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Case Study for Skills Management Approach to Manage and Retain The Highly-Skilled Blue Collar Workers

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Abstract: Skills are essential to enable the highly-skilled blue collar workers to perform their jobs. There is a phenomenon of job hopping among the highly-skilled blue collar workers in the high technology manufacturing (Electrical and Electronics) industry in Malaysia. It is challenging to retain highly-skilled blue collar in the Electrical and Electronics (E&E) in Malaysia because it is resources-consuming to produce this group of workers. How to manage and retain the highly-skilled blue collar workers in the E & E industry in Malaysia? The research aims to prove the applicability of a developed theoretical framework for skills management process to manage and retain highly skilled blue collar workers in the high technology manufacturing (Electrical and Electronics) industry in Malaysia. The researcherss apply the method of study-semi-structured and in-depth interviews to collect data to verify the derived theoretical framework for the skills management process. It consists of four stages with activities: skills planning, skills development, skills transfer and skills retention. The concept of skills management developed by the researcherss in this study is a new and original concept. It has not been done by other researchers in the field of management science.

Key words: Skills management, skills planning, skills development, skills transfer, skills retention, highly-skilled blue collar workers

INTRODUCTION

A National Key Economic Areas (NKEA) is defined as a driver of economic activity that has the potential to contribute a quantifiable amount of economic growth to the Malaysian economy directly (PMO, 2010). Electrical and Electronics (E&E) industry in Malaysia is categorised as one of the NKEAs among the various manufacturing industries in Malaysia.

Skills are essential to enables the highly-skilled blue collar workers to perform their jobs. Skills as basic ability refer to the ways by which an individual adjusts to life. Skills can be defined as the ability a worker provides in exchange for remuneration at the workplace. Skills are associated with know-how while speed and accuracy are some of its traits and characteristics (Adeyemo, 2010). Both of the worker and the employer obtains satisfactions in correspondence if the skills provided at the workplace are satisfactory (Baiyelo and Adeyemo, 2001). Skills must be developed through training, practice and experience. Skills are quality of performance which does not depend solely upon a person's fundamental and innate capacities (Adeyemo, 2010). Skills are concerned with what a person can do rather than with what one knows. Labour economists viewed skills as a property of individuals from a various combinations of education, training and competence (Tight, 1996).

It is a great talent loss to a manufacturer in the E&E industry when job hopping is happening among the highly-skilled blue collar workers. This group of workers possesses specific skills which are difficult to be replaced by automation in the specific research areas. Therefore, they are highly demanded in the E&E industry in Malaysia. Retaining skilled workers is challenging. This is because too many resources have been in place to train and equip a worker to be skillful and competent at job.

In conjunction with this, the manufacturers in the E&E industry must think of alternatives to manage and retain these highly-skilled blue collar workers. Therefore, an organisation must have a proper skills management approach in order to plan, develop, transfer and retain the skilled workers for high technology industrial advancement. Skills Management refers to the ability of

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an organisation to optimise the use of its human resources. Skills management enables an organisation to optimise outcomes while ensuring the most effective, flexible and cost-effective use of workforce (Dubois and Singh, 2009).

The primary purpose of Skills Management is to allocate the appropriate skills at the correct place, at the right time, at optimal costs (Kreitmeier *et al.*, 2000). A person with knowledge does not guarantee he or she has the ultimate skills required (Cheong, 2014).

The research conducted in-depth interviews at company X, an E&E company to represent the high technology industry in Malaysia for data collection. Company X (concealed organisation) is a company that experience in electronics manufacturing for European and US customers. Company X is a low to medium volume, high mix manufacturing company with capabilities in: Assembly and testing of PCBs cable and cable harness assembly manufacture of complex electronics systems and box build assembly value add services in engineering, project management.

There are 50 highly-skilled blue collar workers (among the 315 total employees) at the company X which worth for the research to be conducted.

The company is worth for study because it has it is a high technology manufacturing company which serves a range of industries including aviation, medical, defence, manufacturing and telecommunications.

The primary objective of the research is about "skills" management. In summary, the research focuses to study on highly-skilled blue collar workers because this group of workers possesses high skills which cannot be replaced by automation or machinery.

Blue collar workers refer to employees whose job entails physical labor such as in a factory or workshop (Buisness Dictionary, 2015). Highly-skilled blue collar workers refer to individuals who are able to carry out a trade of activity that involved knowledge, judgment, accuracy and manual dexterity.

In addition, the qualifications of these people are acquired through long duration of training (Adeyemo, 2010). A skilled worker is a man who has achieved a high degree of proficiency and recognition in his vocation.

Skilled performance has to do with production of appropriate responses to a particular problem (Legge, 1970). Skilled person is the highest type of workman, whether in production industry or in trade (Fryklund, 1956).

There is a phenomenon of job hopping among this group of workers. MIDA (2014) stated that "E&E industry recorded the highest investments approved in 2013 with 118 projects amounting to RM9.8 billion." Therefore, the statement significantly indicates that there is large investment in the E&E industry in Malaysia.

This creates high employment opportunities in the E&E industry. In conjunction with this, there is fair competition among the manufacturers in the E&E to employ the talented highly-skilled blue collar workers.

It is essential for all manufacturers in the E & E industry to retain these highly-skilled blue collar workers and to reduce turnover rate among the workers. Therefore, the focus of the research is to conduct a research in order to verify a developed theoretical framework by the researcherss to manage and retain these highly-skilled blue collar workers in the high technology manufacturing industry.

Literature review: Skills management includes the following four major stages of processes:

Skills planning: Skills planning involves predicting what competences will be needed 1-5 year, instead of forecasting the future supply of and demand for employees (Taylor, 2010).

Skills development: It is important to hire people who are willing and able to learn the job and accept training when companies are unable to pay competitive wages (Phillips and Gully, 2009). On-The-Job Training (OJT), workshops and seminars are methods to develop skills of skilled workers (Blanchard and Thacker, 2010).

Skills transfer: Skills transfer can be defined as the process by which the skills developed by a creator is practiced and utilised by an applier (Khalil, 2000).

Skills retention: A firm is likely to have what it needs to appeal to new highly-skilled blue collar workers if the firm is successful to keep its employees satisfied and productive. Retaining skilled workers is able to produce a more loyal and committed workforce with a better understanding of the company's products, services and processes and decreased staffing costs (Phillips and Gully, 2009). Each stage of these processes consists of activities.

Skills planning: The first stage of Skills Management is Skills Planning. Taylor (2010) noted that the primary

objective of Skills planning is to predict what skills will be needed along the technology life cycle of the business, skills planning include.

Skills forecasting: Skill forecasting can be defined as "prediction of technical performance of skills in the future" (Bidgoli, 2010). The three skills forecasting methods discussed in the study are monitoring, trend extrapolation and expert opinion. Monitoring is an orderly method used to gather and analyse data to perform prediction about the future (Porter *et al*., 2011). Trend Extrapolation predicts the future by using the historical data (Porter *et al*., 1991). Bidgoli (2010) defined expert opinion as "application of expert knowledge of individuals or groups to replica relationships between events or observations and to foresee future states of that event or observation".

Skills planning: Skills planning can be defined as the process in determining how a company can best utilise skills to accomplish the company's mission (TechSoup, 2014).

Skills assessment: Skills Assessment is advantageous to ensure that training is linked to the learner and make it the easiest to achieve organisational objectives (Gupta *et al*., 2007).

Skills analysis: Skills Analysis can be used to determine the skills required by the skilled blue collar workers to achieve an acceptable standard of performance. It is done by performing job breakdown (Armstrong, 2001).

Skills development: The second stage of skills management is skills development. The primary objective of skills development is to plan the capabilities required in an organisation for long term by directing the staffing and development activities accordingly skills development includes (Thamhain, 2005).

Skills assessment: Skills assessment for skills development is particularly/significantly important when a company needs to implement new technology and to identify training needs at the skills development stage (Gupta *et al*., 2007).

Skills audit: It is to enable the employer to have a better picture of where the skills shortages lie or will lie in the future. This is particularly essential to identify what trainings are appropriate to the workforce (Maund, 2001).

Skills improvement: Employer of a firm should provide on-the-job experimental training using selected research assignments and managerial guidance to achieve skills improvement among the employees (Thamhain, 2005).

Skills acquisition: Skills acquisition can be defined as "gaining and adapting new skills through know-how, hardware, software, design and manufacturing capability for improved performance and long-term competitiveness" (Bidgoli, 2010). An organisation can either develop skills of its staffs internally or acquire them externally through different skills acquisition channels.

Skills exploitation: The primary purpose for the process of skills exploitation is to make profit or to gain other benefits from skills. Skills exploitation can be defined as the utilisation of new skills to improve the performance of manufacturing processes (Cetindamar *et al*., 2010).

Role enhancement: The primary objective of role enhancement is to expand blue collar workers' skills so they can assume a wider and higher range of responsibilities through innovative and non-traditional roles (Sibbald *et al*., 2004).

Role enlargement: Role enlargement is the horizontal accrual and diversification of employees' skills. Role Enlargement enables blue collar workers to extend their activities and take on roles and functions at parallel levels or lower levels (Ozturk *et al*., 2006; O'Reilly, 1992; Buhler, 1990).

Role substitution: The primary objective of role substitution is to expand practice scopes by encouraging the workforce to work across and beyond traditional professional divides to achieve more efficient workforce exploitation (Sibbald *et al*., 2002).

Role delegation: The primary objective of role delegation is to transfer certain responsibilities or tasks from one grade to another by breaking down traditional job demarcations (Dubois and Singh, 2009).

Skills transfer: The third stage of skills management is skills transfer. Skills transfer can be defined as " transfer of skills and know-how to a company or a department for integration into their product or process" (Bidgoli, 2010). Skills transfer in an organisation may occur internally and

externally. The researcherss propose four activities for Skill Transfer within the organisation (Internally): Motivation to learn, Motivation to transfer, Transfer intention and Training transfer.

Internal skills transfer: Motivation To Learn (MTL) can be defined as a specific desire of employee to learn the content of the training programme (Noe and Schmitt, 1986) and to fully embrace the training experience (Carlson *et al*., 2000). Noe (1986) Defined Motivation to Transfer (MTT) as employees' intended effort to utilise skills learned in a training setting to a workplace.

Transfer Intention (TI) can be defined as employees' end-of-course motivation to apply aspects of training in the work setting (Foxon, 1993). Training Transfer (TT) can be defined as employees effectively and continually apply what they learned in training (knowledge, skills, behaviours, cognitive strategies) to their jobs (Broad and Newstrom, 1992).

The following are factors which affect an organisation in the four activities of skills transfer proposed by the researcherss:

Peer support: The encouragement and assistance that employees accept from their coworkers (Blanchard and Thacker, 2010).

Supervisor support: Nijman *et al.* (2006) defined supervisor support as the extent to which supervisor behaves in a way that optimises employees' use on the job of the knowledge, skills and attitudes gained in training.

Transfer climate: Tracey *et al.* (2001) defined transfer climate as perceptions about characteristics of the research environment that help or restrain the use of trained skills and behaviours.

Identical elements: Blume *et al.* (2010) and Facteau *et al.* (1995) noted that employees are more motivated to transfer newly acquired skills when they believe the training stimuli can response to be more identical to their research setting.

Team management style: Team Management style is an approach to analyse the style of management (collective leadership) in terms of two dimensions: concern for people and concern for production (Morse and Babcock, 2010).

Training design: Training design refers to the characteristics of the learning environment (Noe, 2008).

Mentoring: Mumford (1993) defines mentoring as 'a protected relationship in which experimentation, exchange and learning can occur and skills, knowledge and insight can be developed.

External skills transfer: External skills transfer involves international skills transfer, regional skills transfer, cross-industry skills transfer and inter-firm skills transfer.

International skills transfer: International skills transfer occurs when skills transfer is across national boundaries (Khalil, 2000).

Regional skills transfer: Regional skills transfer occurs when skills are transferred from one region of the country to another region of the country (Khalil, 2000).

Cross-industry skills transfer: Cross-industry skills transfer occurs when skills are transferred from one industrial sector to another industrial sector (Khalil, 2000).

Inter-firm skills transfer: Inter-firm skills transfer occurs when skills are transferred from one firm to another firm (Khalil, 2000).

Skills retention: The fourth stage of Skills Management is Skills Retention. Skills retention can be achieved when highly-skilled blue collar workers are retained at the workplace. The researcherss stress those skills retention in this context can be achieved when an organisation is able to fulfill the needs of highly-skilled blue collar workers. These needs can be illustrated by using McClelland's Learned Needs as followed: (Morse and Babcock, 2010).

The need for achievement: The need for achievement can be defined as the drive or desire to excel to accomplish something better than what has been done previously (Morse and Babcock, 2010).

The need for power: The need for power can be defined as the desire to control one's environment, including resources and people (Morse and Babcock, 2010).

The need for affiliation: The need for affiliation can be defined as the need for human companionship and acceptance (Morse and Babcock, 2009). The proposed theoretical framework is shown in Fig. 1:

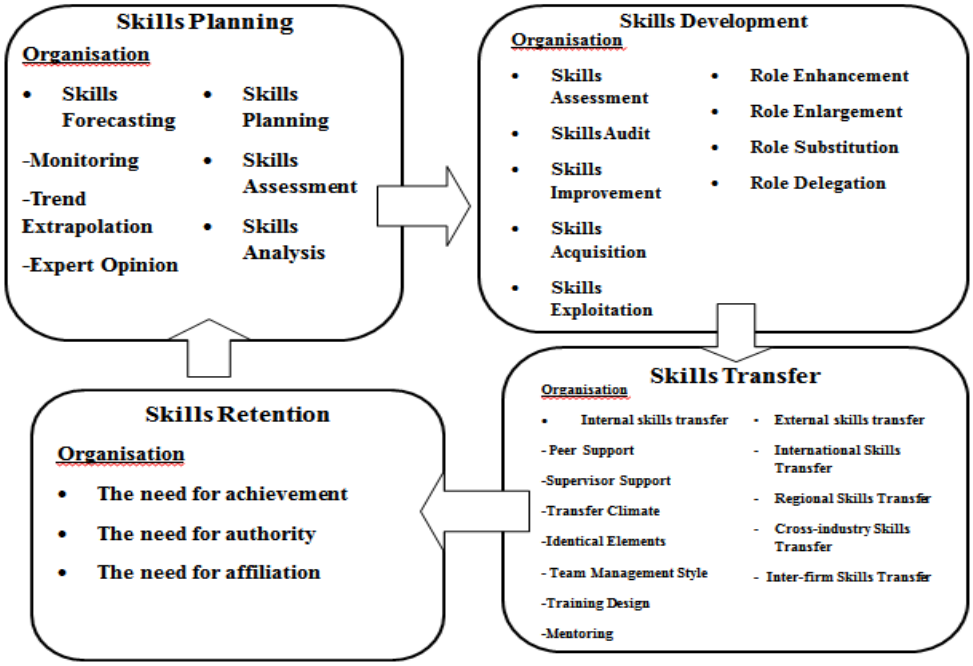

Fig. 1: Theoretical framework for skills management process

MATERIALS AND METHODS

The research is a single case study, because it studies on a single high technology company in the E&E industry in Malaysia which represents the company in the high technology manufacturing industry. The company (Company X) chosen for the case study is a manufacturer of high-technology electronics for the industrial, aerospace and defence sectors. A case study explores a research topic or phenomenon within its context or within a number of real-life contexts. A single case is selected because it is typical and it enables the researcherss to observe and analyse a phenomenon that few have considered before. The important aspect to use a single case is to define the actual case (Saunders *et al*., 2012).

The research is an exploratory study because it intends to discover what is happening in the skills management and to gain insights about this topic of interest (Saunders *et al*., 2012). In addition, the research is an exploratory study because it is used to clarify the thoughts and opinions about the research problem which is to derive a theoretical framework for skills management process (Kumar *et al*., 2013).

The research is qualitative in nature due to it is an exploratory study. The research involves in-depth and semi-structured research interviews due to its exploratory element. The researchers are able to 'probe' answers to require the interviewees to explain or build on their responses when the researcherss apply the semi-structured and in-depth interviews as the methods of data collection (Saunders *et al*., 2012). The researcherss interview the managerial staffs, engineers and highly-skilled blue collar workers in the company X to verify the theoretical framework of the skills management process. The data obtained through the interview is then analysed manually to derive the analysed results.

The research explores attitudes, behaviour and experiences of respondents using interviews. It attempts to get an in-depth opinion from the respondents. The research applies in-depth interviewing: a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea (skills management) (Kumar *et al*., 2013).

RESULTS AND DISCUSSION

The issue of talent loss to the employers in the E&E industry cannot be neglected because it takes long duration to train a new blue collar worker to become a highly-skilled blue collar worker.

Therefore, a skills management process is developed to manage and retain these highly-skilled blue collar workers in the E&E industry. The following are findings

obtained from the interviews conducted to verify the developed theoretical framework for the skills management process.

Skills planning: Skills planning are initiated by expected order and projection of sales required by the customers. Company X will determine the type and quantity of products to be manufactured based on the expected order and projection of sales. The first activity in the skills planning is skills forecasting. It indicates what sort of skills will be required to manufacture products. Company X needs to up-skill the workers if there is a lack of skill to manufacture the products. Workers will be sent for internal or external trainings if there are deficiencies of skills to manufacture the products.

There are three activities can be conducted for skills forecasting: monitoring, trend extrapolation and expert opinion. The first activity for skills forecasting (monitoring) indicates whether the company is required to retain certain skills or to develop certain skills required to fulfil the customers' orders. Monitoring provides direction for business forecast. For instance if the company X is getting more orders on aerospace, defense, industrial sectors, then it will indicate that the company needs to retain and develop skills necessary to manufacture the relevant products. The company needs to make sure that the people are on the population of skills internally in order to fulfill the customers' orders.

The second activity for skills forecasting (trend extrapolation) enables company X to do prediction based on the historical trend while doing skills forecasting. This prediction will affect the manpower and skills planning. The company needs to up-skill or change the existing skills of the workers to meet the new business requirement. The third activity for skills forecasting (expert opinion) is involved when company X engage experts to identify the individual experts who have the skills to obtain expert opinion. For instance if company X needs to employ engineer in aerospace and the company do not have the capability to identify or to go to the market to find the individual experts. Then, the company will engage experts to find for the individual experts.

The second activity in the skills planning is skills planning. company X checks on the current skills possessed by the workers. If there are new skills required, the company needs to determine to get the new skills internally or externally. The third activity in the skills planning is skills assessment. Skills matrix is used to determine the skills level of the workers. Level 1-4: Level 1-beginners, Level 2-someone who can do the job, Level 3-someone who can train others, Level 4- someone who are able to develop or coach others. Skills matrix will determine what types of jobs that the employees are able to perform. The fourth activity in the skills planning is skills analysis. A worker needs to perform many tasks in his/her job. The primary purpose of job breakdown is to break down an entire job into operational instructions to ease the skills learning process for workers.

Skills development: Skills development is about research experience developing. Skills development is done when company X trains a worker from level 2-4 to up-skill a worker from one skill to more than one skill. The company train a worker with a new skill based on their business requirement. The first activity in skills development is skills assessment. It is done by identifying the training needs of the workers based on performance appraisal to determine the strengths and weaknesses of the workers. The second activity in skills development is skills audit. It is conducted based on the training needs analysis to produce the training needs requirement for the workers in the coming year (training calendar). It shows where the skills shortages lie or will lie in the future.

The third activity in skills development is skills improvement. Company X provides the employees with on- the- job trainings in various job assignments. The fourth activity in skills development is skills acquisition. It is about how to acquire a skill. The workers may attend internal or external training and trained by experts of the area. The company sends the workers within the country or to overseas to acquire skills. The company also sends the workers to their supplier or to the customers to acquire skills. Company X (joint venture) with the sister companies and sends the employees to these companies to obtain knowledge and skills transfer.

The fifth activity in skills development is skills exploitation. It is about how the skills are utilised at the production floor. The company utilises the skills based on the requirement of purchase order. The company perform plan, do, check and act for insufficient areas when there is gap. The sixth activity in skills development is role enhancement. The job performance of workers is assessed through performance appraisal. New responsibility will be added to their task in the coming year if they are found to be good in specific job area. The seventh activity in skills development is role enlargement. It occurs during job exchange, changes in the content of the job and role change in the company X.

The eighth activity in skills development is role substitution. It occurs during job rotation. Company X needs to substitute certain jobs that are no longer needed or available. It is done either when the company sustains the workers with the substitution role or the company has to retrain the workers. The ninth activity in skills

development is role delegation. It comes in the leadership process for example during coaching and training. It is done when the superiors delegate certain roles to another worker. In addition, it also occurs when a worker delegate a job to another worker when he/she is not doing the job anymore.

Skills transfer: Skills transfer is about learning a new manufacturing process. The workers will be transferred to learn another new manufacturing process after they are familiar with the previous manufacturing process. The senior workers will transfer skills to junior workers at the production floor. There are internal skills transfer and external skills transfer at company X. The research will discuss first about internal skills transfer. Skills Transfer internally normally comes in job rotation in terms of cross training. For example, Employee A has certain skills which do not possessed by Employee B. So they do job rotation to learn each other's skills. That is a common concept of skills transfer. Senior staffs train new staffs in the internal training.

The researcherss propose four activities for internal skills transfer: motivation to learn, motivation to transfer, transfer intention and training transfer. The first activity for internal skills transfer is motivation to learn. It is linked to individual performance, because performance appraisal will assess how many skills are possessed by the employees. That motivates workers to learn more skills to expand the skills matrix. The second activity for internal skills transfer is motivation to transfer. It is linked to individual performance. If the employees are able to train others by transferring their skills, their skills matrix will be upgraded from level 3 and 4.

The third activity for internal skills transfer is transfer intention. It is linked to individual performance. The employees are more willing to transfer the learned skills because it influences the overall outputs, productivity and quality of the team. These overall results of the team work may reflect the individual performance. The employees will be rewarded when they are able to perform better. The fourth activity for internal skills transfer is training transfer. It is linked to individual performance. The employees will effectively apply what they have learned in the training to their jobs when they will be rewarded if they perform well in their jobs.

The following are factors which affect an organisation in the four activities of Skills Transfer proposed by the researcherss: Peer Support supports and improves the team performance in the company X. Whether they need to transfer the skills or they will be supporting the new people to obtain/acquire the skills. Supervisor support will contribute to the supervisor performance, individual and the group performance in the company X. Supervisor is the one driving skills transfer and skills enhancement of their team. The team is stronger in a way and has a better opportunity for better performance.

Transfer climate plays a role because skills transfer is conducive or not also depends on the environment, the people, the machine and the scenario of that area which affects the skills transfer process in the company X. Identical elements plays a role because all internal trainings and training on the job are performed at the workplace. It is a mixture of classroom to tell the theory, when it comes to practical, the company always allows the employees to practice with the real material at the production floor.

Team management style plays a role because the reason to employ employees is due to these people are able to provide the skills which cannot be replaced by machinery. There is always a correlation between concern for people and concern for production. Definitely the management of the company X is concern for production because to fulfill the orders, but they are also concern for people because if they do not provide the support or the need to develop the people, definitely it is not be able to fulfil the production.

Learning environment plays a role because the environment the workers are learning is as close as possible to whatever the employees supposed to perform to make easy and realistic for them to understand why they are doing that is that they really have to do the real thing. Mentoring is a situation in which there is a mentor will guide the mentee on performing to see how well they can perform. In addition, mentor involves assessing how well the mentee perform in his/her research; it is actually assessed using the skills matrix.

External skills transfer occurs when company X sends the workers out to expert training providers and to technology provider to learn up/to have technology transfer. External skills transfer involves international skills transfer, regional skills transfer, cross-industry skills transfer and inter-firm skills transfer. For international skills transfer, skills experts will come to the company X to train the workers or company X will send the workers to skills experts for external training. It is all depends on whether company X has the needed facilities. For Regional skills transfer, company X involves in regional skills transfer between workers in the same country. For cross-industry skills transfer, company X does not involve in cross-industry skills transfer. For inter-firm skills transfer, company X involves in skills transfer between firms from one company to another company. It involves customers and suppliers of company X.

Skills retention: Company X retains skills by retaining the highly-skilled blue collar worker working in the company. The company retains the workers who have the skills. The researcherss stress those skills retention in this context can be achieved when an organisation is able to fulfill the needs of highly-skilled blue collar workers. These needs can be illustrated by using McClelland's learned needs as followed: (Morse and Babcock, 2010).

The need for achievement: Some of the selected staffs will have the opportunity to expand their current career. The opportunities are offered to potential staffs to develop them to obtain advance skills to motivate them and to retain them.

The need for power: Autonomy is practiced at the company X for example, operators and supervisors will have certain level of decision making researchersity and it goes up to all level.

The need for achievement: The team building is developed by recreation activities such as sports, social activities, competitions and gathering and employees events to develop team cohesiveness.

CONCLUSION

The data collection method-semi-structured and in-depth interviews are used to verify the theoretical framework (skills management process) derived by the researcherss. It is proven that company X has skills management process. Therefore, it is proven that the skills management process developed by the researcherss is practical to manage and retain the highly-skilled blue collar workers in the high technology manufacturing industry in Malaysia (E&E industry). This is a new contribution to the field of skills management in the management science because it is a new concept and it has not been done by other researchers in the management science.

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