge and recognize the achievement and sacrifices made by employees. Personal congratulations are one of the most powerful non-financial motivators identified. Strong teamwork is one of the most important elements in continuous flow manufacturing environment. In the E&E Factory, group discussion and open communication

are encouraged whereby each employee can openly share their feelings and offer suggestions. Teambuilding session such as recreational outing, sport activities, outdoor challenge and structured workshop program are commonly organized in the E&E Factory.

3.3.3 Theoretical Framework

Turnover intention has been identified as the dependent variable while career growth, further education and discriminatory treatment are the independent variables in this applied business research. The hypothesis is that all three independent variables are a significant factor in influencing the turnover intention among manufacturing technicians in the E&E factory and the scope of this study focus was on the E&E factory currently operating in Kulim Hi-Tech Park industrial area.

3.3.4 Research Objective

The objective of the study was to understand the factors that influence manufacturing technicians' turnover intention. Associated to other white-collar factory workforce such as directors, managers and engineers, there was not many research done focusing on factory technician who is considered as blue-collar workforce. The aim of this research is to gauge how serious is the turnover issues in E&E manufacturing factory and identify what are the factors that influenced the turnover intentions.

This research is based on applied method and the objective is to probe, carry out detail research, determine the significant factors and recommend solution to the problem related to factory technician turnover issue in E&E manufacturing industry. This applied business research objective is to study the relationship between career growth, further education, discriminatory treatment and turnover intentions among manufacturing technicians in E&E factory currently operating at Kulim Hi-Tech Park industrial area.

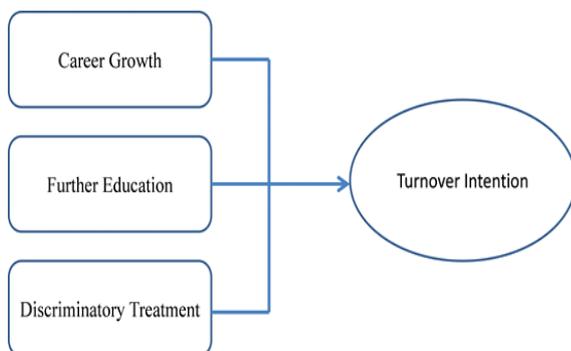


Fig.1: Applied Business Research Concept Theoretical Framework

3.3.5 Research Hypotheses

Hypothesis # 1: Career growth is an influential factor in affecting turnover intention and the relationship is negative

Hypothesis # 2: Further education is an influential factor in affecting turnover intention and the relationship is positive

Hypothesis # 3: Discriminatory treatment is an influential factor in affecting turnover intention and the relationship is positive

3.3.6 Research Questions

The results of this applied business research will enable the following questions to be answered and the hypothesis to be validated. All the answers for these six questions will be beneficial and useful in defining and developing strategies to retain technical workforce in the E&E factory.

- To decide and validate whether career growth is an influential factor in affecting turnover intention?
- To confirm what is the connection concerning career growth and turnover intention variables?
- To decide and validate whether further education is an influential factor in affecting turnover intention?
- To confirm what is the relationship between further education and turnover intention variables?
- To decide and validate whether discriminatory treatment is an influential factor in affecting turnover intention?
- To confirm what is the link between discriminatory treatment and turnover intention variables?

4 Methodology

4.1 Research Design

This study used quantitative method of research. A survey questionnaire was distributed to manufacturing technicians across all four shifts in the E&E Manufacturing organization. Briefing session with technicians was conducted at the production floor emphasizing on the assurance that the response and feedback will be treated confidentiality. The goal is to gather accurate information about the level of relationships between career growth, further education, discriminatory treatment and turnover intentions among Manufacturing Technicians in Electrical and Electronics Factory at Kulim Hi-Tech Park.

4.2 Primary and Secondary Data

Questionnaires are an effective data collection method when the researcher understand the requirement and measurement regarding the variables of interest. In the process of building the questionnaires, the type of questions used are structured questions. The questionnaires are separated into 2 sections comprise of demographics and variable questions. The items were measured using five-point Likert-type scale, with scoring of 1 for “strongly disagree” and 5 for “strongly agree”.

Items selected for turnover intentions (dependent variable) and career advancement (independent variable) were adapted from two human resource journals, which are The American Review of Public Administration (2005) and Public Personnel Management (2012) written by Soon Hee Kim, PhD. These questionnaires were selected because they were relevant to the similar technological workforce as the subject matter of this research. The survey questionnaire was distributed to Manufacturing Technician in E&E Factory at Kulim Hi-Tech Park. The survey session covered all 4 shifts and a total of 120 questionnaires were distributed. Total of 109 surveys were received back. 11 technicians refused to participate in the survey due to their own prerogative. Besides, 2 surveys respondent were discarded because the answer given was all neutral. In summary, total of 107 survey data were collected which was equivalent to 89 percent response rate. The response rate is high because of the very aggressive follow-up carried out during the data collection process.

4.3 Data Analysis and Interpretation

The response data gathered were statistically computed using Statistical Package for Social Science (SPSS) Version 20.0. In the data analysis steps, the data congregated are statistically analyzed to conclude if the hypothesis that were generated have been supported and validated.

In order to distinguish the level of technicians' turnover intention, a regression analysis was performed to define the relationships amongst these variables. The Cronbach Alpha test was carried out to determine the consistency and stability of each variable in this research. Frequency distribution method analyzed the entire questionnaire as a whole in frequency view. This was a mathematical distribution with the objective of obtaining a count of numbers responses associated with different values of one variable and to express these counts in percentage term [24]. The frequency distribution table illustrated the insight view and summary about respondent demographic profile.

5 Results and Discussion

The data analysis and exploration were presented predicated on the method that have been chosen and discussed earlier in chapter three. To analyse the data obtained from the respondents, the SPSS is utilized to explore details on the result.

5.1 Descriptive Analysis

Descriptive statistic is used to digest and define the obtained information from a sample distribution group of responders. The measurement of the central tendency, dispersion and hypothesis was by using SPSS package.

5.1.1 Results of Response

Table 2 displays the details of sampling result for all respective respondents according to their shift allocated. A sum of 120 questionnaires was given out and 109 responses received, contributing 91 percent response rate. But, a total of 2 technicians' responses were excluded from analysis as the answer given was all neutral. Thus, only 107 cases are considered complete and ready to use for this research which contributes 98 percent of questionnaire total response.

Table 2: The Details of Sampling Result

Respondents	Total of Questionnaires Handed Out	Questionnaires Received (Response)	Questionnaires Received (in percentage)	Total Useable	Total Useable (in percentage)
1. Rotating Shift #1 & 2	60	57	95	55	97
2. Rotating Shift #3 & 4	60	52	87	52	100
Total	120	109	91	107	98

5.1.2 Demographic Analysis of Respondents'

All demographic information was attained from the respondents and has been shortened in Table 4. The top respondents were male at 79% and the remaining percentages were female at 21%. This table also displays, Malay are the largest race for respondents involved in this research with a rate of 74% followed by other races, India and Chinese with the respective percentage of 16 percent, and 9 percent. The others race in this research were Siamese at 1%.

In the age group category, the biggest pool of age was from 31 to 40 years at 70 percent. Meanwhile, the second ranked group was those ages more than 40 years at 17 percent followed by 26 to 30 years at 11 percent of the respondents.

The demographic also shows the total respondents with technical diploma were 84 respondents or 79 percent (more than half of total

respondents). Meanwhile, there were only 15 respondents or 14 percent of total respondents from technical certificate educational background. The remaining respondents or 6 percent were degree holder and only 1 percent was in Sijil Pelajaran Malaysia (SPM) level. As presented in Table 3, 100 percent of target sample was Manufacturing Technician.

Table 3: Frequency Analysis (N=107)

		FREQUENCY	PERCENTAGE
SEX	M	85	79
	F	22	21
	Total	107	100
ETHNIC	Malay	79	74
	Chinese	10	9
	Indian	17	16
	Others	1	1
	Total	107	100
AGE	20-25	2	2
	26-30	12	11
	31-40	75	70
	More than 40	18	17
	Total	107	100
MARRIED STATUS	Single	20	19
	Married	87	81
	Total	107	100
EDUCATION LEVEL	SPM	1	1
	Certification	15	14
	Diploma	84	79
	Bachelor's	7	6
	Degree		
	Master's Degree	0	0
	Total	107	100
YEARS OF SERVICE	< 1 year	2	2
	2 – 5 years	11	10
	6 – 10 years	9	8
	11 – 15 years	36	34
	> 15 years	49	46
	Total	107	100
CURRENT POSITION	Operator	0	0
	Technician	107	100
	Supervisor	0	0
	Engineer	0	0
Total	107	100	
CIRCUMSTANCES BEING DISCRIMINATED	Promotion	42	39
	Pay	16	15
	Increment	31	29
	Performance	12	11
	Training	2	2
	Job	4	4
	Assignment	107	100
Total			

Table 4: Reliability Table

Variables	Cronbach's Alpha
Career Growth (IV)	0.664
Further Education (IV)	0.618
Discriminatory Treatment (IV)	0.619
Turnover Intention (DV)	0.644

Table 4 indicates that all variables are ranging from 0.618 (smallest amount) to 0.664 (biggest amount). All variables exposed that Cronbach's alpha value is more than 0.60. The factor choice influencer is still satisfactory because of its undependability as shown by the Cronbach's alpha is between 0.60 and less than 0.70 in this study

5.1.3 Analysis of Factors

The next level to analyse four variables. The mean analysis was acclimated to determine the main factors that influence technicians' turnover intention.

5.1.4 Mean Analysis

The mean of the variable was exploiting to find the key elements inspire the technicians' turnover intention in order to achieve the research objective and questions. Table 5 illustrate a summarization of means of calculated items based to all variables (Independent Variables; IV and Dependent Variable; DV).

Table 5: Tendency level of agreement

Mean Score	Tendency Level of Agreement
1.0 – 2.33	Low
2.34 – 3.66	Medium
3.67 – 5.00	High

Source: [25]

Table 6: Means summary of calculated items according to variable (N=107)

Variables	Mean Score	Standard Deviation SD
Career Growth (IV ₁)	4.21	.523
Further Education (IV ₂)	3.52	.73
Discriminatory Treatment (IV ₃)	4.23	.414
Turnover Intention (DV)	4.18	.468

The means of all computed items are above 3.00 which showed that the respondent consider all factors have medium to high tendency level of agreement [25] towards turnover intention. Discriminatory treatment factor and career growth factor exhibited high tendency level of agreement while further education factor has medium level of agreement.

5.1.5 Correlation Analysis

Correlation study was conducted to recognize the substantial connection concerning the dependent variable and independent variables. All the independent variables are examined according to Pearson's correlation of the dependent variable.

Table 7: The correlation concerning dependent variable and independent variables

		Career Growth	Further Education	Discriminatory	Turnover Intention
Career Growth	Pearson Correlation	1			
Further Education	Pearson Correlation	.323**	1		
Discriminatory	Pearson Correlation	.533**	.290	1	
Turnover Intention	Pearson Correlation	.555**	.315**	.363**	1

Table 7 illustrates the connection between the IVs and the DV. Explanations of the results from Table 9 are as follows:

1. All influences variables were clearly indicated positive correlation with technicians’ turnover intentions.
2. Results for the correlation of the factors variables:
 - a. Career growth indicates the top correlation to technicians’ turnover intention standing at 0.555. This figure views at moderate correlation.
 - b. Further education has the least correlation to technicians’ turnover intention of 0.315. Though, it is considered as weak correlation.

5.1.6 Hypothesis Test

This study focusses to test the hypothesis for analyzing the relationship between all three independent variables and turnover intentions among Manufacturing Technicians in E&E Factory at Kulim Hi-Tech Park. The approaches utilized in testing the hypothesis were reliability test and Pearson correlation analysis.

Table 8: Summary of the hypothesis results

	Hypothesis	Association	Result
H1	Career growth is an influential factor and has significant association with turnover intention	Negative	Proven
H2	Further education is an influential factor and has significant association with turnover intention	Negative	Proven
H3	Discriminatory treatment is an influential factor and has significant association with turnover intention	Positive	Proven

5.2 Findings Justification and Discussion

5.2.1 Career Growth

The influential factor of career growth is established from mean score and standard deviation while the significant association with turnover intention is determined based on Pearson correlation test. Mean score for career growth factor was 4.21 and the standard deviation was 0.52 which indicated high tendency level of agreement on the factor. Career growth has significant association with turnover intention based on Pearson correlation test with coefficient value of 0.55. The important principle in this factor with a mean score of 4.31 is “Fair opportunity for career advancement or promotion will influence my quitting decision.

5.2.2 Discriminatory Treatment (IV3)

The discriminatory treatment (IV3) has been identified as the influential factor which affected technicians’ turnover intention with average mean score of 4.23. Discriminatory treatment factor has a significant association with turnover intention based on Pearson correlation test with coefficient value of 0.36. The primary most influential criteria that made up this factor were “Discriminatory treatment will influence my intention to quit as it has the highest mean score of 4.270.

Meanwhile, “I experienced being discriminated in the current organization.” was second criteria with a value mean of 4.130. It shows us that experiencing discriminatory additionally contribute toward turnover of the technicians.

5.2.3 Further Education

Based on mean score of 3.52 and standard deviations of 0.73, further education was an influential factor that affected turnover intention. It also has a significant association with turnover intention based on Pearson correlation test with a coefficient value of 0.32 which was weaker compared to career growth and discriminatory treatment factors. The study showed that the rotating working shift pattern became a hindrance for them to further improve their education level (mean of 3.64), trailed by they might quit their job for furthering education with the mean value of 3.39.

5.3 Conclusion of Analysis

Based on the finding from the research analysis the researcher can conclude the discussion as displayed below:

Table 9: Conclusion of Analysis

IV's	RELIABILITY TEST	PEARSON CORRELATION
Career Growth	0.664 (Moderately Acceptable)	0.555 (Acceptable)
Further Education	0.618 (Moderately Acceptable)	0.315 (Acceptable)
Discriminatory Treatment	0.619 (Moderately Acceptable)	0.363 (Acceptable)

From the table above, reliability test displays that all of the independent variables are acceptable while Pearson correlation analysis indicates that all of independent variables have significant association with dependent variables. Career growth has the highest correlation coefficient followed by discriminatory treatment and further education.

6 Conclusion and Recommendations

The results of quantitative statistical analysis indicated that career growth is an influential and significant factor in contributing towards turnover intention. It is the most significant factor and has negative relationship with turnover intention. The lack of career growth has induced increased in turnover intention. The second most significant factor in contributing towards turnover intention is discriminatory treatment factor and the least significant is further education factor. Discriminatory treatment has positive relationship with turnover intention. Any discrimination practices towards technicians in the factory will induce higher turnover intention. The results also validated and proven the theoretical framework as illustrated.

6.1 Usage of the Findings

6.1.1 Career Growth

This research result is consistent with the findings of the previous study conducted by [23] which discovered that the organizational career growth factor and turnover intentions are negatively related. [26] defines career as the sequence of a person's work-related activities and behaviors and associated attitudes, values, and aspirations over the span of one's life.

The start-up level for Factory Technician I is at Grade 55. The next progression moves up to Grade 56 and the current highest grade for technician is Grade 57 for Senior Technician. Career path defines

as the series of work experiences that prepare an employee for higher – level jobs [27]. The issues observed and involved technician that have reached the highest-grade level 57 and stuck there without any clear or limited opportunity to progress further. At time of research, there was no clear growth path for job progression beyond Grade 57, which resulted in the Manufacturing Technician exploring better job prospect in other functional groups within the E&E factory or moving out of the company that provide better offer for them.

Based on this research findings, there is a strong need to provide more solid and clearer technical career path for Manufacturing Technicians after Grade 57. The next promotion grade level after Grade 57 is advancement to Grade level 03 which is categorized as Executive or Exempt level in this E&E Factory. The Grade 57 Senior Technician is allowed to apply for any Grade Level 03 position upon approval from their immediate supervisor. The subsequent level technical career promotion is Equipment Specialist II which is a Grade 5 position and then the next upgrade level moves up to Senior Equipment Specialist which is Grade 6 Executive level position. This career promotion path is equivalent to engineering job category career progression which start at Grade 03 for Engineer I and advance to Grade 5 for Engineer II, followed by Grade 6 for Senior Engineer position.

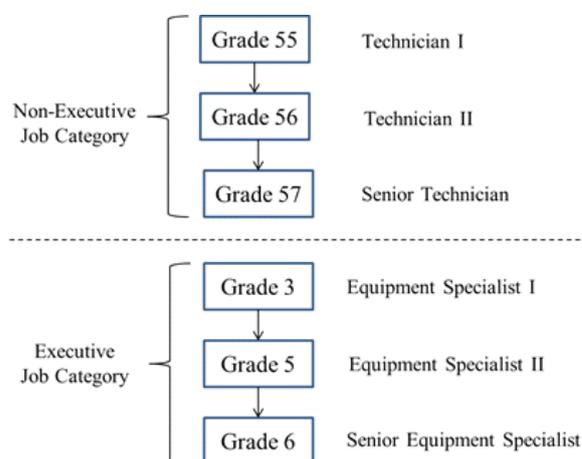


Fig.2: Proposed New Career Growth Path for Factory Technicians Working in Shift Operation

6.1.2 Discriminatory Treatment

In this study, discriminatory treatment is proven as a significant factor in affecting employee turnover intention. The mean comparison analysis indicated that discriminatory treatment factor has the highest mean value at 4.23, which reflected that E&E factory technicians regarded discrimination or prejudice as a key factor in influencing turnover

intentions. Another alarming fact was most technicians have experienced being discriminated during their tenure working in the E&E factory being studied. The descriptive statistics analysis results revealed that technicians rated employee promotion at 39.3 percent and performance appraisal at 29 percent as the most susceptible and most common area discriminatory treatment occurred.

The gender and ethnic disparity in earnings are still subsist despite the enactment of merit predicated or incentive pay practices [28] [29]. Organization is suggested to utilize performance reward systems and implement meritocracy system that invigorating the link between rewards and performance evaluations which increase job satisfaction and motivates employees to work even harder [30] [31] [32].

6.1.3 Further Education

This research result is consistent with the discoveries of the previous research completed by [27]. Presently, knowledge intensive economy mandates for continuous educating and upgrading capabilities are convincing all workers that includes the low qualified employees like Factory operators and technicians [33]. Moreover, previous studies have discussed that further education and skills training help improving the person economic self-sufficiency [34][35]. [25] defines career path planning as "a deliberate process for becoming aware of self, opportunities, constraints, choices, and consequences; identifying career- related goals; and programming of work, education, and related developmental experiences to provide the direction, timing, and sequence of steps to attain a specific career goal.

6.2 Research Limitations

There are a few limitations in this study. Firstly, the research focused on Electrical & Electronics manufacturing industry and concentrated on Manufacturing Technician job category. In the Electrical & Electronics factory, Manufacturing Technicians are the second biggest functional group after Manufacturing Operators. There are 4 crews or shifts that rotate subsequently 12 hours and the factory runs all day and all night for 24 hours per day, 7 days per week. In other words, the factory did not stop except when there was a factory scheduled downtime for maintenance. This study did not cover technicians work in other functional groups in the Electrical & Electronics factory such as Engineering Technicians, Facilities Technicians or Information

Technology Technicians who customarily working in office hours or normal shift arrangement.

6.3 Recommendations for Future Research

More researches on technical workforce and maintenance workers are essential as Malaysia marching forward to become a fully developed nation. Traditionally Malaysia's E&E Manufacturing industry was inclined or heavily dependent on manual process because of relatively cheaper labor cost compared to the multi-national company home labor cost.

However, recent trends and business environment revealed that other emerging and developing countries such as Vietnam and Indonesia have able to attract foreign direct investment by offering cheaper labor cost to the multi-national companies.

E&E Manufacturing sector is evolving and transforming from labor intensive to capital intensive high technology equipment and moving towards higher value-added technology driven industries such as semiconductor wafer fabrication and optoelectronics that require advanced technical workforce. In depth benchmarking study should be done on technical workforce in advanced nations like Germany, Japan and the United States of America. The main difference is that, in Malaysia the Manufacturing Technician requires Technical Certificate or Technical Diploma for qualification, in contrast to the more advanced Manufacturing environment, whereby the factory technicians required to have an Engineering Degree [36]. The Factory Technician career in fully developed countries is highly recognized and command or receive higher compensation and benefit.

7 Conclusions

The analysis of the results indicated that all three independent variables are proven to be an influential and significant factors for turnover intention. The most influential and significant factor was career growth, followed by discriminatory treatment at workplace. Further education was confirmed to be the least influential and least significant factor. This study has proved the importance of providing clear technical career growth path and advancement for senior factory technician. The experienced and highly capable factory technician must be given opportunity for promotions to executive level job category while still remain working in manufacturing shift operation. This new technical career path is recommended and should be clearly

communicated so that it will motivate and inspire the factory technician to develop their knowledge and capability.

Moreover, this study also revealed that discrimination was an influential and significant factor and the issue was quite alarming. The recommended area of focus as shown by this study is on promotion and performance appraisal issues. In addition, it is also recommended to the management of E&E factory to support the factory technician further education needs by providing financial support and partnering with local college or university to develop a flexible technical degree program which is conducive for the factory technician who works in rotating shift pattern to participate and enhance their qualification level. Comprehending the factors that influenced turnover intention is a pre-requisite and crucial information required for the Human Resource department in the multi-national company to develop solid retention strategies and programs to retain technical workforce. High cost involved in hiring, training and developing capable technical workforce and direct negative impact to factory operation performance are driving the importance and significance of this research. The roles and contributions of the technical workforce should not be overlooked. Retaining, developing and enriching factory technician job are vital as the country marching towards becoming a fully industrialized and developed nation.

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