

## **2.1 INTRODUCTION**

This literature review examines the previous studies on quality management system, ISO 9000 QMS and its principles, implementation of ISO 9000 QMS, the relationship between motivation for ISO 9000 certification and implementation effort of ISO 9000 QMS, the relationship between implementation effort of ISO 9000 QMS and organizational performance, and the effects of organization size and length of ISO 9000 implementation.

## **2.2 QUALITY MANAGEMENT SYSTEM**

For having a good quality product, an organization not only needs to have a good quality process but also a good quality management system (Ahmed & Hassan, 2003). Quality management system is defined as a management system that can improve and manage the quality of products and services. The quality management system has evolved from a simple inspection, two decades ago, to quality assurance, and from quality assurance to total quality management (Lau & Tang, 2009). Total quality management is built on three fundamental principles which are customer focus, management-led employee participation and continue improvement process focus (Evan & Lindsay, 2008; Lau & Tang, 2009). In order to implement total quality management successfully, organizations must use a set of practices and techniques to support the three fundamental principles (Evan & Lindsay, 2008; Fotopoulos & Psomas, 2009a).

The most popular and major quality management systems today include ISO 9000 standards, Six Sigma, Lean Production, Malcolm Baldrige National

Quality Award Model, European Quality Award (EQA) Model and Total Quality Management (TQM). All these models and frameworks of quality management systems have the same total quality principles but with different emphasis and supported by certain practices, tools and methodologies (Vouzas, 2007; BSI, 2008; Evan & Lindsay, 2008; Fotopoulos & Psomas, 2009a, Lau & Tang, 2009).

### **2.3 ISO 9000 QMS AND ITS PRINCIPLES**

ISO 9000 QMS is a quality management system having accreditation bodies to give certification to those organizations who would like to have their quality management system comply with the ISO 9000 standards. Some researchers and practitioners consider ISO 9000 QMS as the first step toward Total Quality Management system (Gotzamani & Tsiotras, 2001; Costa & Lorente, 2004; Han, Chen & Ebrahimpour, 2007).

The first edition of ISO 9000 QMS standards was developed and issued by the International Organization for Standardization (IOS) in 1987 (Evan & Lindsay, 2008). The latest edition is the fourth edition (ISO 9000:2008). ISO 9000 QMS standards were revised three times in 1994, 2000 and 2008. Due to a lot of critics on the shortage of principles on the second edition (ISO 9000:1994) compared to TQM and other business excellence models, ISO 9000 QMS standards had a major and significant revision in year 2000 (Vouzas & Gotzamani, 2005; Evan & Lindsay, 2008). Based on the total quality management principles and many core values and concept of Baldrige and European Quality Award models, ISO 9000 QMS standards

were revised into the new structure with eight new quality management principles (Vouzas & Gotzamani, 2005; Evan & Lindsay, 2008; Lee *et al*, 2009). The eight new ISO 9000 QMS principles are customer focus, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making and mutually beneficial supplier relationships (Evan & Lindsay, 2008; Lee *et al*, 2009). The ISO 9000 QMS standards were developed taking into consideration all the above principles (BSI, 2008). Compared to other quality management systems, ISO 9000 QMS is much more aligned with Total Quality Management (Evan & Lindsay, 2008; Fotopoulos & Psomas, 2009b).

The current ISO 9000 QMS standards comprise of three documents: ISO 9000–Fundamentals and Vocabulary, ISO 9001–Requirements and ISO 9004–Guidelines for Performance Improvement (Evan and Lindsay, 2008; Hiyassat, 2000). In these three documents, only the ISO 9001 document is intended to be used for certification purpose. ISO 9001 standards contain five main clauses which are “Quality Management System”, “Management Responsibility”, “Resource Management”, “Product Realization” and “Measurement, Analysis and Improvement” (Pan, 2003; BSI 2008; Kong *et al*, 2010). Based on ISO 9001 standards, the accreditation bodies which are given authority to issue certificates will assess and verify the quality management system of an organization which participates in the accreditation process (Hiyassat, 2000; Evan & Lindsay, 2008; BSI, 2008). If the quality management system of the organization fulfills the ISO 9001 standards, the organization will be accredited as an ISO 9000 certified organization. It is very

important to understand that it is not the product but the management system which meets the ISO 9000 QMS standards for an ISO 9000 certified organization (Williams, 2004; Han *et al*, 2007).

As mentioned in clause 0.1 in the introduction of ISO 9001:2008 standards, the quality management system design and implementation for any organization shall depend on their own varied organizational environment, needs, objective, products, processes, size and organizational structure. Therefore, it is very clear that ISO 9000 QMS standards are intended for all types of industries (Evan & Lindsay, 2008). Based on the ISO 9000 QMS standards, different quality management systems can be designed by different organizations based on their own special needs and environment. (Singels *et al*, 2001). Thus, an ISO 9000 certified organization can still gain competitive advantage over its competitors which also have ISO 9000 certification (Lee *et al*, 2009).

## **2.4 IMPLEMENTATION OF ISO 9000 QMS**

To implement ISO 9000 QMS, an organization must adopt all the required ISO 9000 QMS standards with the necessary practices, tools and techniques (Fotopoulos & Psomas, 2009a; Prajogo, 2011).

In the study by Huarng, Horng & Chen (1999), they included ten process variables that are required for implementing ISO 9000, namely interdepartmental communication/integration, paper work, employee's participation, top management support and involvement, education and

training, management information system, internal audit, previous quality activities and experience, execution team and organizational culture.

In the study by Han *et al* (2007), they identified seven ISO 9000 requirements to measure the ISO 9000 registration efforts of certified organizations. These seven requirements are quality system, document control, process control, corrective action, quality records, internal quality audit and training. However, Kong *et al* (2010) directly extracted twenty nine items from the five main clauses of ISO 9001 standards for the measurement of ISO 9001 registration efforts in a study on the Malaysian construction industry.

In the study by Feng, Terziovski & Samson (2008), they identified that the ISO 9000 implementation consists of three certification practices which are planning for ISO 9000 certification, organizational commitment and implementing procedures. The certification practice of planning for ISO 9000 certification was measured by the items including identification of quality aspect, documentation, training, capital investment and defining standard procedures. The certification practice of organizational commitment was measured by the items including top management commitment, middle management commitment, worker's commitment, and trades unions' commitment. The certification practice of implementing procedures was measured by the items including periodic audits, following standard procedures and implementation of corrective action.

According to Feng *et al* (2008), their twelve measure items for the three certification practices of ISO 9000 were developed based on the global survey instrument of Corbett & Luca (2002) and Pan (2003). Except for the trade unions' commitment, other eleven measure items were identified by Corbett & Luca (2002) and Pan (2003) as the factors of ISO 9000 implementation. In the studies by Corbett & Luca (2002) and Pan (2003), they investigated the importance and the required effort of each factor of ISO 9000 implementation in different countries.

Jang and Lin (2008) also developed their survey instrument based on the global survey instrument of Corbett & Luca (2002) and Pan (2003). However, in their study, they only identified eight items, which are identification of quality aspects, defining standard procedures, documentation, training, top management support, employees' involvement, periodic auditing and corrective action, to measure the depth of ISO 9000 implementation. In another study by Lin and Jang (2008), they further categorized the above eight items into four ISO 9000 practices which are top management support, quality planning, employee involvement and continuous improvement.

In the study by Prajogo (2011), he identified that the implementation process of ISO 9000 is one of the factors that would determine the benefits that organizations can gain from ISO 9000 certification. He referred to the implementation process of ISO 9000 as the adoption of ISO 9000 QMS standards, which contain certain prescribed practices. ISO 9000 certified

organizations must implement those prescribed practices in their quality management system.

In the study by Lee *et al* (2009), they conducted a cluster analysis on the implementation patterns of ISO 9000 certified service organizations in Hong Kong and Macau. The analysis of ISO 9000 implementation patterns in their study was based on the measurement of the implementation level of each ISO 9000 principles. For measuring the implementation level of each ISO 9000 principles, they developed the measure items based on the proposed actions or practices shown in the document "ISO 9000 principles: benefits and actions" which is available at the website of IOS. They found that different ISO 9000 certified organizations have different emphasis on the implementation level of each ISO 9000 principles. Thus, there are different implementation patterns among ISO 9000 certified organizations.

As ISO 9000 QMS principles were developed based on TQM philosophy, Fotopoulos & Psomas (2010) used ISO 9000 certified organizations, which had been certified for at least four years, as their samples for examining the relationship between TQM factors and organizational performance. In their study, the TQM success factors included quality practices of the top management, employee involvement, customer focus, process and data quality management and the use of quality management tools and techniques. They concluded that to go beyond ISO 9000 standards towards total quality, ISO 9000 certified organizations not only must adopt the total quality principles and encourage employee participation in the quality improvement

process, but must also use quality management tools and techniques. They also found that the use of quality management tools and techniques has a positive effect on employee involvement in the quality management system.

Quality management tools and techniques are required to quantify and measure the improvement of quality so that the improvement process for satisfying customers' ever changing needs can be continued (Ahmed *et al*, 2005). Without sufficient tools and techniques, none of today's major quality management systems can be implemented effectively and objectively (Ahmed & Hassan, 2003). Due to the different types and nature of products, different industries may use different quality management tools and techniques and have different emphasis on which tools and techniques to be used. Lau & Tang (2009) studied the Hong Kong ISO 9000 certified construction firms and they concluded that construction works are always unique for every project. Therefore, construction firms use less statistical techniques to measure and verify the process and product capability.

According to Poksinska, Pettersen, Elg, Eklund & Witell (2010), organizations with different quality management systems will use different tools and techniques. They found in their study that the quality improvement tools and techniques that are mostly practised by Swedish ISO 9000 certified organizations include non-conformities handling, written work instructions, internal audits and measurement of customer satisfaction.



In the study by Fotopoulos & Psomas (2009a), the result also showed that only those simplest and easiest tools such as check sheet, flow chart and data collection form, are mostly used by the ISO 9000 certified small and medium-sized organizations in Greece. They also found that those ISO 9000 certified organizations who wish to implement TQM in future have a higher level of quality management tools usage. They concluded that ISO 9000 QMS standards itself is not enough to stimulate the certified organizations to implement the quality management tools and techniques.

From the literature reviewed, it can be concluded that an ISO 9000 certified organization must implement a quality management system that comply with the requirements of ISO 9000 QMS. These requirements were developed taking into consideration eight ISO 9000 quality management principles (BSI, 2008). These requirements not only contain required practices but also specific quality management tools and techniques such as non-conformities handling, internal audits and measurement of customer satisfaction. Time, effort and the overcoming of resistance and barriers are required for an organization to adapt the processes and procedures to the requirements of ISO 9000 QMS and make all levels of employees commit to quality (Escanciano, Fernandez & Vazquez, 2001). Different ISO 9000 certified organizations may put in different efforts to implement ISO 9000 QMS (Lee *et al*, 2009). An ISO 9000 certified organization may also have different emphasis and put in different efforts to implement each requirement of ISO 9000 QMS (Lee *et al*, 2009).

## **2.5 RELATIONSHIP BETWEEN MOTIVATION FOR ISO 9000 CERTIFICATION AND IMPLEMENTATION EFFORT OF ISO 9000 QMS**

ISO 9000 certification is just to ensure that organizations will follow their documented procedures, which comply with the requirements of ISO 9000 QMS, to carry out their operation process and provide services more consistently and traceably (Singels *et al*, 2001). After obtaining the ISO 9000 certification, an organization will not automatically improve the performance of the organization's operation process (Singels *et al*, 2001; Jang & Lin, 2008). Some researchers had studied the factors that can influence the implementation of ISO 9000 QMS and the performance of ISO 9000 certified organizations. The organizations' motivation for ISO 9000 certification is one of the factors (Singels *et al*, 2001; Gotzamani & Tsiotras, 2001; Boiral & Roy, 2007; Prajogo, 2011).

Anderson, Daly & Johnson (1999) classified the motivation for certification into two types: compliance related and quality management and communication related. For the compliance related motivation, organizations pursue ISO 9000 certification because they want to comply with the government's regulation and meet customers' requirement. For quality management and communication related motivation, organizations pursue ISO 9000 certification for one of the following reasons:-

- 1) to have marketing advantage over competitors.
- 2) to have standardized quality management process that can improve the quality of product and reduce the cost for satisfying the requirements of various customer markets.

3) to improve internal operation and management process for better quality of product.

In their findings on the public listed American manufacturers, quality management and communication related motivation is the main motivation for the managers to adopt ISO 9000 certification rather than compliance related motivation, which was held as the main motivation by many critics.

In the study by Huarng *et al* (1999), they found that motivation for certification has a positive impact on the performance of ISO 9000 certified organization. They classified motivation for certification into three types: active motivation, passive motivation and international motivation. Active motivation refers to the motives to implement ISO 9000 QMS which is to improve the operation process and product quality. Passive motivation refers to the motives to implement ISO 9000 QMS which is just to get the certificate or because of customer's request. International motivation refers to the motives to implement ISO 9000 QMS which is to develop international market and improve international competitiveness. They found that the three types of motivation for certification have positive impact on the performances. Active motivation has the impact on the quality improvement, internationalization and cost reduction. Passive motivation has an impact on the sales performance only. International motivation has an impact on the internationalization and sales performance.

Leung *et al* (1999) categorized the motivation for obtaining ISO 9000 certification and setting up quality management system into customer-driven

(external motivation) and non-customer-driven (internal motivation). They actually suggested that highly motivated (non-customer-driven) organization will be more committed to implement the quality management system and gain more benefits. However, according to their findings, motivation for getting certification, actually, is not a significant factor for determining whether or not the benefit of certification would outweigh the cost of certification for a certified organization.

Sun (2000) suggested that the influence of ISO 9000 standards on organizations' performance depends on how the organization would like to use it. If the organization just gets certification only for the sake of advertisement, then the existing business processes will be destroyed by the requirement of ISO 9000 standards and no improvement of performance will exist.

Singels *et al* (2001) categorized ISO 9000 certified organizations into internally motivated and externally motivated organizations. Internally motivated organizations are the organizations that seek ISO 9000 certification because they really need to implement ISO 9000 QMS for improving their organizations' performance. Externally motivated organizations are the organizations that seek ISO 9000 certification because of external pressure. In their empirical analysis, they further found that internally motivated ISO 9000 certified organizations will have a better performance than those externally motivated certified organizations.

In the study by Gotzamani & Tsiotras (2001), they concluded that the contradicting findings on the long term effectiveness and contribution of ISO 9000 standards to the certified organizations actually showed that the long term effectiveness and value of ISO 9000 standards not only depend on its requirements, but also on how the certified organizations adopt and implement the requirements. They contended that the organization's real commitment to quality improvement and motives to gain certification are the key factors that determine the success of ISO 9000 QMS implementation. Therefore, in the study by Gotzamani & Tsiotras (2002), they found that Greek ISO 9000 certified organizations with true quality improvement motives will gain more overall benefits and have better TQM performance improvement than those with motives focused on external pressure.

In the findings by Escanciano *et al* (2001), most of the Spanish organizations identified the improvement in the performance of all areas, such as product, process and market development, and its adaptation to market and competitive business environment as the important reasons for gaining ISO 9000 certification. Their findings also showed that customer pressure or demand was not an important reason for Spanish organizations to gain certification.

On the contrary, Inaki, Landin & Fa (2006) used Delphi methodology and concluded that the Spanish organizations in Basque Country implemented ISO 9000 QMS mainly due to the external pressure. In addition, Llopis & Tari (2002) also found that many Eastern Spain ISO 9000 certified organizations

had identified external reasons as the most important reasons for their certification. Among the external reasons, an improvement in quality image offered to the market is the most important reason. They further found that organizations with internal motivation for certification will obtain higher profits and implement a higher level of TQM elements than those with external motivation for certification.

In the survey of ISO 9000 users in New Zealand by Castka *et al* (2006), they found that different industries have different motivation for ISO 9000 implementation and perceive different benefits from ISO 9000 implementation. Lee (1998) also found that manufacturing, service and construction industries in Hong Kong have different motivation for ISO 9000 implementation.

Zaramdini (2007) found that United Arab Emirates (UAE) organizations have attained some improvement in their business performances after ISO 9000 certification because their major motivational factors for seeking certification are internal motivation. Based on the motivational factors which are internal motivation and external pressure, Boiral & Roy (2007) developed four groups with different extent of the two motivational factors. They too found that those groups with a high level of internal motivation will have a higher level of business benefits and a lower level of organizational problems arising from ISO 9000 certification.

Terziovski & Power (2007) also categorized the motivation for ISO 9000 certification into intrinsic and extrinsic nature of motivation. The intrinsic

nature of motivation (internal motivation) for seeking ISO 9000 certification is driven by a continuous improvement strategy and the extrinsic nature of motivation (external motivation) for seeking certification is driven by the reaction to external factors. Their findings showed that internal motivation for certification has a strong positive relationship with the benefits of ISO 9000 implementation but external motivation for certification has a weak positive relationship with the benefits of ISO 9000 implementation. Therefore, they concluded that only those organizations which have internal motivation for seeking certification can gain significant benefits from the implementation of ISO 9000 standards.

In the study by Sampaio *et al* (2009), they concluded that organizations which are getting ISO 9000 certification just for reacting to external pressure will only gain limited improvement in the internal operation because they only use minimum effort to attain the certification. Only the organizations with internal motivation to gain ISO 9000 certification will gain maximum benefits from certification.

Studies by Lee (1998), Dissanayaka *et al* (2001) and Lo (2002) on the Hong Kong ISO 9000 certified construction firms revealed that the main motivation for gaining certification is from external pressure, which is to satisfy the customer, particularly the government. Lo (2002) contended that the quality culture has not been established in the Hong Kong construction industry and there is no improvement in the quality of services, as expected after the implementation of ISO 9000 QMS. He further concluded that the failure in the

improvement of the quality of services for the certified Hong Kong construction firms is due to the wrong motivation for certification, which is from external pressure and not from internal motivation.

In the study by Ahmed *et al* (2005), they concluded that due to the Hong Kong government's requirement, there are a much higher percentage of construction organizations having ISO 9000 certification in Hong Kong compared to USA. However, they found that Hong Kong ISO 9000 certified contractors do not really understand the concept of process approach required in version 2000 of the ISO 9000 standards. Furthermore, most of the quality managers who are Hong Kong respondents pointed out that the required quality records and site audit records by ISO 9000 standards were just for recording purpose only. No further analysis was made on those records. Therefore, they concluded that Hong Kong respondents might have the wrong motives to obtain certification.

Investigating the five critical factors for implementing ISO 9000 QMS effectively in small and medium-sized service firms, Psomas, Fotopoulos & Kafetzopoulos (2010) found that the "internal motivation of company" which corresponded to internal motivation for certification was the most important factor. However, "attributes of the external environment" which corresponded to external motivation for certification was the least important factor.

The study by Jang & Lin (2008) found that internal motivation for certification not only has a direct and positive relationship with the depth of ISO 9000



implementation but also mediates the relationship between the external motivation for certification and the depth of ISO 9000 implementation. Even though there is no direct relationship between external motivation for certification and the depth of ISO 9000 implementation, external motivation for certification can still improve the depth of ISO 9000 implementation through the positive effect on the internal motivation for certification.

Prajogo (2011) used the link of strategy, process and performance from strategic management theory to study the relationship among motives for certification, implementation process of ISO 9000 and outcome of ISO 9000. In his study, motives for certification have three theoretical roles which affect the implementation of ISO 9000. The three roles are “motives as a goal”, “motives as a driver” and “motives as a context”. In his findings, internal motives for certification have a positive and stronger relationship with the ISO 9000 implementation and operational performance. However, external motives for certification only have a positive relationship with the implementation process but no relationship with the operational performance.

In the research findings by Williams (2004) on the relationship among different motivations and different benefits of ISO 9000 implementation, employees of those organizations which considered customer demand as the main motivation for certification rated 20 benefits with the lowest scores and employees of those organizations which considered quality improvement benefit as the main motivation for certification rated 20 benefits with the highest scores. His findings supported the argument that only the internal

motivation for certification can motivate all the employees to be committed and involved in the ISO 9000 implementation process and make the certified organizations gain the maximum benefits from the ISO 9000 implementation.

The research by Kemenade *et al* (2011) for higher education accreditation, which is also a form of certification such as ISO 9001, found that professionals in an organization were willing to make a contribution in the certification implementation process only if they perceived there was internal added value from the certification. External added value from the certification will not have a significant effect on the professionals' contribution to the certification implementation process. Thus, their results suggested that internal motivation for certification can instigate employees to contribute their efforts to the certification implementation process.

Except for the study by Leung *et al* (1999), the literature reviewed showed that motivation for certification is a significant factor in determining the success of ISO 9000 QMS implementation. Motivation for certification will determine the commitment of an organization to ISO 9000 implementation and the resources that an organization wants to invest for the ISO 9000 implementation (Leung *et al*, 1999). Motivation for certification will determine the way and the level of ISO 9000 implementation in an ISO certified organization (Gotzamani & Tsiotras, 2002; Prajogo, 2011).

Based on the literature reviewed, the motivation for ISO 9000 certification is categorized into internal motivation and external motivation. This study will

use the same two categories of motivations. When an organization really feels that it is needed or there are internal forces pushing to implement ISO 9000 QMS for operational improvement, such as quality improvement, cost reduction and process efficiency improvement, the motivation is referred to as internal motivation; if an organization gets certification just because of external pressure or for the purpose of promotional and marketing, such as customers' requirement, desire to increase market share, governmental regulation and pressure from certified competitors, the motivation is referred to as external motivation (Llopis & Tari, 2003; Zaramdini, 2007; Jang & Lin, 2008; Sampaio *et al*, 2008; Prajogo, 2011).

Organizations that seek ISO 9000 certification with internal motivation tend to gain greater benefit than those with external motivation (Feng *et al*, 2008). External motivation for certification can only bring external benefits such as competitive advantage from a good image and an improvement of market penetration from certification requirement (Kemenade *et al*, 2011). However, internal motivation for certification can bring both external and internal benefits (Zaramdini, 2007; Kemenade *et al*, 2011). Internal motivation for certification can provide the right context and motivate the employees to commit, involve and put more effort into the ISO 9000 implementation (Leung *et al*, 1999; Williams, 2004; Jang & Lin, 2008; Kemenade *et al*, 2011; Prajogo, 2011). External motivation for certification alone is unable to motivate all the employees to give full support and to put additional effort in the ISO 9000 implementation (Jang & Lin, 2008). Only when the employees implement ISO 9000 QMS with full commitment and more effort than the minimum

requirement, the ISO 9000 certified organizations can benefit more from the performance improvement (Jang and Lin, 2008).

## **2.6 RELATIONSHIP BETWEEN IMPLEMENTATION EFFORT OF ISO 9000 QMS AND ORGANIZATIONAL PERFORMANCE**

In the last two decades, the number of ISO 9000 certified organizations have increased rapidly and this has led many researchers to carry out studies on the benefits and improvement of the business performance resulting from ISO 9000 standards (Costa & Lorente, 2004). The main reasons why companies choose to seek ISO 9000 certification are to increase the market share and productivity (Ebrahimpour *et al*, 1997; cited by Han *et al*, 2007). ISO 9000 certified organizations can gain internal and external benefits together only when ISO 9000 QMS is implemented not just for marketing or promotion purpose but with full understanding (Sampio *et al*, 2009). If the ISO 9000 QMS is not implemented effectively, the desired benefits cannot be realized (Psomas *et al*, 2010). Past research studies showed inconsistent results regarding the benefits or performance improvement that can be provided by ISO 9000 QMS.

Huang *et al* (1999) found that the implementation process has a positive impact on the performance of ISO 9000 certified organizations. However, different implementation processes may affect different performance factors. They identified four performance factors which are quality improvement, cost reduction, sales performance and internationalization.

The case study by Costa & Lorente (2004) found that the implementation of ISO 9000 QMS can help an organization to develop better work procedures and have clear defined responsibilities and duties for its employees. In their findings, product quality (high improvement), customer satisfaction (medium improvement), competitiveness (medium improvement) and productivity (medium improvement) were the performances that had shown improvements after the fourteen Spanish ISO 9000 certified organizations had implemented ISO 9000 QMS. However, their findings showed that there is no clear positive effect on financial performance, such as market share and revenue, from the implementation of ISO 9000 QMS.

Haversjo (2000) found that after two years of certification, the increase on the rate of return of ISO 9000 certified Danish organizations was more than non-certified organizations. By further investigating the trends of the net total turnover and capacity ratio of certified and non-certified organizations, he found that the above result was mainly due to the improvements in external efficiency (marketing effect by having the certificate), rather than improvements in internal efficiency (internal capacity utilization). His findings showed that after ISO 9000 certification, Danish organizations had very slight improvements in internal efficiency compared to external efficiency which saw significant improvement. Therefore, he argued that his study only proved that financial improvement occurs simultaneously with the implementation of ISO 9000 QMS and not because it is caused by the implementation of ISO 9000 QMS.

Sun (2000) conducted an empirical study on the Norwegian manufacturing and service organizations. He identified five performance factors to measure the impact of TQM and ISO 9000 certification on the performance of organizations. The five performance factors are product quality and customer satisfaction, productivity and profitability, market positions and competitiveness, employee satisfaction, environmental protection. He classified productivity and profitability as business performance. He found that ISO 9000 certified organizations had shown better performance than non-certified organizations in only two factors, which are “product quality and customer satisfaction” and “productivity and profitability”. ISO 9000 certification had very little impact on market positions and competitiveness, and no impact at all on employee satisfaction and environmental protection.

Singels *et al* (2001) identified five performance indicators which are improvement production process, improvement company result, customer satisfaction, investment on means and personnel motivation. They found that there is no relationship between ISO 9000 certification and organizational performance because ISO 9000 certified organizations do not perform better than non-certified organizations in all the performance indicators.

In a study on the effectiveness of ISO 9000 certification amongst Spanish multi-sector organizations, Escanciano *et al* (2001) found that the benefit of ISO 9000 certification not only was realized by the organizations in terms of improved product quality, company image and better use of time and resource, but was realized also by their customers in terms of increased customer

satisfaction and their employees in terms of employee motivation. In addition, through collaborative agreement, the product quality from the suppliers of ISO 9000 certified organizations had also shown improvement.

Gotzamani & Tsiotras (2001) found that ISO 9000 standards improved the certified organizations' performance in all eight TQM elements which are leadership, strategy quality planning, quality data and analysis, human resource management, process management, supplier relations, customer relations and product quality design. Therefore, they concluded that ISO 9000 QMS is the first step toward TQM. However, they contended that ISO 9000 certified organizations still need much improvement especially in the "soft" TQM elements such as leadership, human resource management and supplier relations.

In the study by Costa & Lorente (2007) on the impact of ISO 9000 standards on company performance of Spanish manufacturers, they used objective financial data as a performance measure for both longitudinal and comparative analysis. The financial data included in the study are sales growth rate, personnel expenses and operational cost growth rates, earnings before taxes and return on assets (ROA). They actually found that ISO 9000 implementation not only cannot improve but instead can worsen the financial performance of the certified organizations. They concluded that the findings may be due to the cost of ISO 9000 implementation is higher than the benefits of ISO 9000 implementation.

By using the financial data, such as sales revenue and ROA, as business performance measures, Dick, Heras & Casadesu (2008) found that there is no relationship between the ISO 9000 QMS implementation and the improvement of sales revenue and ROA. By using the attribution testing method, they further proved that the causes other than ISO 9000 QMS actually improved the performance of sales revenue and ROA. However, they did not explore what the other causes are in their study. They commented that the cross-section analysis is not suitable to study the relationship between ISO 9000 certification and performance because it will infer the relationship erroneously due to an ignorance of better performance prior to certification.

The study by Han *et al* (2007) on the relationship between ISO 9000 registration efforts, TQM practices, organizational competitiveness, customer satisfaction and business performance for electronic manufacturers found that ISO 9000 registration efforts had a direct and positive effect on the organizational competitiveness which in turn enhanced the business performance and customer satisfaction. They also found that ISO 9000 registration efforts could enhance TQM practices. TQM practices also had a direct impact on the organizational competitiveness. The organizational competitiveness in their study were measured based on four strategic advantages which were cost, quality, delivery and flexibility. They measured business performance by profit and market share.

Similar to the study by Han *et al* (2007), Kong *et al* (2010) also studied the relationship between ISO 9000 registration efforts, practices of ISO 9000



QMS, company competitiveness, customer satisfaction and business performance for the Malaysian construction industry. There are three components for the variable of company competitiveness, namely competitive performance, competitive processes and competitive resources. In their findings, they found that the ISO 9000 registration efforts could only enhance the practices of ISO 9000 QMS. Then, the practices of ISO 9000 QMS had a direct effect on the company competitiveness which in turn enhanced customer satisfaction and business performance. The ISO 9000 registration efforts had no direct impact on the company competitiveness, customer satisfaction and business performance. Their results also showed that there was no relationship between customer satisfaction and business performance.

Sohail & Teo (2003) conducted a comparative study on the impact of TQM practices on the organizational performance of ISO 9000 certified small and medium-sized enterprises (SMEs) and non-certified SMEs in Malaysia. The organizational performance measures in their study were developed based on TQM's six criteria which are employee training and development, process management, quality measurement and benchmarking, top management commitment, customer involvement and satisfaction and strategy and planning. Their findings showed that ISO 9000 QMS has positive impact on the organizational performance.

In the study by Said *et al* (2006) on the ISO 9000 certified and non-certified Malaysian contractors, the following results were found:-

- 1) The implementation of management responsibility in ISO 9000 certified contractors is better than in non-certified contractors. Management responsibility is one of the core elements of ISO 9000 standards.
- 2) The performance of ISO 9000 certified contractors is better than the non-certified contractors. The performance measures in the study included the quality performance, financial performance and non-financial performance.
- 3) Implementation of management responsibility is significantly positively associated with the performance of contractors.

In the study by Jang & Lin (2008) on the relationship between the depth of ISO 9000 implementation, operational performance, market performance, market share and business performance amongst Taiwan manufacturing organizations, it was found that the depth of ISO 9000 implementation has a positive and direct effect on operational performance only. Their results also showed that better operational performance will not only lead to better market performance but also to better business performance. In addition, the results also showed that better market performance will lead to a larger market share which in turn will also lead to better business performance. In another study by Lin & Jang (2008) on the relationship between ISO 9000 practices, operational performance and business performance amongst Taiwan manufacturing organizations, they also found that the implementation of ISO 9000 practices is positively related to operational performance which in turn is positively related to business performance. However, in the study by Lin &

Jang (2008), the measure of operational performance included the measure of market performance and the measure of business performance included the measure of market share.

In studying the impact of ISO 9000 standards on the financial performance of public listed organizations, Clare, Goh & Tan (2003) found that ISO 9000 certification has a positive impact on the financial performance of public listed organizations. The financial performance measures used in their study are objective financial data which includes profit margin on sales, ROA, total assets, ROE, debt to equity ratio, and earnings per share (EPS).

In the study by Bayati & Taghavi (2007) on the impact of ISO 9000 certification on the performance of Iranian small and medium-sized enterprises (SMEs), they found that the implementation of ISO 9000 QMS improved the organizational performance of Iranian SMEs especially in the performance criteria of business improvement, quality improvement, documentation and standardization of procedures, increasing customer satisfaction, increasing organization quality awareness, team work and organization communication improvement.

In a study of the United Arab Emirates (UAE) service and manufacturing sectors, Zaramdini (2007) categorized the benefits that can be gained from ISO 9000 certification into internal benefits and external benefits. Internal benefits refer to the benefits that are related to the organization's internal operation and management (Zaramdini, 2007). External benefits refer to the

benefits that are related to the organization's external environment or customers (Bayati & Taghavi, 2007; Zaramdini, 2007). Their findings showed that of the twenty benefits, the most important four benefits are related to internal operational issues such as processes, procedures and product/service quality. They concluded that UAE ISO 9000 certified firms can gain both internal and external benefits as expected from the implementation of ISO 9000 QMS.

Based on the concept of balanced scorecard, Wu & Liu (2010) developed a performance measurement of ISO 9000 certified organization. They found that ISO 9000 certification has a positive effect on all the performance indicators from the perspectives of finance, customer, internal process, learning and growing, and corporate mission.

Lee *et al* (2009) found that ISO 9000 certified service organizations could be clustered into two groups based on the implementation levels of each ISO 9000 principle. The group with a higher implementation level of ISO 9000 principles would have a better overall performance in terms of concerning customer satisfaction, internal administration efficiency, cost of quality and employee turnover rate.

Naser *et al* (2004) found that ISO 9000 certified public listed organizations had better financial performance, measured by return on sales (ROS) and economic value added (EVA), than non-certified public listed organizations in Malaysia.

The study by Feng *et al* (2008) measured organizational performance in two dimensions - operational performance and business performance. Operational performance referred to the performance of internal operation such as productivity, product quality and customer satisfaction. Business performance referred to the performance of finance, such as sales growth, profitability and the performance of market share. Their research results showed that all the three ISO 9000 certification practices (planning for ISO 9000 certification, organizational commitment and implementing procedures) have a significantly positive relationship with the operational performance. However, only two ISO 9000 certification practices, organizational commitment and implementing procedures, have a significantly positive relationship with the business performance.

Fotopoulos & Psomas (2010) used ISO 9000 certified organizations as their samples to investigate the relationship between TQM factors and organizational performance. Their findings showed that TQM factors in ISO 9000 certified organizations has a direct and significant effect on the organizational performance in terms of quality improvement, customer satisfaction, market benefits and the protection of natural and social environment.

The research findings of Prajogo (2011) showed that the implementation process of ISO 9000 QMS has a direct and positive effect on the operational performance, which includes the performance of the product and productivity.

To find out whether or not the implementation of ISO 9000 QMS can improve the organizational performance, inconsistent results were found in the literature reviewed. The contradictory findings may be due to different samples, research methodologies and data analysis techniques (Singels *et al*, 2001; Haversjo, 2000; Costa & Lorente, 2007). However, those studies (Huarng *et al*, 1999; Han *et al*, 2007; Jang & Ling, 2008; Lin & Jang, 2008; Wu & Liu, 2009; Feng *et al*, 2008; Kong *et al*, 2010; Prajogo, 2010; Fotopoulos & Psomas, 2010) which used causal analysis (regression) consistently found that the implementation of ISO 9000 QMS can positively (directly or indirectly) affect the performance improvement of certified organizations.

Different studies used different dimensions of organizational performance for measuring the impact of ISO 9000 QMS (Said *et al*, 2006). For the purpose of this study, organizational performance is measured in two dimensions - operational performance and business performance, based on the studies by Feng *et al* (2008) and Lin & Jang (2008). The operational performance refers to the performance of the company's internal operation including operating processes, working procedures, product quality, employee involvement and customer satisfaction. Business performance refers to the company's market development and financial performance such as profit, sales and market share.

## **2.7 EFFECTS OF ORGANIZATION SIZE AND LENGTH OF ISO 9000 IMPLEMENTATION**

The organization size and the length of ISO 9000 implementation are the two factors that were also studied by some researchers for their effects on the benefits and implementation of ISO 9000 QMS or any other quality management practices. The literature reviewed showed that there were contradictory findings on the effects of the organization size and length of ISO 9000 implementation on the benefits and implementation of ISO 9000 QMS.

### **2.7.1 ORGANIZATION SIZE**

In the study by Mady (2009) on the quality management practices of two Kuwaiti industries, the plant size is only found to have a positive effect on certain quality management practices. Yong & Wilkinson (2001) found that large-sized companies can implement quality management practices better than small-sized companies in Singapore because large companies have more funds and resources. Fotopoulos & Psomas (2009a) found that larger ISO 9000 certified companies used more quality management tools and techniques. In the study by Feng *et al* (2008), they found that large and medium-sized ISO 9000 certified organizations will have a better operational and business performance.

On the contrary, Gotzamani & Tsiotras (2001) found that large and small-sized ISO 9000 certified organizations have no significant difference in terms of the performance of TQM factors. In the study by Dissanayaka *et al* (2010) on Hong Kong contractors, they found no difference between the benefits that

can be gained by medium and large-sized contractors from the ISO 9000 implementation. The study by Llopis & Tari (2003) also showed that no significant difference was found in the performance of TQM practices for different sizes of ISO 9000 certified organizations.

The study by Bayati & Taghavi (2007) concluded that small and medium-sized enterprises (SMEs) in Iran do gain performance improvement after the implementation of ISO 9000 QMS. However, they highlighted that a similar study by Amiran (2000) did not find any performance improvement after the implementation of ISO 9000 QMS for the large-sized ISO 9000 certified organizations in Iran.

### **2.7.2 LENGTH OF ISO 9000 IMPLEMENTATION**

In the study by Gotzamani & Tsiotras (2001), they found that the performance of TQM practices of the ISO 9000 certified organizations with more than two years certification is significantly better than those certified organizations with less than two years certification. The longer the ISO 9000 QMS is implemented, the more matured the system will become and certified organizations will have a higher level of quality management practices (Gotzamani & Tsiotras, 2001).

On the contrary, Leung *et al* (1999) found that the length of ISO 9000 implementation has no effect on the costs and benefits of ISO 9000 implementation for Hong Kong certified organizations. Fotopoulos & Psomas (2009a) found that there was no significant difference in terms of the level of



the use of quality management tools and techniques between earlier and later certified companies. The study by Llopis & Tari (2003) also showed that no significant difference was found in the performance of TQM practices for those organizations with different length of ISO 9000 implementation.