A STUDY ON THE EFFECTIVENESS OF TECHNOLOGY TRANSFER TOWARDS THE WORK PERFORMANCE IN SME'S

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I hereby declare that the work in this thesis is my own except for the quotation and summaries which have been duly acknowledge. The thesis has not been accepted for any degree and is not concurrently submitted for award of the degree.

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Dedicated to my parents

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ABSTRACT

This study was conducted to evaluate the effectiveness of technology transfer in small medium enterprise (SME's) manufacturing-based industry. Besides that, the objective of this research is to study the relationship between technology transfer and the work performance. In addition, this study attempt to recommend the best practice of technology transfers for a better work performance. Sets of questionnaires were developed and the data was collected by mail and hand distributed. Total sample of 75 respondents was used in this study. The result of this study showed that the effectiveness level of technology transfer that is used in that industry is good enough. Besides, the relationship between technology transfer and the work performance in terms of quantity of work and quality of work shows there are a strong positive relationship for both variables. Hence, there are lists of several recommendation of best practice of technology transfer for a better work performance in the end of this study.

Keyword:

Technology transfer : the process of transferring skills, knowledge, technologies, method of manufacturing, samples of manufacturing and facilities from one organization to another

Work performance : The work related activities expected of an employee and how well those activities were executed

ABSTRAK

Kajian ini dijalankan untuk menilai keberkesanan pemindahan teknologi dalam industri perusahaan kecil dan sederhana (PKS) berasaskan perkilangan. Di samping itu, objektif kajian ini adalah untuk mengkaji hubungan antara pemindahan teknologi dan prestasi kerja. Di samping itu, kajian ini cuba untuk mencadangkan amalan terbaik pemindahan teknologi untuk prestasi kerja yang lebih baik. Set soal selidik telah dibuat dan data dikumpulkan melalui pos dan edaran tangan. Jumlah sampel yang terdiri daripada 75 responden telah digunakan dalam kajian ini. Hasil keputusan kajian ini menunjukkan bahawa tahap keberkesanan pemindahan teknologi yang digunakan dalam industri tersebut adalah cukup baik. Selain itu, hubungan antara pemindahan teknologi dan prestasi kerja dari segi kuantiti kerja dan kualiti kerja menunjukkan terdapat hubungan positif yang kukuh bagi kedua-dua pembolehubah. Oleh itu, terdapat senarai beberapa cadangan amalan terbaik pemindahan teknologi untuk prestasi kerja yang lebih baik dalam bahagian yang terakhir kajian ini.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter will discuss some introduction about small-medium enterprise industry (SME's), technology transfer and the work performance. The overall objective of this chapter is to identify the background of the study, problem statement, research objective, scope of the study, significant of the study and also the expected result of the study.

1.1 Background of Study

Increasing number of SME in developing countries has proven as a critical sector in enhancing economic growth and contributes to human development especially in eliminating poverty and boost up standard of living. SME's must be enabled to focus on both incremental as well as radical innovations to remain competitive (Arun, 2003). Technology cannot be denied as one of the importance tool in advancing SME to be more productive and cost efficiency. However there are few elements should be considered

before deciding to adopt or apply technology in the business operation. Transferring technology is not that easy, a lot of challenges need to be faced by both parties before any technology transfer happen. In addition, the challenge has open to wide opportunity for researcher to find the best level of technology to suite to SME (Mitchael, 2005). Most of the research done said that, transferring technology from research institutions to industry has always been a strategic issue (Hong Liu, 2000).

Technology transfer is said to be the best way in adopting technology among SME's. Mechanism of technology transfer namely licensing, joint venture and patenting is the most model used by the industry or business in accepting technology from technology provider or research institution. Technology transfer is "any process by which basic understanding, information, and innovations move from a university, an institute, or a government laboratory to individuals or firms in the private and quasi-private sectors" (Parker and Zilberman, 1993). On the other hand agree that, technology transfer provide knowledge and closing a gap between technology provider and technology acquirers (Arun, 2003). This process will benefited both parties in term of business development (Moira 2007). This process is very crucial as business always need to have high element of innovation which is always supported by a new technology as it is rapidly change. This movement of technology from one entity to another (Amanjeet, 2010) needs to be supported by the best model to ensure the successful the transfer. Escalating the value of technology transfer has intentional benefited both nations and companies (Hong Liu, 2000).

According to The Small and Medium Industries Development Corporation (SMIDEC) SMEs account for close to 99% of all the establishments in the manufacturing, services and agricultural sector, provide around 65 % of total employment and it is expected that the value added production of SMEs to be around RM120 billion or 50 % of total production in the manufacturing sector by 2020. Malaysian SME contribution to the GDP was only 32% in 2006 compared to that of 40% in the United States, 57% in Germany, 55% in Japan, 60% in China, 57% in Indonesia and Thailand at 38.9%. SMEs in Malaysia have focused on addressing limitation and enhancing their capabilities in area such as finance, expertise and intellectual property and technology. It is critically to bring a

front role in industrial linkages between SME and large companies or any institution in transferring the technology in the interest of developing SMEs.

1.2 Problem Statement

SME's industries tend to face some challenges and pressure due to technology transfer. Indirectly, this will affect the work performance among their employees. Innovation and the capacity to innovate are among the most important factors that affect an organizations competitiveness and performance. Due to their small size, managerial capabilities are limited as well as limited resources do face a challenging task in innovating.

Additionally, SME's as compared to larger firms are weakly structured in innovation. It also has a low market power and scarcity of resources in order to appropriate the benefit of their innovation. There are many other challenges that are faced by SME's in Malaysia such as lack of technology assessment mechanism, lack of technological infrastructure, lack of technical manpower and others.

One of the main factors that influences in the success or failure of enterprise is technology factor. Therefore, there is a need for SME's to adopt technology transfer, to reduce the gap with the larger firm. By this approach, it will give some positive impact to the work performance among the organization and indirectly, it will improve the organisational performance as well. The best use of technology no doubt enables enterprise in reducing cost of production, maintain consistency in quality, improve productivity and finally develop the competitiveness of the enterprise.

1.3 Research Objective

i) To evaluate the effectiveness of technology transfer.

ii) To study the relationship between technology transfer and the work performance
iii) To recommend the best practise of technology transfer for a better work performance

1.4 Research Question

i) How far the effectiveness level of technology transfers that being applied?
ii) Does the technology transfer and work performance have a significant relation?
iii) What is the best practise for a better work performance?

1.5 Scope of Study

For contributing to the further understanding of these related terms, the task of this study is to examine the relationship between technology transfer and the work performance in SME's manufacturing-based industry. This study will evaluate the effectiveness of technology transfer, the relationship between technology transfer and the work performance, and the best practise of technology transfer for a better work performance in that industry.

These studies will focus on the local SME's employees at Senai, Johor. The SME's has developed many technology transfers that have various impacts to their organization which will influence the work performance of their employees. The instrument that will be used to collect the data is questionnaire.

1.6 Significant of Study

The purpose of this study is to analysing the effectiveness of technology transfer and the work performance in SME's industry at Senai, Johor. There must be some effect of technology transfer that are applied in SME's whether a good effect or bad effect. Besides that, this study will investigate the problem related to the technology transfer in SME's. There have some issues of technology transfer that will be discuss in the context of SME's in this study.

These studies attempt to analyse the effectiveness of technology transfer in SME's and the relationship between technology transfer and the work performance. Besides, this study also will recommend the best practice that can be applied in that industry to have a better work performance among their employees. By doing this study, it will give some idea to SME's in increasing the work performance within their organization.

The variation of the effectiveness of technology transfer was acquired through analysing the impact to the organisation. Top management could then put their efforts on the determining the best practice of technology transfer for a better work performance in the organization. These all can help to improve the performance on an organization and further benefit both individual stakeholders' members and objectives of the whole project within SME's industry.

1.7 Expected Result

This study is important to identifying the nature of technology transfer in SME's. The researcher will find out the relationship between technology transfer and work performance through the survey questionnaire method. It can be said that the work performance in an organization also affected by the effectiveness technology transfer. Besides, the researcher could find out the effectiveness of transferring technology to the

business operation. Last but not least, researcher also will recommend the best practise to have better work performance among the organization. This will give benefit to both employee and the company itself.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter will discuss on some of selected literature review and issues of technology transfer and work performance in small medium enterprise (SME's). The overall objective of this chapter is to develop knowledge and understanding the previous research finding regarding the topic that being research. Besides, this chapter will review the concept of technology, technology transfer, work performance and followed by the discussion about the relationship between technology transfer and the work performance.

'Technology' can be broadly interpreted as knowledge incorporated within artefacts, business methods or techniques, and 'technology transfer' has come to denote any situation in which technology crosses inter-organizational and intra-organizational boundaries. Collaboration can be particularly effective in the SME context. SMEs with limited resources to engage in R&D can develop this capacity through sharing knowledge in coalitions. This is reinforced by a recent longitudinal study that examined clusters of small businesses. These appear to have been successful in technology transfer. It was stressed that these successful industry– higher education collaborations had developed over a number of years, and that a key driver of success in each case was a committed individual or group with a fundamental belief in the benefits of collaboration. These 'champions' were

prepared to invest time, effort and money to overcome barriers that often beset industry–higher education partnerships.

2.1 The concept of technology

Past researchers have viewed and defined the term ‘technology’ from many perspectives and this has influenced the research design and results, negotiations around a transfer and government policies in general. Thus, the term technology has been given various definitions by previous literatures. According to Kumar et.al (1999) technology consists of two primary components: 1) a physical component which comprises of items such as products, tooling, equipment, blueprints, techniques, and processes; and 2) the informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor and functional areas. Technology is always connected with obtaining certain result, resolving certain problems, completing certain tasks using particular skills, employing knowledge and exploiting assets (Lan and Young, 1996). The concept of technology does not only relate to the technology that embodies in the product but it is also associated with the knowledge or information of it use, application and the process in developing the product (Lovell, 1998; Bozeman, 2000).

Tihanyi and Roath (2002) propose that technology can include information that is not easily reproducible and transferable. Based on this argument technology is seen as “tacit knowledge (Polanyi, 1967) or firm-specific, secrets or knowledge known by one organization” (Nonaka, 1994). Technology as the intangible assets of the firm is rooted in the firms routines and is not easy to transfer due to the gradual learning process and higher cost associated with transferring tacit knowledge (Rodasevic,1999). Valuable technological knowledge which is the intangible assets of the firm is never easily transferred from one firm to another because the technological learning process is needed to assimilate and internalized the transferred technology (Lin, 2003). Earlier, Burgelman et al. (1996) refer

technology as the theoretical and practical knowledge, skills, and artefacts that can be used to develop products and services as well as their production and delivery systems.

Technology is also embodied in people, materials, cognitive and physical processes, facilities, machines and tools (Lin, 2003). Based on Sahal's (1981) concept, Bozeman (2000) argues that technology and knowledge are inseparable simply because when a technological product is transferred or diffused, the knowledge upon which its composition is based is also diffused. The physical entity cannot be put to use without the existence of knowledge base which is inherent and not ancillary.

The latest definition given by Mascus (2003) has broadened the concept of technology where technology is defined as 'the information necessary to achieve a certain production outcome from a particular means of combining or processing selected inputs which include production processes, intra-firm organizational structures, management techniques, and means of finance, marketing methods or any of its combination'.

2.2 The concept of technology transfer

The definitions and concepts of technology transfer have been discussed in many different ways based on the disciplines of research and according to the purposes of the research (Bozeman, 2000). Technology transfer has been defined as the shared responsibility between firms in ensuring that technology is accepted and at least understood by someone with the knowledge and resources to apply or use the technology (T. Warookun, R. A. Stewart, and S. Mohamed, 2005).

The technologies that resemble blueprint, machines, or materials are easily replicated and transferred (Lin, 2003). The literatures on technology transfer and international technology transfer are extensive and varied in perspective from various disciplines which include political science, economics, sociology, public policy, marketing and management of technology (Kumar et al., 1999). The issues that have been investigated, among other, are technology transfer process, appropriateness of technology,

cooperation and conflict between transfer countries, the success of technology transfer, and the social and economic benefits of technology transfer for both suppliers and recipient countries.

Nevertheless, the main beneficiary of this learning process is the country or firm on the lower technological trajectory. There are studies showing technology transfer between foreign affiliates and local enterprises between developed and developing countries B.Javorcik, 2004 on Lithuania and Garrick and Gertler on Indonesia. Past literatures have referred technology transfer as the transmission of know-how to suit local conditions, with effective absorption and diffusion both within and across countries (Chung, 2001; Kanyak, 1985).

Since the term "technology transfer" provides many dimensions, it has often been used to describe the process by which ideas and concepts are moved from the laboratory to marketplace (Phillips, 2002; Williams & Gibson, 1990), the transfer and knowledge and concept from developed to less technologically developed countries (Derakhshani, 1983; Putranto et al., 2003) and the transfer of inventive activities to secondary users. Autio and Laamanen (1995) suggest a broader definition by proposing that technology transfer involves an intentional, goal-oriented interaction between two or more social entities, during which the pool of technological knowledge remains stable or increases through the transfer of one or more components of technology. Levin (1996) considers technology transfer as the application of scientific principles to solve practical problems.

From the social science perspective Levin (1993) defines technology transfer as a socio-technical process implying the transfer of cultural skills accompanying the movement of machinery, equipment and tools. This definition includes the transfer of the physical movement of artefacts and the embedded cultural skills. Majority of the previous studies have defined technology transfer as the transmission or movement of knowledge as a process. It involves the process how an organization or a country transfers scientific or technological achievements, new uses for technology, designs, and the technical knowledge that can be used in production (Chun 2007). The process that involves does not only concern about the transmission of knowledge but it is also relate to a learning process

where technological knowledge is continually accumulated into human resources that are engaged in production activities.

The technology transfer concept is not only concern about the transfer of technological knowledge or information but also the technology recipient's capability to learn and absorb technology into the production function (Maskus, 2003). Farhang (1997) suggests that transfer of technologies in cases of manufacturing processes requires not only the transfer of technological knowledge in the form of process sheets, blueprints, products, and materials specification but also the transfer of know-how of high-calibre engineering and technical personnel. The absence of technological spillovers is generally explained by the lack of absorptive capacity of the local firms (L. Jabbour and J. L. Mucchielli, 2007). There are studies highlighting the economic progress of developing nations from being recipients of new technology (F. Najmabadi and S. Lall, 1995)

In their extensive review on technology transfer literature from various disciplines, Zhoa and Reisman (1992) view that economists often define technology transfer on the basis of the properties of generic knowledge where the main focus is on variables that relate to production and design. Zhoa and Reisman (1992) identify that bulk of the technology transfer literatures have also been contributed by the management researchers. On the other hand, the management researchers tend to focus on intra-sector transfer and relationships between technology transfer and strategy (Rabino, 1989; Chiesa and Manzini, 1996; Laamanen and Autio, 1996; Lambe and Spekman, 1997). Most of the literatures on management have shifted their focus to alliances among enterprises and how alliances are crucial to the development of technology transfer (Zhoa and Reisman, 1992).

This is facilitated through enhanced organizational performance and innovation capabilities as a result. Based on these discussions, on the one hand it is hypothesized that organizations' resource availability and absorptive capacity have positive impacts on technology transfer whereas the perceived level of opportunistic behavior is negatively related to technology transfer. On the other hand, technology transfer is hypothesized to have positive impacts on organizational performance and innovative capabilities.

2.3 The concept of work performance

The meaning of work performance in the field of organizational behaviour has changed over the last forty years. Research has shifted from a focus on jobs and their fixed tasks to a broader understanding of work roles in dynamic organizational contexts (Ilgen & Hollenbeck, 1991). Traditionally, work performance was evaluated in terms of the proficiency with which an individual carried out the tasks that were specified in their job description. From this perspective, a "well-specified job" was one in which all of the behaviors that contribute to organizational goal attainment were captured within an individual's job description (Murphy & Jackson, 1999). Work performance could then be evaluated in terms of outcomes achieved by the quantity of work done and the quality of work itself (Campbell, McCloy, Oppler, & Sager, 1993).

The changing nature of work and organizations has challenged traditional views of individual work performance (Ilgen & Pulakos, 1999). Two of the major changes are the increasing interdependence and uncertainty of work systems (Howard, 1995). Early approaches to work performance did not account for the full range of behaviors that contribute to effectiveness when systems are uncertain and interdependent (Campbell, et al., 1993; Murphy & Jackson, 1999). In response to this limitation, new constructs have been introduced that encompass an expanded set of responsibilities. These constructs include citizenship performance (Smith, Organ & Near, 1983), contextual performance (Borman & Motowidlo, 1993), adaptive performance (Hesketh & Neal, 1999; Pulakos, Arad, Donovan & Plamondon, 2000), and proactivity (Crant, 2000; Frese & Fay, 2001; Parker, Williams & Turner, 2006).

As noted by Rotundo and Sackett (2002), there is now a proliferation of partially overlapping constructs within the performance literature. There is currently no theoretical framework for differentiating and integrating the various constructs that describe individual performance and its link to effectiveness. Although performance frameworks and taxonomies have been developed (e.g., Borman & Motowidlo, 1993; Campbell, et al., 1993; Johnson, 2003; Welbourne, Johnson & Erez, 1998), none captures the spectrum of

recent performance constructs while providing a theoretical rationale for defining different dimensions and linking them to the context in which work is performed. Based on the above distinction between formalized and emergent roles, we identify three different subdimensions of work role performance.

The first dimension of work role performance is termed “proficiency” and describes the extent to which the individual meets role requirements that can be formalized. It is possible to assess proficiency when the requirements of a work role are formalized because there is a clear standard against which these judgments can be made. The second dimension is termed “adaptivity” and describes the extent to which an individual adapts to changes in the work system or work roles. The third dimension is termed “proactivity” and describes the extent to which the individual takes self-directed action to anticipate or initiate change in the work system or work roles. Adaptivity and proactivity are important whenever the work context involves uncertainty and not all aspects of work roles can be formalized.

The nature of work roles cannot be divorced from the context in which they are enacted (Ilgen & Hollenbeck, 1999), so models of work role performance should incorporate theoretical features of the organizational context (Hattrup & Jackson, 1996). Despite the relevance of role theory, previous applications have focused on the process of role development rather than the way context relates to the dimensions of performance (Ilgen & Hollenbeck, 1999). Although a number of researchers have proposed that role theory is useful for describing a broader set of work responsibilities (e.g., Ilgen & Hollenbeck, 1991; Morgeson, Delaney-Klinger, & Hemingway, 2005; Welbourne, et al., 1998), this research has not formally included the organizational context, nor has role theory been used to describe the dimensions of a work performance model.

The potential for an individual to contribute to effectiveness at the team or organizational level depends on the embeddedness of their work role in the social context (Murphy & Jackson, 1999). When the activities of a work role are independent of others, then there is a simple link between the behavior of an individual and their effectiveness as an employee. When the activities of work role are interdependent with other roles, then the link between behavior and effectiveness is more complex. It is also important to note that

behaviors that directly contribute to effectiveness at a given level (e.g., the individual level) can indirectly contribute to effectiveness at higher levels through an additive process of composition (Chan, 1998).Murphy and Jackson (1999) describe work roles as the "the total set of performance responsibilities associated with one's employment" (p. 335). It has proved difficult for researchers to capture the full range of activities that contribute to effectiveness in uncertain and interdependent organizational contexts.

Individual task proficiency describes behaviours that can be formalized and are not embedded in a social context. These behaviours reflect the degree to which an employee meets the known expectations and requirements of his or her role as an individual. In essence, individual task proficiency is closely related to the concepts of "task performance" (Borman & Motowidlo, 1993; Johnson, 2003), and "job role behaviour" (Welbourne, et al., 1998). The requirements of individual roles are relatively easy to define when uncertainty is low, and are commonly specified in formal job descriptions. Traditional performance management systems focus almost entirely on this dimension of performance.

Next, team member proficiency describes behaviours that can be formalized and are embedded within a team or group context. These behaviours reflect the degree to which an individual meets the expectations and requirements of his or her role as a member of a team. It is similar to the concepts of personal support (Borman, Buck, Hanson, Motowidlo, Stark, & Drasgow, 2001), helping behavior (Podsakoff, et al., 2000) and team role behaviour (Welbourne, et al., 1998). Marks, Mathieu, & Zaccaro (2001) defined team process as "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioural activities directed toward organizing task work to achieve collective goals". These behaviors will often be expected whenever people work in teams, even if they are not formally specified within job description.

Organization member proficiency describes behaviours that can be formalized and are embedded in an organizational context. These behaviours reflect the degree to which the individual meets the expectations and requirements of his or her role as a member of the organization. Organizational role proficiency is similar to the concepts of organizational

support (Borman et al. 2001; Johnson, 2003), organizational loyalty and civic virtue (Podsakoff, et al., 2000), and organization role behavior (Welbourne, et al., 1998).

2.4 Technology transfer and work performance

Technological advances have the ability to impact how individuals go about their daily lives. This includes how they complete tasks around the home and at work. For small businesses, the introduction and use of new technology can help streamline processes and increase worker productivity if managed properly. Earlier research on the impact of technology focused on whether work was up skilled or down skilled and to what extent technology was used to control labour. Many researchers were optimistic that the new automated technologies would require higher-order mental and teamwork skills (Hirshhorn, 1984) and that technology coupled with demand for diversified products would allow the return of the new technical craftsman (Piore and Sabel, 1984). However, studies often found that the impact of technology on work depended upon the HR system in which it was imbedded (Hunter and Kafkas, 1998; Bresnahan et al,1998).

At the establishment level, most researchers agreed that the impact technology transfer depends upon the nature of technology. Levy and Murnane (1996) and Murnane, Levy, and Autor (1999) reach a similar conclusion about the way new computer technology has changed work. They argue that job tasks include routine or rule-based problem-solving operations, which can easily be done by a computer. . The use of computers results in the exceptions shaping the demand for labor both in terms of quantity and skills. Murnane, Levy and Autor (1999) also studied the how the lower-skilled jobs in check processing were redesigned with the introduction of image processing technology. The outcomes for these jobs were more complex, in that instance of both increases and decreases in skill and pay occurred. The transformation required a structured training program and worker buy-in to be successful.

Case studies analysing how technological change affects skills, job tasks, and pay have raised serious questions about how to interpret the relationship between skill and technology variables and wages in studies using national data sets (Moss, 1997). In both the industrial and microelectronics revolutions, these studies indicate that technological change increased skill levels without increasing wages either because the supply of skilled workers increased (Goldin and Katz, Levy and Murnane) or because the new skills were not acknowledged and rewarded (Barley and Orr, Brown). These studies indicate that the exact relationship among technological change, skill, and wages requires more research.

2.5 Theoretical Framework

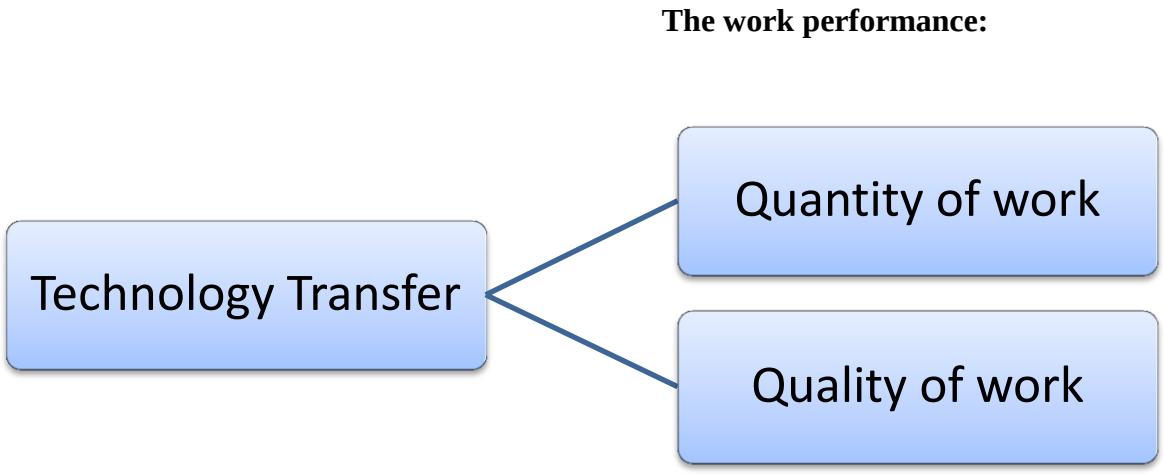

Figure 2.1: Theoretical Framework

H1: There is a significant relationship between technology transfer and the quantity of work.

H2: There is a significant relationship between technology transfer and the quality of work.

2.6 Conclusion

The various factors discussed above are important in carried out this research study. These factors are important to ensure the objectives and goals of this study are achieved. The researcher believe that technology transfer and work performance have a significant relationship. The effectiveness of technology transfer practice can positively affect work performance in an organization. This also will contribute to economic growth of that organization indirectly.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This research study was conducted based on the methodology. The research methodology plays an important role in implementing this research study accordingly. This chapter is an essential stage to determine successful of achieving the aim and objectives of a research (Singh and Nath, 2005). It is based on the concepts and principles of the knowledge areas which related to the research topic were explored by conducting a comprehensive literature review. Besides that, it presents the research design and methodology that are being used in this study.

This chapter consists of procedure and techniques for conducting this study and consist of a few section. In this chapter, all the steps, procedure and technique that are taken in order to investigate the research question will be mentioned clearly and explained in detail. This chapter will cover about how this study was conducted, the population of participants that involved in this study, the method used to collect the data and how the data will be analysed.

In addition, this research is actually to study the relationship between the independent variable that is technology transfer and the dependent variable that is the work performance (in terms of quantity of work and quality of work) within SME's industry. The relationship among these two variables is being studied by developing hypothesis and test the hypothesis. This chapter have some section that discusses about research design, population & sampling, data collection technique, development of measurement, design of questionnaire and statistical technique.

3.1 Research Design

Research design is essentially a statement of the object of the inquiry and the strategies for collecting the data or evidence, analysing the data and reporting the finding (Singh and Nath, 2005). Besides, it also can be defined as a kind of design that used to outline the techniques of how information gathered for an evaluation or assessment (Mondofacto, 2009). Design of this study was descriptive study which is trying to undertaken ascertains in order to describe the characteristics of the variables of interest in a circumstances.

For this study, cross-sectional surveys are used to gather information on a population at a single point in time. In cross-sectional studies, samples are drawn from the relevant population and studied once and the population that involve is from SME's, manufacturing-based industry in Senai, Johor. Survey method has been chosen as it is the most suitable method to conduct this study. For this survey method, a quantitative method approaches which is questionnaires was used in this study where the questionnaires developed to assist and seek solution for research problem and answering research questions. In this survey method, survey questionnaire are being used as the instrument as it is the most commonly used tool in survey research.

The survey questionnaire will be distributed to the worker among the selected SME's industry. A cross-sectional survey questionnaire will determine the relationship

between two variable that is independent and dependent variable. In this study, the independent variable is the effectiveness of technology transfer while the dependent variable is the work performance. By this tool, the data can be collected within the selected population.

The analysis will be done individually as the respondent is the worker. Non-probability conveniently sampling techniques is being used where subjects are selected because of their convenient accessibility and proximity to this study. Before the questionnaire being distributed, internet survey has been done. Since the popularity of the internet, the information about the selected population can get easily. So, from this, the questionnaire can be design according to the information.

3.2 Extent of Researcher Interference

The core objective of this research is to evaluate the effectiveness of technology transfers that are being applied in SME's manufacturing-based industry. Besides that, this research tends to study the relationship between technology transfer (independent variable) and the work performance (dependent variable). In addition, researcher attempt to recommend the best practice of technology transfer for a better work performance in the end of this research. The data is collected among the respondents on the effectiveness of technology transfer towards the work performance. The subjects of this study are the employee of SME's manufacturing-based industry at Senai, Johor. Therefore, the interference of this study has been minimal.

3.3 Population and Sampling

The population is the specific group that researcher trying to get information (Sekaran, 2003). Another definition of population is a complete set of elements (persons or

objects) that possess some common characteristic defined by the sampling criteria established by the researcher. According to Singh and Nath (2005), population means the entire mass of observation which is the parent group from which a sample is to be form. For this study, the targeted population is comprised entire staffs from the selected SME's manufacturing-based industry in Senai, Johor.

Sampling technique is required in order to get a sample from the population involved. Sekaran (2003) and Singh and Nath (2005) defined sampling as a selection of individuals from the population. Besides that, sampling also can be defined as a subset of the population or a section of population that researcher actually going to survey (Kumar, 2005). For this study, a non-probability sampling technique was used because no directory list is provided. Convenience sampling is used as sampling design that involves collecting information from the members of the population who are conveniently to provide it.

It obvious from the definition of the population above that a census is not feasible in this study. Accordingly, this study will adopt the survey type of research in which a sample from the target population will be used for the study. In this study, every staffs in selected industry has opportunities to be involved as it uses non probability sampling technique. The staffs have to fill the questionnaire form, and give their opinion.

Sekaran (2003) state that the sample size is important to established the representativeness of the sample of generalizability. It is very significant to determine the sample size because samples that are too large may waste resources, money, and time and also may become a problem. However, if the samples are too small, the results of finding will be in accurate. Bartlett et al (2001) says that an inappropriate, in adequate, or excessive sample sizes will influence the quality and accuracy of researchs.

Table 3.1: Determining Minimum Returned Sample Size for a Given Population Size

Population Size	Sample Size		
	Margin of Error = 0.03 / 3%		
	Alpha level = 0.05 t = 1.65	Alpha level = 0.05 t = 1.96	Alpha level = 0.05 t = 2.58
100	46	55	68
200	59	75	102
300	65	85	123

Based on the alpha value, t-value, and acceptable margin of error as suggested by Kotrlik et al (2001), Table 3.1 was referred. The total population size for this study is 144 and based on Table 1.0, with alpha level of 0.05, t-value 0f 1.96 and acceptable margin of error of 3%, the number of minimum respondent needed in this study is 75. Therefore, this study requires minimum of 75 respondents to match the nature and size of the population.

In total, a sample of 100 will be selected from a targeted population just in case if some respondent unable to answer the questionnaire during the given time, there still have other respondent that can answer the questionnaire. After all the staff finish answering the questionnaire, the can submit it to department manager and then give it to human resource manager. This research will be succeeding if all the staffs in selected SME's industry give full commitment and cooperation.

3.4 Data Collection Technique

Data collection is crucial stage in the planning and implementation of a study and it is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. Survey method was conducted in order to obtain the data. Self-administered questionnaire has been used in collecting the

data. Since this study is only about one month, this technique is a good way to collect data because it can collect all the complete response within a short of period of time. Perhaps, it also less expensive and save a lot of time.

Questionnaires may be used to collect regular or infrequent routine data, and data for specialised studies. A questionnaire requires respondents to fill out the form themselves, and so requires a high level of literacy. Where multiple languages are common, questionnaires were prepared using the major languages of the target group. Special care needs to be taken in these cases to ensure accurate translations.

In total, a sample of 100 will be selected from a targeted population. The questionnaires from will be distributed to 100 respondents once the information about the selected population was identified. This is best way to get a valid data because the respondent will shortly brief about the research study before they answering the questionnaire form. People are more truthful while responding to the questionnaires regarding controversial issues in particular due to the fact that their responses are anonymous. One week were given to the respondent to answering the questionnaire as they also busy doing their work. After that, all questionnaires that being distributed from the human resource managers and the data will be collected, analysed and interpreted.

Besides doing face-to-face while distributes the questionnaire to the respondents, this study also will use a new and inevitably growing methodology that is web-based questionnaire survey. This would mean receiving an e-mail on which you would click on an address that would take you to a secure web-site to fill in a questionnaire that are develop by using the adequate e-questionnaire program. The respondents can use their own personal computer for responding to the questions. The researcher can check on the update of the subject's response on the questionnaire anytime. This type of research is often quicker and less detailed. This is more easily and very inexpensive.

3.5 Development of Measurement: Design of Questionnaire

The questionnaire are design for this study was closed ended questions which is generally include certain possible answer or prewritten response categories and respondent have to ask which to choose answer among certain answer that are provided. According Kumar (2005), he defined a similar explanation about the closed ended questions which is possible answer are set out in the questionnaire in closed ended questions, and the respondents need to tick the category that best describes the respondent's answer. Closed ended questionnaire are chosen because it helps the respondents to make a quick decision among the alternatives answers given.

The research measurements included demographic variable, influencing factor, evaluation criteria and value preference. Demographic variables include gender, marital status, age, ethnicity, and work position. Influencing factor is the other factor other than the demographic variable that plays an important role in this field of study. Evaluation criteria done after following result drawn from the literature review, and some factor were test according to the criteria that commonly use to evaluate the work performance. Value preference conducted to determine the best way for a better work performance.

This research consists of one independent variable and two dependent variable. Nominal scale, ordinal scale and interval scale are being used as measurement of scales for this research. Nominal scale is a variable scale that enables the classification of individuals, object or responses into subgroup based on a common property or characteristic. It is used for obtaining personal data and distinguish group only qualitatively by categorising them into mutually exclusive and collectively exhaustive sets. Then, ordinal scale is used to rank-order the preferences. Next, intervals scale help to compute the means and the standard deviations of the responses on the variables. Besides, it also used to obtaining variable data and perform certain arithmetical operations on the data collected from the respondents. It also can measure the magnitude of the differences in the preferences among the individuals.

The questionnaire form will be distributed to 100 respondents even thought the number of minimum respondent needed in this study is only 75. It is because there is a possibility that not 100% of respondents will give feedback from the questionnaire. So if this situation happens, there still have other respondent that can answer the questionnaire. All the respondents will randomly select from selected SME's industry in Senai, Johor. Questionnaires are often the best way of gathering such information and views. Questionnaires often make use of checklist and rating scales. These devices help simplify and quantify people's behaviours and attitudes. A checklist is a list of behaviours, characteristics, or other entities that the researcher is looking for. A rating scale is more useful when behaviour needs to be evaluated on a continuum. They are also known as Likert-scales. Likert-scale is based upon the assumption that each statement on the scale has equal important or weight in terms of reflecting an attitude towards the issues in the question (Kumar, 2005).

In this study, the questionnaire was designed and divided into 4 sections that are section A, B, C and D. Section A is the demographic part that will define the gender, years of working, and department. While for section B and C, the respondents will be asked about the technology transfer that being use in their work and the work performance among employee respectively. This section will determine effectiveness of the technology transfer on their work performance and also the relationship between technology transfer and the work performance. Lastly, section D will ask them about their opinion about the best practice of technology in order to improve the work performance based on the job specification. This will help to suggest the best strategy for a better work performance. It uses a rating scale, so that the respondents can rank it by using 5 Likert-Scale. The Likert-scale will determine how strongly subject agree or disagree which statement on a five point scale with the following anchors:

Table 3.2: Degree of Importance of Likert-scale

Degree of Importance				
1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

3.6 Data Analysis Method: Statistical Techniques

According to Cavana et al. (2001) there is always have error in measurement of attitudinal variables and possible that a developed scale become imperfect. Therefore, evaluation of goodness of measures need to be assess because of the aim to make sure the instrument developed accurately measure a particular concept or variables and also ensure actually measuring the concept that set out to measure. Based on the opinion of Cavana et al. (2001), the use of better instrument will enhance the accuracy of the result and outcomes of research. In the end, the more accurate results will enhance scientific quality of this study.

Statistical Package for the Social Science (SPSS) was used in order to analyse the data. According to Cavana et al. (2001) and Sekaran (2003), measure the reliability need researcher establish by testing for both consistency and stability. To testing the stability and consistency of the variables, the Cronbach's Alpha coefficient of reliability has been use for each variable. The reliability of measure indicates to which the measure is without bias and offer consistency measurement across time and the various items in the instruments. Cronbach's Alpha is a reliability coefficient that indicates well the items in a set are positively related to one another and is computed in terms of the average inter-correlations among the items measuring the concept (Cavana et al., 2001 and Sakaran, 2003). Besides that, the Cronbach's Alpha coefficient range can hold a value of zero to one. The closer the Cronbach's Alpha coefficient value gets to 1, the higher is the internal consistency reliability (Sekaran, 2003 and Gliem, J. and Gliem, S. 2003).

Then, the data is analysed by using descriptive statistic. The purpose of descriptive statistic is to provide information to describe a set of factors in a situation and present a raw data into a transformed form that will make easy understand and interpret (Cavana et al. 2001). Descriptive statistics are available in SPSS software which is provided by frequencies, mean, mode, median, range, variance and also standard deviation. Mean is average or sum of the value that divided by the number of observations. Median is the value in the middle of the data set. Mode is the value occurring most often in the data. Variance is the sum of the squared deviation of each value from the mean divided by observations number while standard deviation is the positive square root of variance.

Statistics is the study of the collection, organization, analysis, interpretation, and presentation of data. After the data have been collected from the respective respondent, the data is coded and key in to SPSS software for analysis. Research hypotheses are tested and research questions are answered. Then the data will be analysed by using descriptive statistics and inferential statistics. Descriptive statistics involved transformation or raw data into a form that would provide information to describe a set of factors in a situation. Descriptive analysis is conducted to obtain the respondent's general information. There is descriptive statistics like frequencies, mean, median, mode, range, variance and standard deviation.

The purpose of this study is to examine the influence of independent variable that is the effectiveness of technology transfer towards the dependent variable that is the work performance. So, inferential analysis and correlation coefficient also has been used. Inferential statistics is adapted to generate statistical result the relationship between these two variables while correlation coefficient emphasis is on the degree to which a linear model may describe the relationship between two variables.

The correlation coefficient may take on any value between +1 and - 1. The sign of the correlation coefficient (+, -) defines the direction of the relationship, either positive or negative. A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases; as one decreases the other decreases. A

negative correlation coefficient indicates that as one variable increases, the other decreases, and vice-versa.

The absolute value of the correlation coefficient measures the strength of the relationship. A correlation coefficient of r=0.50 indicates a stronger degree of linear relationship than one of r=0.40. Thus a correlation coefficient of zero (r=0.0) indicates the absence of a linear relationship and correlation coefficients of r=+1.0 and r=-1.0 indicate a perfect linear relationship.

The scatter plots presented below perhaps best illustrate how the correlation coefficient changes as the linear relationship between the two variables is altered. When r=0.0 the points scatter widely about the plot, the majority fall roughly in the shape of a circle. As the linear relationship increases, the circle becomes more and more elliptical in shape until the limiting case is reached (r=1.00 or r=-1.00) and all the points fall on a straight line.

A number of scatter plots and their associated correlation coefficients are presented below:

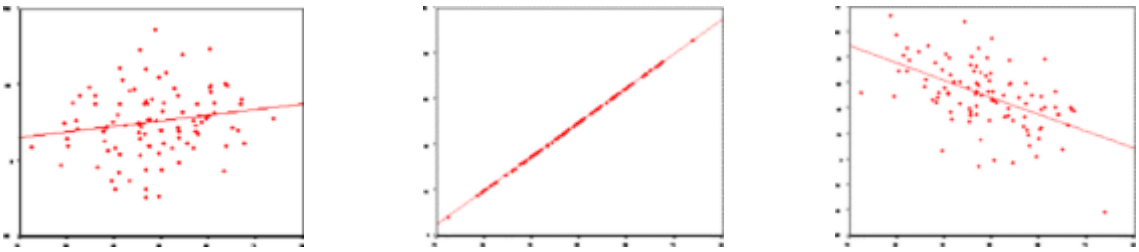

Figure 3.1: Scatter Plot example of Correlation Coefficient

3.7 Pilot Test

Cronbach's Alpha coefficient of reliability is used in this study to gauge the variable reliability to determine its consistency. In this study, 15 sets of questionnaire has been distributed among the company of SME's manufacturing-based industry in Senai, Johor region to test for the reliability of questionnaire. After the data has been collected from the respective respondent, the data is coded and key in to SPSS software for analysis to test the result. According to Sakaran (2003), Cronbanch's Alpha less than 0.6 are considered to be poor, those in the 0.7 range are considered acceptable and those over 0.8 are considered good. The closer the Cronbach's Alpha coefficient gets to 1, the greater the internal consistency reliability (Sekaran, 2003, and Gilem, J. and Gilem, R. 2003).

Table 3.3: Cronbach's Alpha for Pilot Test

Variable	No. of items	Cronbach's Alpha value	No. of item deleted	Cronbach's Alpha if item delected
The effectiveness of technology transfer	10	8.48	1(item 3)	8.71
The quantity of work	5	8.31	-	-
The quality of work	5	8.01	1(item 2)	8.11
The recommendation of best practice of technology transfer	10	8.92	-	-

The analysis of the pilot test in this study declared that the Cronbach's Alpha coefficient value range from 8.01 to 8.92. The Cronbach's Alpha coefficient of questionnaire is over 0.8 which considered as good. Hence, the element would continue to analysis without any variable is deleted. Analysis of the Cronbach Alpha value for this pilot test was shown in the table 3.3.

3.8 Conclusion

The formulation of research design has been discussed in this chapter. It includes several stages that must be followed towards acquiring the answers to wide variety of research questions. Each stage must be formulated clearly in order to have a good research design and yield useful data to be analysed.

CHAPTER 4

DATA ANALYSIS

4.0 Introduction

This chapter reviews the result of data analysis and hypothesis testing based on the research objectives respectively. This chapter also will present the results of the survey conducted as they are analyse using the normality test, correlation and regression technique. First of all, the review of result will be started with Section A, which is Demographic Section. In this section, the respondents will be asked to answer the personal detail about them or their company. Then it will be followed by section B and C which is the subjective measurement of technology transfer and work performance dimension respectively. Both of this section will be analysed by using descriptive statistic. The analysing data will be continued with section D that requires respondent's opinion about the best practice of technology transfer. Thus, the final results will be reveals whether there is a significant relationship between the effectiveness of technology transfer and the work performance or not. In this chapter also will list the best practice of technology transfer for recommendation.

4.1 Questionnaire Distribution

The closed ended questionnaires were distributed to the targeted respondents in order to collect data for analysis. As determined in Chapter 3, based on the alpha value, t-value, and acceptable margin of error as suggested by Kotrlik et al (2001), 75 respondents was required to match the nature and size of the population. However, in total 100 questionnaires were distributed to the targeted population just in case if some respondent unable to answer the questionnaire during the given time, there still have other respondent that can answer the questionnaire. The targeted populations for this study are the employee of SME's manufacturing-based industry that is located in Senai, Johor.

The questionnaire consisted four (4) sections that are section A, B, C and D. Section A is the demographic part that will define the gender, years of working, and department. While for section B and C, the respondents will be asked about the technology transfer that being use in their work and the work performance among employee respectively. This section will determine effectiveness of the technology transfer on their work performance and also the relationship between technology transfer and the work performance. Lastly, section D will ask them about their opinion about the best practice of technology in order to improve the work performance based on the job specification. This will help to suggest the best strategy for a better work performance.

4.2 Demographic Profile

A total of 75 respondents were participated in this survey from the population of manufacturing factory in Senai, Johor. Information on the respondent profile is obtained from Section A of the questionnaire. There are seven demographic characteristics discussed in this section which is gender, age, number of permanent staff in the company, work experience, work position, period of company existence and also company scope. However, the demographic variables are not relevant to the research question, but it is significant to

know the background of the respondent. The frequency and percentage for each item was presented in Table 4.1.

Table 4.1: Demographic Profile

Characteristic		**Frequency**	**Percentage**
Gender	Male	50	67.7%
	Female	25	33.3%
Age	21-30	65	86.7%
	31-40	10	13.3%
	Above 41	-	-
Number of permanent staff in the organization	Less than 50	-	-
	50-100	15	20%
	100-200	40	53.3%
	200-250	20	26.7%
Work experience	Below 5 years	65	86.7%
	6-10 years	5	6.7%
	11-20 years	5	6.7%
	Above 21 years	-	-
Work position	Engineer/assistance engineer	3	4%
	Manager/assistance manager	10	13.3%
	Supervisor	8	10.7%
	Production worker	34	45.3%
	Store worker	20	26.7%
Period of the organisation operates	Less than 5 years	-	-
	6-10 years	75	100%
	11-20 years	-	-
	Above 21 years	-	-
Business organisation scope	Electric	20	26.7%
	Electronic	25	33.3%
	Biotech	10	13.3%
	Chemical	10	13.3%
	Mechanical	10	13.3%

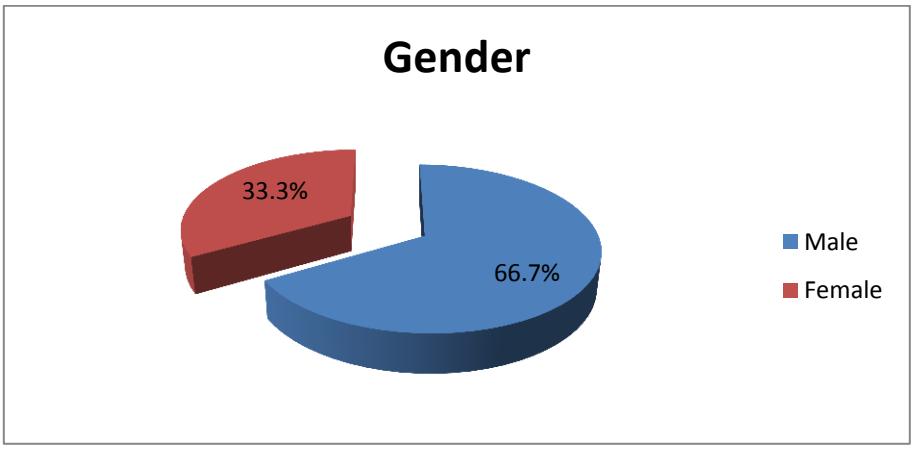

Figure 4.1: Gender profile

For the first characteristic, it is about gender. Out of 75 respondents, there are 66.7% of respondent which represent 50 male respondents. Another 33.3% of the respondents are female, which represent 25 respondents on actual amount.

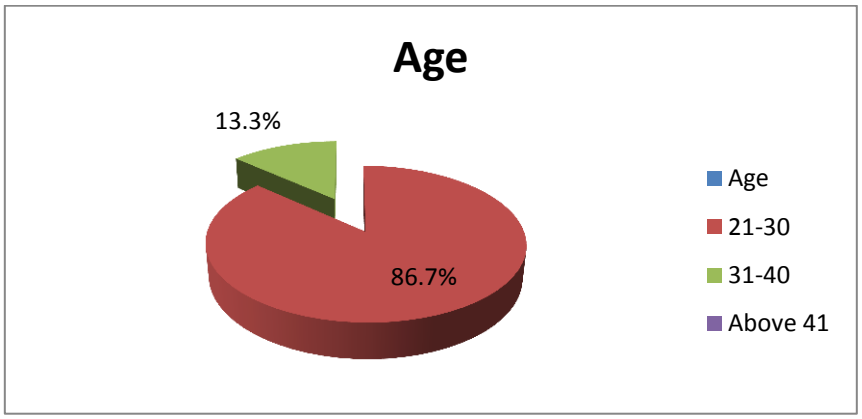

Figure 4.2: Age profile

Based on the Figure 4.2, it shows that most of the respondents are from 21-30 years old that is 86.7% which represent 65 respondents. The other 13.3% which represent 10 respondents is from 31-40 years old.

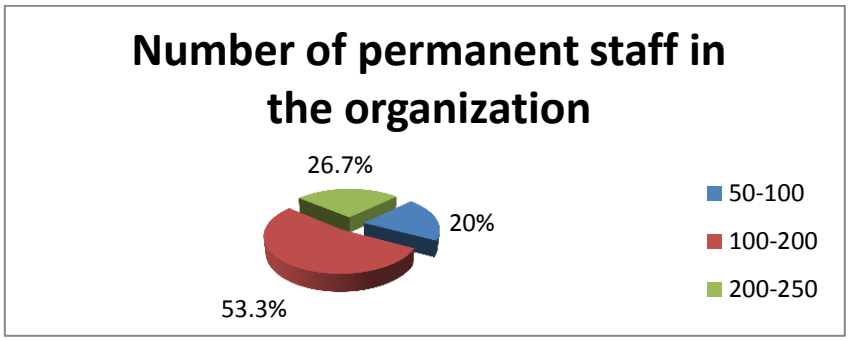

Figure 4.3: The number of permanent staff in the organization profile

Figure 4.3 shows that the highest percentage of respondents that is 53.3% which represent 40 respondents, comes from medium size company structure while the lowest percentage that is 20% which represent 15 respondents comes from small size company structure. The rest of respondents are come from big size company structure.

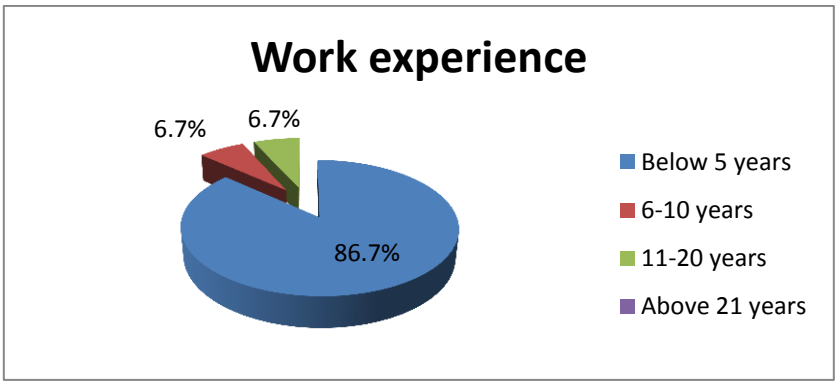

Figure 4.4: Experience profile

Next is experience profile characteristic. Figure 4.4 show that most of the respondents have 1 to 5 years' experience with 86.7% which represent 65 respondents. The rest of respondents that have 6 to 10 years' experience and 11 to 20 years' experience share the same percentage that is 6.7% which represent 5 respondents respectively.

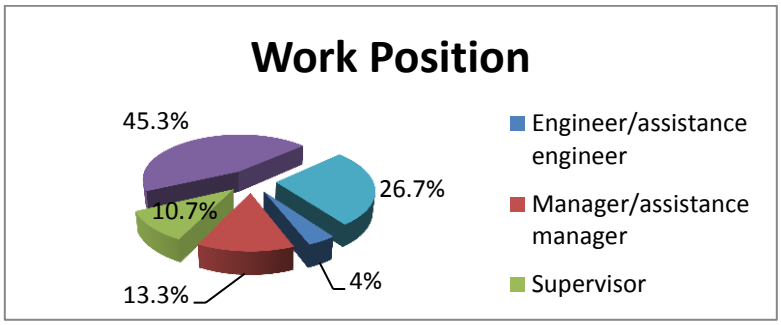

Figure 4.5: Work position profile

Based on the Figure 4.5 above, the highest percentage is from production worker group that is 45.3% which represent 34 respondents. Then it followed by store worker group with 26.7%, manage or assistance manager group with 13.3% and then supervisor group with 10.7% which represent 20, 10 and 8 respondents respectively. The lowest percentage comes from engineer or assistance engineer with 4% which represent only 3 respondents.

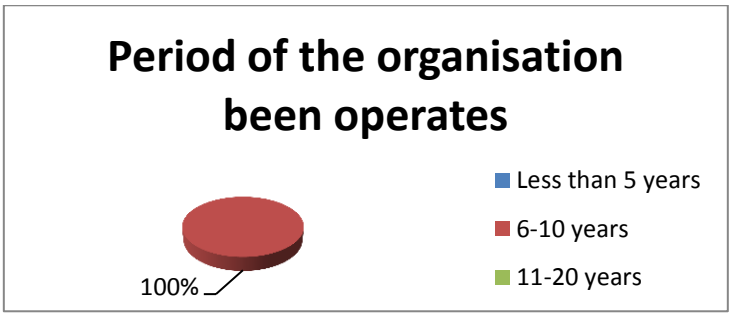

Figure 4.6: Existence of company profile

In term of how long the organisation has been existed, there is no one respondent comes from company that have been operated other than 6 to 10 years. As we can see from the pie chart above, all respondent comes from the company that have been operated between 6 to 10 years.

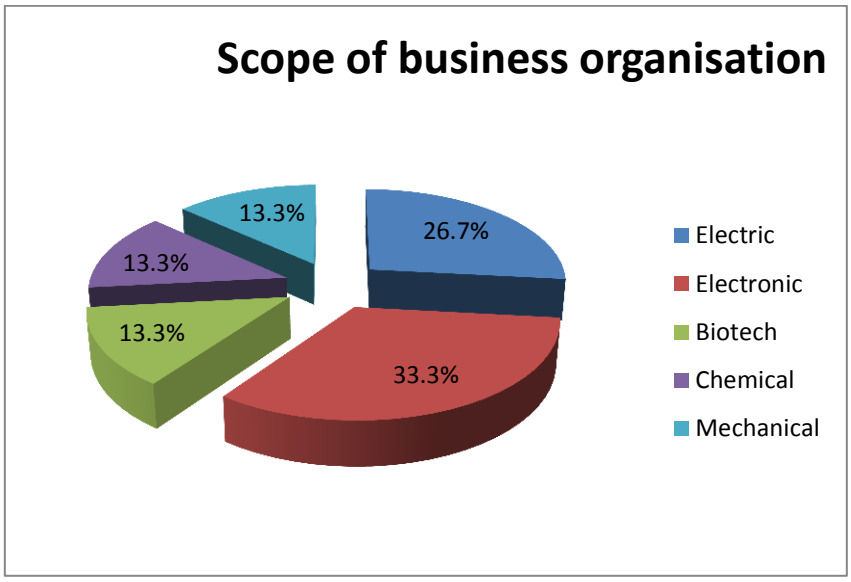

Figure 4.7: Organization scope profile

Based on the Figure 4.7, the highest percentage of the respondents comes from electronic based scope with 33.3% which represent 25 respondents. Then it followed by electric based scope with 26.7% which represent 20 respondents. Biotech, chemical, and mechanical based scope share the lowest percentage that is 13.3% which represent 10 respondents respectively.

4.3 Reliability Test

Reliability refers to the consistency of a measure. Reliability test refers to the degree to which a test is consistent and stable in measuring what it is intended to measure. Cronbach's alpha is the most common measure of internal consistency (reliability). According to Cavana et al (2001), Cronbach's Alpha is a reliability coefficient that indicates how well the items in a set were positively correlated with one another or inter-item consistency measure. It is most commonly used in multiple Likert-scale questions in a

survey or questionnaire that form a scale. Therefore, reliability test is the most suitable method to determine whether the scale is reliable or not reliable.

In order to determine whether the questions used in the questionnaires are reliable or not, the reliability test was undertaken. The Cronbach's Alpha values obtain shows the reliability of the variable. According to Sakaran (2003), Cronbanch's Alpha less than 0.6 are considered to be poor, those in the 0.7 range are considered acceptable and those over 0.8 are considered good. The closer the Cronbach's Alpha coefficient gets to 1, the greater the internal consistency reliability (Sekaran, 2003, and Gilem, J. and Gilem, R. 2003)

4.3.1 Reliability test on the effectiveness of technology transfer

Table 4.2: Reliability test on the effectiveness of technology transfer

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.832	.837	10

Based on the table above, the Cronbach's alpha for the effectiveness of technology transfer is **0.832**, which indicates a high level of internal consistency for our scale with this specific sample.

Table 4.3: Item-Total Statistics on the effectiveness of technology transfer

	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Technology increase production	.519	.817	.817

Technology transfer can help companies generate profits.	.622	.606	.808
Technology transfer can improve product quality	.074	.672	.858
I am good at using technology	.635	.754	.804
Technology transfer helps companies more competitive	.587	.749	.810
Employee was trained to use technology	.576	.563	.811
Technology transfer can reduce production costs	.645	.629	.805
Technology is needed in manufacturing industry	.554	.560	.814
Cost of technology transfer is appropriate to achieve organization target	.481	.717	.822
Technology transfer can help companies achieve targets require	.614	.835	.810

Table above presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. We can see that removal of any question, except question 3, would result in a lower Cronbach's alpha. Therefore, we would not want to remove these questions. However, removal of question 8 would lead to a small improvement in Cronbach's alpha, and we can also see that the "Corrected Item-Total Correlation" value

was low (0.074) for this item. This might lead to consider whether this item should be removed or not.

4.3.2 Reliability test on the quantity of work

Table 4.4: Reliability test on the quantity of work

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.810	.809	5

Based on the table above, the Cronbach's alpha for the effectiveness of technology transfer is **0.810**, which indicates a high level of internal consistency for our scale with this specific sample.

Table 4.5: Item-Total Statistics on the quantity of work

	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Technology transfer can increase the production quantity	.645	.491	.761
Technology can help the work assignment complete on time	.742	.589	.723
Technology transfer can shorten time to achieve expectation quantity of product	.589	.403	.776

Good timing and scheduling are important to ensure the work going smoothly	.519	.397	.795
Lack of a technology in the organization can affect rate of production	.516	.385	.796

Table above presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. We can see that removal of any question would result in a lower Cronbach's alpha. Therefore, we would not want to remove any of these questions.

4.3.3 Reliability test on the quality of work

Table 4.6: Reliability test on the quality of work

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.801	.814	5

Based on the table above, the Cronbach's alpha for the effectiveness of technology transfer is **0.801**, which indicates a high level of internal consistency for our scale with this specific sample.

Table 4.7: Item-Total Statistics on the quality of work

	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Technology helps company to meet future expectation	.580	.603	.766

High quality of work will gain customer and client satisfaction	.457	.321	.811
Existence of technology can help us to use appropriate method	.673	.632	.737
Technology transfer can help to manage and reduce resource usage	.498	.527	.793
Technology can improve the quality of work	.788	.656	.707

Table above presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. We can see that removal of any question, except question 2, would result in a lower Cronbach's alpha. Therefore, we would not want to remove these questions. However, removal of question 2 would lead to a small improvement in Cronbach's alpha, and we can also see that the "Corrected Item-Total Correlation" value was low (0.457) for this item. This might lead to consider whether this item should be removed or not.

4.3.4 Reliability test on the recommendation of best practise of technology transfer

Table 4.8: Reliability test on the recommendation of best practice of technology transfer

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.883	.888	10

Based on the table above, the Cronbach's alpha for the effectiveness of technology transfer is **0.883**, which indicates a high level of internal consistency for our scale with this specific sample.

Table 4.9: Item-Total Statistics on the recommendation of best practice of technology transfer

	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Develop technology transfer office models	.682	.662	.867
Improvement of specialized competencies by personnel	.696	.850	.867
Promoting technology transfer office	.601	.701	.874
Implementation of several research exploitation tools	.645	.714	.870
Effective marketing and competitive intelligence	.526	.473	.878
Effective operations and creative resourcing	.444	.785	.883
Development of organizational model	.684	.848	.867
Clear documentation and open communication	.689	.849	.868
Implementation of common operational tools	.552	.708	.876
Technology scouting and follow up	.711	.834	.868

Table above presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. We can see that removal of any question, except question 6, would result in a lower Cronbach's alpha. Therefore, we would not want to remove these questions. However, removal of question 6 does not effect in Cronbach's alpha, and we can also see that the "Corrected Item-Total Correlation" value was low (0.444) for this item. This might lead to consider whether this item should be removed or not.

4.4 Normality Test

In order to fulfil this study, normality analysis is used to determine whether the data collected in this study is normal or not normality distributed. Based on the explanation SPSS 14 (2007), normal distribution is a statistical distribution in which data are represented graphically by a symmetrical bell-shaped curve with the highest frequency in the middle while the smallest frequency are towards the edges.

There are various ways to access the normality of distribution. Referring to the guide of SPSS 14 (2007), Kolmogorov-Smirnov test is appropriate for test normality of distribution when the sample size is 50 and above, while Shapiro-Wilk test is appropriate for test normality of distribution when the sample size is less than 50. Normal distribution indicated when the significant value (Sig.) greater than 0.05 and in contrast, there is not a normally distributed. There are two main group of the work performance that are being observed that is quantity of work (group 1) and quality of work (group 2).

Table 4.10: Tests of Normality

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
total mean of the quantity of work	.171	75	.000	.942	75	.002
total mean of the quality of work	.226	75	.000	.887	75	.000

a Lilliefors Significance Correction

Table 4.10 shows the result from the normality test for all variables involved in this research. The table review the result for Kolmogorov-Smirnov statistics and Shapiro-Wilk statistics which both of the statistics explain about the normal distribution of the data. Since the number of respondents is 75 which is more than 50, the Kolmogorov-Smirnov statistics

is more appropriate to be used. Thus, from the result, both of the variables show the Sig. value is less than 0.05 which are considered not normally distributed as their significant value is smaller than the p-value. According to SPSS 14 quick guide (2007), when Sig. value less than or equal to 0.05, it was considered as a good evidence that the data set is not normally distributed.

4.5 Descriptive Analysis

The purpose of descriptive statistic is to provide information to describe a set of factors in a situation and present a raw data into a transformed form that will make easy understand and interpret (Cavana et al. 2001). Descriptive statistics involved transformation or raw data into a form that would provide information to describe a set of factors in a situation. Descriptive statistics are available in SPSS software which is provided by frequencies, mean, mode, median, range, variance and also standard deviation.

Descriptive analysis was done to describe the respondent's perception levels towards several predictor variables of technology transfer and work performance. All the variables were analysed on the mean and standard deviation by looking at each item from the dimensions used using Likert-scale. Likert-scale is based upon the assumption that each statement on the scale has equal important or weight in terms of reflecting an attitude towards the issues in the question (Kumar, 2005).The score of these variables is based on a 5 point Likert-type scale, in which 1=”strongly disagree”, 2=”disagree”, 3=”neutral”, 4=”agree” and 5=”strongly agree”.

4.5.1 The Effectiveness of Technology Transfer Dimension

Table 4.11: Mean score on the technology transfer dimension

Statistics

	N					
	Valid	Missing	Mean	Median	Mode	Std. Deviation
Technology increase production	75	0	4.4000	5.0000	5.00	.71660
Technology transfer can help companies generate profits.	75	0	4.3600	4.0000	5.00	.67062
Technology transfer can improve product quality	75	0	4.3867	5.0000	5.00	.76923
I am good at using technology	75	0	3.5333	3.0000	3.00	.89039
Technology transfer helps companies more competitive	75	0	4.1867	4.0000	5.00	.80023
Employee was trained to use technology	75	0	3.4667	3.0000	3.00	.81096
Technology transfer can reduce production costs	75	0	3.6667	4.0000	3.00	.70391
Technology is needed in manufacturing industry	75	0	4.3333	4.0000	5.00	.70391
Cost of technology transfer is appropriate to achieve organization target	75	0	3.4000	4.0000	4.00	.88532
Technology transfer can help companies achieve targets require	75	0	3.8667	4.0000	4.00	.62240

Table 4.11 represent the values of mean score of the effectiveness of technology transfer. This has been done to achieve first research objective which is to evaluate the effectiveness of technology transfer. The item of "Technology increase production" has the highest mean value that is 4.4 with the standard deviation of 0.7166. On the other hand, the item "Cost of technology transfer is appropriate to achieve organization target" has the lowest mean value that is 3.4 with the standard deviation of 0.88532.

4.5.2 Quantity of Work Dimension

Table 4.12: Mean score on the work performance (quantity of work dimension)

Statistics

	N					
	Valid	Missing	Mean	Median	Mode	Std. Deviation
Technology transfer can increase the production quantity	75	0	4.3600	4.0000	5.00	.67062
Technology can help the work assignment complete on time	75	0	3.5333	3.0000	3.00	.89039
Technology transfer can shorten time to achieve expectation quantity of product	75	0	3.4667	3.0000	3.00	.81096
Good timing and scheduling are important to ensure the work going smoothly	75	0	4.3333	4.0000	5.00	.70391
Lack of a technology in the organization can affect rate of production	75	0	3.8667	4.0000	4.00	.62240

Table 4.12 resembles the result of the mean score on the work performance in quantity of work dimension. The item of "Technology transfer can increase the production quantity" has the highest mean value that is 4.36 with the standard deviation of 0.67062. The item that has lowest mean value, 3.4667 with the standard deviation of 0.81096 is "Technology transfer can shorten time to achieve expectation quantity of product".

4.5.3 Quality of Work Dimension

Table 4.13: Mean score on the work performance (quality of work dimension)

Statistics

	N					
	Valid	Missing	Mean	Median	Mode	Std. Deviation
Technology helps company to meet future expectation	75	0	4.0000	4.0000	4.00	.51988
High quality of work will gain customer and client satisfaction	75	0	4.2000	4.0000	4.00	.65760
Existence of technology can help us to use appropriate method	75	0	3.8000	4.0000	4.00	.54525
Technology transfer can help to manage and reduce resource usage	75	0	3.4667	3.0000	3.00	.62240
Technology can improve the quality of work	75	0	4.1333	4.0000	4.00	.50225

Table 4.4 review the result of the mean score on the work performance in quality of work dimension. The item of "High quality of work will gain customer and client satisfaction" has the highest mean value that is 4.2 with standard deviation of 0.6576. On the other hand, the item of "Technology transfer can help to manage and reduce resource usage" has the lowest mean value that is 3.4667 with the standard deviation of 0.6224.

4.5.4 Total Mean of Each Variable

Table 4.14: Total mean of each variable

	N	Mean	Std. Deviation
Total mean of the effectiveness of technology transfer	75	3.9600	.48071
Total mean of the quantity of work	75	3.9120	.56208
Total mean of the quality of work	75	3.9200	.42744
Valid N (listwise)	75		

Table 4.14 present the total mean score between technology transfer (independent variable) and the work performance (dependent variable). Based on the table, the total mean of the effectiveness of technology transfer is 3.96. So, it can conclude that the uses of technology transfer are effective enough in that industry and it has answered research objective 1. In dimension of work performance, the total mean of quantity of work is 3.912 while total mean of quality of work is 3.92. There are small differences between total mean of quantity and quality of work which means the technology transfer give almost the same effect to both quantity and quality of work.

4.5.5 The Recommendation of Best Practice of Technology Transfer

Table below shows the recommendations of best practice of technology transfer that already been ranked by mean. Referring to Harper (2012), mean is one acceptable measure of central tendency for interval data and thus, the mean of each factor was use to rank in order to produce the most influenced factor. This step has been done to achieve third research objective which is to recommend the best practice of technology transfer for a better work performance.

Table 4.15: Recommendation of Best Practice of Technology Transfer

	N	Mean	Rank
Develop technology transfer office models	75	4.3600	1
Implementation of several research exploitation tools	75	4.3333	2
Development of organizational model	75	4.2000	3
Technology scouting and follow up	75	4.1333	4
Effective operations and creative resourcing	75	4.0000	5
Effective marketing and competitive intelligence	75	3.8667	6
Clear documentation and open communication	75	3.8000	7
Improvement of specialized competencies by personnel	75	3.5333	8

Promoting technology transfer office	75	3.4667	9
Implementation of common operational tools	75	3.4533	10
Valid N (listwise)	75		

4.6 Hypothesis Testing

Setting up and testing hypotheses is an essential part of statistical inference. In order to formulate such a test, usually some theory has been put forward, either because it is believed to be true or because it is to be used as a basis for argument. This step is carried out to achieve second research objective which is to study the relationship between technology transfer and the work performance.

Hypothesis testing is a process which an analyst tests a statistical hypothesis. The methodology employed by the analyst depends on the nature of the data used, and the goals of the analysis. Hypothesis testing is used to infer a result of a hypothesis performed on sample data from a larger population. For example, performing a hypothesis test on sample data in an attempt to determine the mean of a population is the same as the mean of the sample. The goal is to either accept or reject the null hypothesis.

In this section, Regression technique and the Pearson Correlation analysis was carried out to determine whether the relationship between the effectiveness of technology transfer and the work performance is significant or not significant. In each problem considered, the question of interest is simplified into two competing claims or hypotheses between which we have a choice; the null hypothesis, denoted H_0, against the alternative hypothesis, denoted H_1.

For this research, there have two hypotheses that are need to test. The hypotheses were stated below:

H1: There is a significant relationship between technology transfer and quantity of work

H2: There is a significant relationship between technology transfer and quality of work

4.6.1 Relationship between Technology Transfer and Quantity of Work

H_0: There is no significant relationship between technology transfers on the quantity of work

H_1: There is a significant relationship between technology transfers on the quantity of work

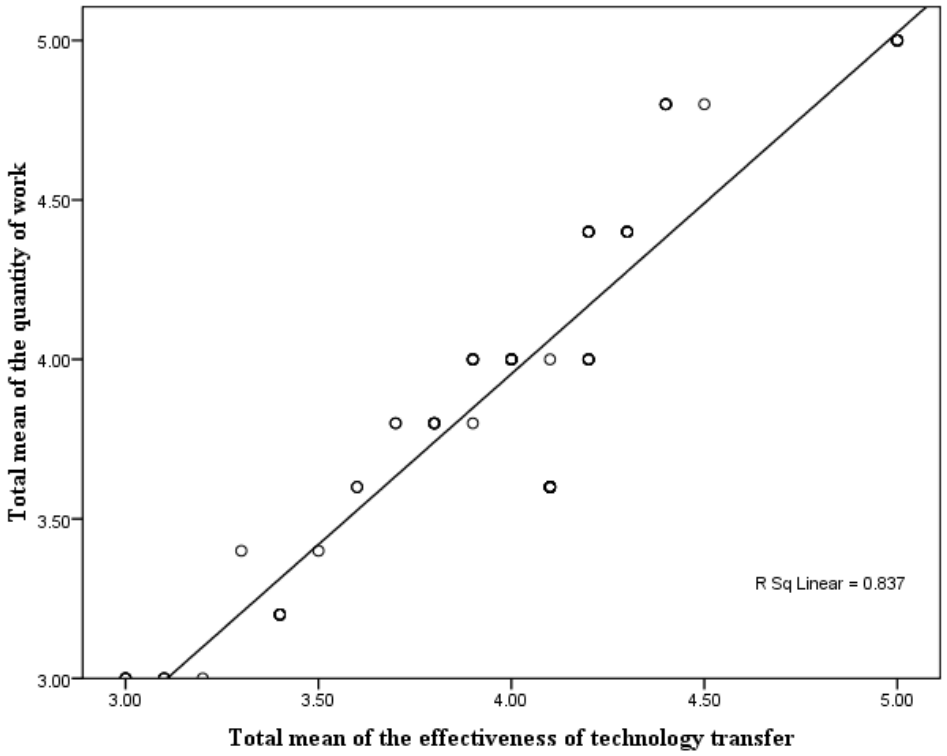

Figure 4.8: Regression of technology transfer and the quantity of work

Table 4.16: Regression summary of the effectiveness of technology transfer and the quantity of work

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.915(a)	.837	.835	.22826

a Predictors: (Constant), total_mean_of_the_effectiveness_of_technology_transfer

Figure 4.8 shows the graphical result of linear regression method between the effectiveness of technology transfer and the quantity of work. Table 4.5 shows that the regression summary collected between the effectiveness of technology transfer and the quantity of work respectively. In the table, the linear correlation coefficient, *r*, shows the value of 0.915 which indicated that there is a strong positive relationship between the effectiveness of technology transfer and the quantity of work. The value of coefficient of determination, r^2, is 0.837 which also indicate 83.7% of the variation of technology transfer is explained by the quantity of work.

ANOVA(b)

Table 4.17: ANOVA summary of the effectiveness of technology transfer and the quantity of work

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.576	1	19.576	375.708	.000(a)
	Residual	3.804	73	.052		
	Total	23.379	74			

a Predictors: (Constant), total_mean_of_the_effectiveness_of_technology_transfer

b Dependent Variable: total_mean_of_the_quantity_of_work

Table 4.6 shows the result from the ANOVA test of the regression between the effectiveness of technology transfer and the quantity of work. The significant value is approximately 0.000 which is smaller than 0.05. Since p-value = $0.00 \leq 0.05$, then we shall reject the null hypothesis. As a conclusion, there is enough evidence which prove that there is a significant relationship between the effectiveness of technology transfer and the quantity of work at significant level of 0.05.

4.6.2 Relationship between Technology Transfer and Quality of Work

H_0: There is no significant relationship between technology transfers on the quality of work

H_1: There is a significant relationship between technology transfers on the quality of work

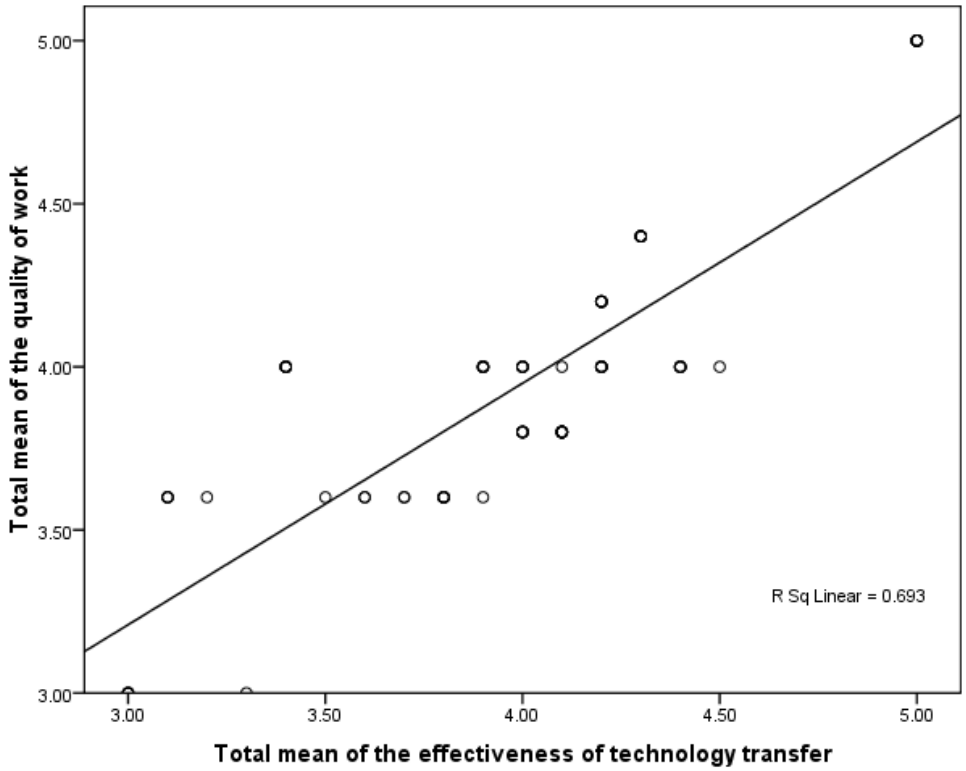

Figure 4.9: Regression of technology transfer and the quality of work

Table 4.18: Regression summary of the effectiveness of technology transfer and the quality of work

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833(a)	.693	.689	.23835

a Predictors: (Constant), total_mean_of_the_effectiveness_of_technology_transfer

Graph 4.2 reviews the graphical result of the linear regression method on the effectiveness of technology transfer and the quality of work. Table 4.7 above shows that the regression summary collected between technology transfer and the quality of work respectively. Based on the table, the linear correlation coefficient, *r*, shows the value of 0.833 which indicate that there is a positive relationship between the effectiveness of technology transfer and the quality of work. The value of coefficient of determination, r^2, is 0.693 which indicates that 69.3% of the variation of technology transfer is explained by the quality of work.

ANOVA(b)

Table 4.19: ANOVA summary of the effectiveness of technology transfer and the quality of work

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.373	1	9.373	164.985	.000(a)
	Residual	4.147	73	.057		
	Total	13.520	74			

a Predictors: (Constant), total_mean_of_the_effectiveness_of_technology_transfer

b Dependent Variable: total_mean_of_the_quality_of_work

Table 4.8 shows the result from the ANOVA test of the regression between the effectiveness of technology transfer and the quality of work. The significant value is approximately 0.000 which is smaller than 0.05. Since p-value = $0.00 \leq 0.05$, then we shall reject the null hypothesis. As a conclusion, there is enough evidence which prove that there is a significant relationship between the effectiveness of technology transfer and the quality of work at significant level of 0.05.

4.6.3 Pearson Correlation between Variables

Table 4.20: Pearson Correlation between variables

		Total mean of the effectiveness of technology transfer	Total mean of the quantity of work	Total mean of the quality of work
Total mean of the effectiveness of technology transfer	Pearson Correlation	1	.915(**)	.833(**)
	Sig. (2-tailed)		.000	.000
	Sum of Squares and Cross-products	17.100	18.296	12.660
	Covariance	.231	.247	.171
	N	75	75	75
Total mean of the quantity of work	Pearson Correlation	.915(**)	1	.758(**)
	Sig. (2-tailed)	.000		.000
	Sum of Squares and Cross-products	18.296	23.379	13.472
	Covariance	.247	.316	.182
	N	75	75	75
Total mean of the quality of work	Pearson Correlation	.833(**)	.758(**)	1
	Sig. (2-tailed)	.000	.000	
	Sum of Squares and Cross-products	12.660	13.472	13.520
	Covariance	.171	.182	.183
	N	75	75	75

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

Table 4.9 shows the result of the Pearson correlation analysis which included all variable involved. Similar to the regression function, this correlation also be used to answer the hypothesis.

For the first hypothesis, the correlation between technology transfer and the quantity of work has correlation value of 0.915 and the significant value is 0.000. As the significant value is smaller than 0.05, the null hypothesis is rejected. Thus, it can be conclude that there is a strong positive relationship between the technology transfer and the work performance in quantity of work dimension.

The next hypothesis, the correlation between technology transfer and the quality of work has correlation value of 0.833 and the significant value is 0.000. As the significant value is smaller than 0.05, the null hypothesis is rejected. Thus, it can be conclude that there is a strong positive relationship between the technology transfer and the work performance in quality of work dimension.

4.7 Conclusion

This research is attempted to study the relationship between technology transfer and the work performance. Besides that, this study will analyse the influence of technology transfer towards the work performance in terms of quality and quantity of work. In addition, these studies also aimed to recommend the best practice of technology transfer for a better work performance. By using some of methodology such as regression and correlation analysis, the relation between technology transfer and the work performance has been determined. The result of correlation and regression analysis shows all the predictor's are found to have a significant relationship with the work performance respectively. Thus, the null hypotheses are rejected. The findings of this research study are summarized in Table 4.21 below:

Table 4.21: Summarized of research finding

	H_0: There is no significant relationship between technology transfers on the work performance H_1: There is a significant relationship between technology transfers on the work performance	
	Quantity of work	Quality of work
Result	Significant	Significant
Decision	Reject null hypothesis	Reject null hypothesis
Relationship Strength	Strong positive relationship	Strong positive relationship

CHAPTER 5

CONCLUSIONS AND RECOMMENDATION

5.0 Introduction

This chapter will discuss about the conclusion or summary of the research based on the finding. The research summary is made based on chapter one, chapter two, chapter three and chapter four respectively. Besides, the limitation of this study will be addressed in this chapter follow by the conclusion on the result of quantitative analysis of this study. Finally, a section of recommendation for further studies is included towards the end of this report.

5.1 Research Summary

The aim of this study is to evaluate the effectiveness of technology transfer in SME's manufacturing-based industry. In addition, this research was carried out to study the relationship between technology transfer and the work performance. Besides that, this study

also will recommend the best practice that can be applied in that industry to have a better work performance among their employees.

In order to achieve the objectives, survey method has been used as it is the most suitable method to conduct this study. In this method, survey questionnaire are being used as the instrument. Questionnaires are the most commonly used tool in survey research. In addition, sampling technique was used and it's covering 75 respondents respectively. The respondents are comes from SME's manufacturing-based company around Senai, Johor area.

For analysing the data, this research tends to use the Statistical Packages for the Social Science (SPSS) software. The analyses involve are the profile demographic, reliability test, normality test, descriptive statistics, regression and correlation coefficient. The reliability test was conducted to check whether the data from the questionnaire is valid or not while normality test was used to determine whether the data was normally distributed or not normally distributed. Besides that, descriptive statistics are used to describe the basic features of the data in this study and it provides simple summaries about the sample and about the observations that have been made. This includes regression and correlation coefficient.

In conclusion, the result from this study shows that there is a positive relationship between technology transfer and the work performance. Therefore, technology transfer can influence the result of work performance in term of quality of work and quantity of work. Based on the result obtained, technology transfer has a strong relationship with both quality and quantity of work. Hence, the effectiveness of technology transfer that was applied can improve the work performance in this industry for a better work performance.

5.2 Discussion

This study used survey method as a research method. A survey is a systematic method of collecting data from a population of interest. It tends to be quantitative in nature and aims to collect information from a sample of the population such that the results are representative of the population within a certain degree of error. The purpose of a survey is to collect quantitative information, usually through the use of a structured and standardized questionnaire. The survey concerned with the present and attempts to determine the status of phenomena under investigation (Singh and Nath, 2005). Generally, survey method includes measures of central tendency which are the mean, mode, median, standard deviation, variation, percentage, and correlation between variables.

5.2.1 The effectiveness of technology transfer

Descriptive analysis was done to describe the respondent's perception levels towards the effectiveness of technology transfers in their organisation. All the variables were analysed on the mean and standard deviation by looking at each item from the dimensions used using Likert-scale. Table 4.11 represent the values of mean score of the effectiveness of technology transfer of each item. Then, by using the mean that are collected, the total mean of the effectiveness of technology transfer was calculated. The total mean of the effectiveness of technology transfer was shown in Table 4.14.

Based on the table 4.14, the total mean of the effectiveness of technology transfer is 3.96. So, it can conclude that the uses of technology transfer are effective enough in that industry. Referring to Harper (2012), mean is one acceptable measure of central tendency for interval data and thus, the mean of each factor was used to determine the level of effectiveness of technology transfer. Therefore research objective number 1 which is to evaluate the effectiveness of technology transfer has been achieved.

5.2.2 Work performance in terms of quantity of work and quality of work

Pearson Correlation Analysis was used to analyze the relationships between the independent variable which is the technology transfer with the dependent variables which is the work performance. The result showed that the efficiency of risk management planning had a correlation value of 0.703 which is 70.3% with the project success. The other result showed that the efficiency of risk management planning had a correlation value of 0.571 which is 57.1% with the risk mitigation. However, the correlation of dependent variables (project success) and dependent variable (risk mitigation) is 0.605 which is 60.5%.

Besides, regression analysis was used to examine the relationship between independent variable which is the technology transfer and dependent variables which is the work performance in terms of quantity of work and quality of work. The results obtained were supported and accepted the hypotheses with p-value which is less than alpha value 0.05 which mean that the null hypothesis being rejected, where the result is significant and relation strength for the relationship of technology transfer on the quantity of work is strong positive relationship while the relationship of technology transfer on quality of work is also strong positive relationship. The summaries of regression analysis was shown, refer to Table 4.21 below:

	H_0: There is no significant relationship between technology transfers on the work performance H_1: There is a significant relationship between technology transfers on the work performance	
	Quantity of work	Quality of work
Result	Significant	Significant
Decision	Reject null hypothesis	Reject null hypothesis
Relationship Strength	Strong positive relationship	Strong positive relationship

Based on this finding, therefore, research objective number 2 which is to study the relationship between technology transfer and the work performance has been achieved.

5.2.3 Recommendations of best practice of technology transfer for a better work performance

Descriptive statistic is to provide information to describe a set of factors in a situation and present a raw data into a transformed form that will make easy understand and interpret (Cavana et al. 2001). Referring to Harper (2012), mean is one acceptable measure of central tendency for interval data and thus, the mean of each factor was use to rank in order to produce the most influenced factor. Therefore, research objective 3 which is to recommend the best practice of technology transfer for a better work performance has been achieved. Below are the lists of the recommendation that already being ranked by the level of importance on the best practice of technology transfers.

Best practice of technology transfers	Rank
Develop technology transfer office models	1
Implementation of several research exploitation tools	2
Development of organizational model	3
Technology scouting and follow up	4
Effective operations and creative resourcing	5
Effective marketing and competitive intelligence	6
Clear documentation and open communication	7
Improvement of specialized competencies by personnel	8
Promoting technology transfer office	9
Implementation of common operational tools	10

5.3 Limitation

Result in this study should be considered in light of certain limitation. There are some limitations towards this study in order to answer all the research questions. During the course of this research, some potential limitations for this study in term of methodology and data collection were expected. Firstly, this study is limited to the SME's manufacturing-based industry. There might be different result if this study was conducted in different field other than manufacturing industry. Furthermore this study is just focusing on two element of work performance that is evaluated from the quantity of work and the quality of work. Perhaps to make it more reliable, more element should be included.

Besides that, there is other limitation in this study that is the method in collecting the data. Refer to Chapter 3, the data collection method is survey questionnaires that are distribute by hand and mail. For the mailing method, it is not appropriate method to use for this study because the feedback from the mail is unsatisfied. There are only a few respondents reply that mail maybe because of the respondents does not concern about this research. In addition, it is hard to get valid information from the company. It also considered as a limitation in this study. Some of company did not want to expose their profile and the information about their company and employee because it is confidential. Therefore, the reliability of the data collected will be affected.

Other than that, enthusiasms of respondent considered one of the limitations. Due to this limitation, out of 100 expected respondents, only 60 were collected. So, more questionnaires should be distributed in order to get 75 respondents to match the nature and size of the population and it will take a longer time to collect it again. Therefore, enthusiasms of respondents were influenced directly to this study. Lastly, lack of resources such as journal also is the limitation to this research study. There are no specific journals that can support the findings. Due to this limitation, the result of this finding seems not too valid.

5.4 Recommendation for future study

Based on this study, there are some of the recommendations for future research that are needed in this field of study in order to get more accurate result. Besides, these recommendations are expected to improve the work performance in SME's manufacturing-based industry and other related industry. Firstly, in order to get more accurate result, the actual or current collection of data should be more than expected amount of respondents. In this research, there are some slacks in amount of the respondent which increase the amount of uncertainty in the finding. Thus the prevention of these slacks should be done as the data from respondents are very important for the researcher to analyse them. Besides, this action will increase the reliability of the data and make the finding more accurate.

Next, future researchers are suggested to study the large number of participants for a more accurate outcome and represent a more realistic population in Malaysia. The selected numbers of participants were not enough to be generalized the SME's manufacturing-based industry. Furthermore, the future study should not be limited to use a single method such as survey questionnaire like in this research in collecting data. Some of the participants tend to select the average answer as their response to items in the questionnaire. For example, "neutral" were selected by some of them in this study. It is because they are not willing to take out a couple of minutes to answer the questionnaire due to busy with work, lack of enthusiasms, lazy or other reason. Thus, the future researchers can try another method such as depth interviewing with respondents to get the more accurate result.

The last recommendation is the variance of the related studies. In short, there are a few studies that are focused on how technology transfer affects the work. So, for future research are suggested to study in other field of industry. Thus, this subject can improve the result towards the finding of the relationship between technology transfer and the work performance in dimension of quantity of work and quality of work respectively. There is therefore a tremendous potential for research in this direction respectively. The present study of the relationship between technology transfer and the work performance is an ambitious attempt to pave the way for future research from a similar perspective.

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APPENDIX

A STUDY ON THE EFFECTIVENESS OF TECHNOLOGY TRANSFER TOWARDS THE WORK PERFORMANCE IN SME's

Dear participants,

First and foremost, thank you for taking part in this survey. For your information, this survey is to fulfill the requirement for my undergraduate research project entitled as state above. The main objective of this research is to evaluate the effectiveness of technology transfer towards the work performance. This research project aims to study the relationship between technology transfer and the work performance. Last but not least, this study also attempts to recommend the best practice of technology transfer for a better work performance.

This enclosed questionnaire will assist the researches in this field of study. Your view is very important to the fulfillment of our study and we hope that you will be able to find the time to complete and RETURN THE QUESTIONNAIRE DOCUMENT ON OR BEFORE the date given. Thank you in advance for your participation.

*key description

Technology transfer - a new technology that is being adopted which is transferred from other organization that has been already use it.

Section A: Demographic

Instructions: Please marks (X) in the space provided and write the most appropriate answer to the question presented.

1. Gender :

☐ Male ☐ Female

2. Age :

☐ 21-30
☐ 31-40
☐ 41 above

3. What is the number of permanent staff in your organization?

☐ Less than 50 ☐ 50-100 ☐ 100-200 ☐ 200-250

4. How many years' work experience have you had in manufacturing industry?

☐ 1-5 ☐ 5-10 ☐ 10-20 ☐ Over 20

5. What is your position in your organization?

_____

6. How many years has your organization been existence?

☐ Less than 5 ☐ 5-20 ☐ 20-50 ☐ More than 50

7. What is your business scope of your organization in industry?

☐ Electric ☐ Electronic ☐ Biotech
☐ Chemical ☐ Mechanical ☐ Other : _____

Instructions: For Section B, C and D, please indicate your answer according to your experience and opinion about the following item. The importance is scaled as follows:

Arahan : Untuk Seksyen B, C dan D, sila nyatakan jawapan anda berdasarkan soalan kajian di bawah mengikut pengalaman atau pandangan anda. Skala kepentingan adalah seperti berikut:

1) Strongly Disagree/ *Sangat tidak setuju*
2) Disagree/ *Tidak setuju*
3) Neutral/ *Neutral*
4) Agree/ *Setuju*
5) Strongly Agree/ *Sangat setuju*

Section B

Instructions: For each of the factors listed in this questionnaire. Please indicate according to your experience about the effectiveness of technology transfer in your organization.

Independent Variable: Impact of technology transfer

No.	Statement					
1	Technology increase production *Teknologi meningkatkan pengeluaran*	1	2	3	4	5
2	Technology transfer can help companies generate profits. *Teknologi boleh membantu syarikat menjana keuntungan*	1	2	3	4	5
3	Technology transfer can improve product quality *Pemindahan teknologi meningkatkan kualiti produk*	1	2	3	4	5
4	I am good at using technology *Saya mahir mengunakan teknologi*	1	2	3	4	5
5	Technology transfer helps companies more competitive *Pemindahan teknologi membantu syarikat lebih berdaya saing*	1	2	3	4	5
6	Employee was trained to use technology *Pekerja dilatih untuk mengunakan teknologi*	1	2	3	4	5

7	Technology transfer can reduce production *Pemindahan teknologi mengurangkan kos pengeluaran*	1	2	3	4	5
8	Technology is needed in manufacturing industry *Technology diperlukan dalam industry pembuatan*	1	2	3	4	5
9	Cost of technology transfer is appropriate to achieve organization target *Kos pemindahan teknologi amat sesuai untuk mencapai sasaran organisasi*	1	2	3	4	5
10	Technology transfer can help companies achieve targets require *Pemindahan teknologi boleh membantu syarikat mencapai sasaran yang dikehendakinya*	1	2	3	4	5

Section C

Instructions: For each of the factors listed in this questionnaire. Please indicate according to your experience about the work performance with the existence of technology transfer.

Dependent Variable: Work Performance

C. i) In terms of quantity of work

No.	Statement					
1	Technology transfer can increase the production quantity *Pemindahan teknologi boleh meningkatkan kuantiti pengeluaran*	1	2	3	4	5
2	Technology can help the work assignment complete on time *Teknologi boleh membantu tugasan selesai tepat pada waktu*	1	2	3	4	5

3	Technology transfer can shorten time to achieve expectation quantity of product *Pemindahan teknologi boleh memendekkan masa untuk mencapai jangkaan kuantiti produk*	1	2	3	4	5
4	Good usage of technology transfer and scheduling are important to ensure the work going smoothly *Penggunaan teknologi transfer yang baik dan penjadualan adalah penting untuk memastikan kerja berjalan lancar*	1	2	3	4	5
5	Lack of a technology in the organization can affect rate of production *Kekurangan teknologi dalam organisasi boleh mempengaruhi kadar pengeluaran*	1	2	3	4	5

C. ii) In terms of quality of work

No.	Statement					
1	Technology helps company to meet future expectation *Teknologi membantu syarikat untuk memenuhi jangkaan masa depan*	1	2	3	4	5
2	High quality of work will gain customer and client satisfaction *Mutu kerja yang tinggi akan mendapat pelanggan dan kepuasan pelanggan*	1	2	3	4	5
3	Existence of technology can help us to use appropriate method *Kewujudan teknologi boleh membantu kita untuk menggunakan kaedah yang sesuai*	1	2	3	4	5
4	Technology transfer can help to manage and reduce resource usage *Pemindahan teknologi boleh membantu untuk mengurus dan mengurangkan penggunaan sumber*	1	2	3	4	5
5	Technology can improve the quality of work *Teknologi dapat meningkatkan kualiti kerja*	1	2	3	4	5

Section D

Instructions: For each of the factors listed in this questionnaire. Please indicate according to your experience about the recommendation of best practice of technology transfer for a better work performance.

Recommendation of best practice of technology transfer for a better work performance

No.	Statement					
1	Develop technology transfer office models *Membangunkan model pejabat pemindahan teknologi*	1	2	3	4	5
2	Improvement of specialized competencies by personnel *Peningkatan kompetensi khusus oleh kakitangan*	1	2	3	4	5
3	Promoting technology transfer office *Menggalakkan pejabat pemindahan teknologi*	1	2	3	4	5
4	Implementation of several research exploitation tools *Pelaksanaan beberapa alat eksploitasi penyelidikan*	1	2	3	4	5
5	Effective marketing and competitive intelligence *Pemasaran yang berkesan dan kepintaran berdaya saing*	1	2	3	4	5
6	Effective operations and creative resourcing *Operasi yang berkesan dan penyumberan kreatif*	1	2	3	4	5
7	Development of organizational model *Pembangunan model organisasi*	1	2	3	4	5
8	Clear documentation and open communication *Dokumentasi yang jelas dan komunikasi terbuka*	1	2	3	4	5
9	Implementation of common operational tools *Pelaksanaan alat operasi biasa*	1	2	3	4	5
10	Technology scouting and follow up *Pengakap Teknologi dan susulan*	1	2	3	4	5

Thank you for spend some time to answer this questionnaire ☺

Gantt Chart FYP 1

week / progress	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Title brainstorming														
Conduct introduction														
Literature review														
Methodology design														
Questionnaire design														
Final proposal and presentation														

Gantt Chart FYP 2

Week / Progress	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DISTRIBUTE QUESTIONNAIRE														
COLECT QUESTIONAIRE														
DATA ANALYSIS														
ANALYSIS INTERPRATION														
DEVELOPMENT OF DISCUSSION														
CONCLUSION														
FINAL REPORT SUBMITTION AND PRESENTATION														