

CHAPTER VI

CONCLUSION

This chapter is divided into the following five sections: (1) summary of the study; (2) conclusion (managerial implications), (3) recommendation (policy reflections), and (4) suggestions for future research. In last section, a brief summary of conclusion and recommendation will be presented.

6.1 Summary of The Study

The principal aim of this study is to develop an implementation model of sustainability of TQM program in oil and gas industry in Indonesia. Data for this study were collected using a self-administered questionnaire that was distributed to 49 oil and gas companies operating in Indonesia with 140 strategic business units (SBUs). Of the 2,800 questionnaires distributed, a total of 1,332 complete responses and answers were used. A multiple informant sampling (a stratified random sampling) unit was used to ensure a balanced view of the relations among the research constructs, and to collect data from the most informed respondents on different level of management (top level, middle level, and low level management).

From quantitative data analysis, the researcher used factor analysis (exploratory or confirmatory factor analyses). Six empirically validated dimensions (critical factors) of QMPs as independent variables; WCC, and OE, CNFP (as mediating variables); and CFP (as a dependent variable) were identified. The SEM simultaneously employed to investigate the relations between the QMPs and CFP as well as WCC, OE, and CNFP (three mediating

variables). Data analysis reveals that there is a strong positive relations between six QMPs (through WCC) and four QMPs (through OE) on CNFP and CFP. Table 6.1 shows the research summary of the study (the research objectives 1-6 related to research questions 1-6; research hypotheses 1-6; and research findings 1-6).

Table 6.1
The Research Summary

Research Questions	Research Objectives	Research Hypotheses	Research Findings
1. What are the critical factors of quality management practices that would facilitate TQM implementation model in oil and gas industry in Indonesia?	1. To analyze the critical factors of quality management practices that would facilitate TQM implementation	H1: Fifty items related to TQM implementation could be extracted (classified) into a set of critical factors of quality management practices	Six critical factors of quality management practices (QMP1-6) were meaningful and accounted for 56.188% of total variation among fifty items
2. What are the most significant influence of the critical factors of quality management practices to the world-class company practice?	2. To determine the most significant influence of the critical factors of quality management practices to the world-class company practice	H2a-f: All critical factors of quality management practices have strong positive impacts on world-class company practice	Six QMPs have positive impact on WCC
3. What are the most significant influence of the critical factors of quality management practices to the operational excellence practice?	3. To determine the most significant influence of the critical factors of quality management practices to the operational excellence practice	H3a-f: All critical factors of quality management practices have strong positive impacts on operational excellence practice	Four QMPs have positive impact on OE
4. How do world-class company practice and company non financial performance mediate the impact of critical factors of quality management practices on company financial performance?	4. To reveal world-class company practice and company non financial performance mediate the impact of critical factors of quality management practices on company financial performance	H4: World-class company practice and company non financial performance partially mediate the impact of critical factors of quality management practices on company financial performance	WCC and CNFP partially mediate the impact of QMP1-6 on CFP
5. How do operational excellence practice and company non financial performance mediate the impact of critical factors of quality management practices on company financial performance?	5. To reveal operational excellence practice and company non financial performance mediate the impact of critical factors of quality management practices on company financial performance	H5: Operational excellence practice and company non financial performance partially mediate the impact of critical factors of quality management practices on company financial performance	OE and CNFP partially mediate the impact of QMP1, 2, 4, 6 on CFP
6. What is the influence of company non financial performance to the company financial performance?	6. To determine the influence of company non financial performance to the company financial performance	H6: Company non financial performance has a strong positive impact on company financial performance	CNFP has strong positive impact on CFP

6.2 Conclusion: The Significance of Findings and Contribution of the Study

Throughout this study, a number of managerial elements and ideas was explained, tested, and analyzed. Many academicians, practitioners, and managers have been still suggesting several various managerial practices and ideas for organizational innovation. As Lee (1994) cited in ByeoungGone (1997) suggested, management is not a fashion or a stream of superficial activities. He at this point emphasized that management should be focused on innovations and should seek organization-wide improvements, regardless of organizational characteristic or type. From this focal point, an organization can achieve its expectations and goals (sustainable competitive advantage). Thus, this study utilized numerous managerial factors that were tested through six hypotheses statements, and empirically examined the implementation model of sustainability of TQM program in oil and gas industry in Indonesia.

Three significances of findings and contributions to the knowledge of TQM emerge from the quantitative research of the current study.

First, six QMPs were identified for oil and gas industry (Quality Improvement Program, Supervisory Leadership, Supplier Involvement, Top Management Commitment, Training to Improve Products/Services, and Cross Functional Team among SBUs). Following the classifications of Flynn *et al.* (1994), Pannirselvam and Ferguson (2001), Sousa and Voss (2002), and Lakhal *et al.* (2006), the researcher groups them into three main categories, namely:

1. Management practice: issued from top management;
2. Infrastructure practices: intended to support core practices; and
3. Core practices: based on tools and techniques specifically related to quality (Lakhal *et al.*, 2006)

This classification constitutes the basis of the research model, and highlights the links between six QMPs and CFP. Table 6.2 presents the classification of practices into each of the three categories.

Table 6.2
Classification of Six QMPs

A. Management practice	B. Infrastructure practices	C. Core (Value-creation) practices
<ul style="list-style-type: none"> • Top management commitment 	<ul style="list-style-type: none"> • Supervisory leadership • Supplier involvement • Training to improve products/services • Cross functional team relationships among strategic business units 	<ul style="list-style-type: none"> • Quality improvement program

This classification provides three managerial implications for **improvement** of the understanding of the QMPs in oil and gas industry in Indonesia.

A. Management Practice: Top Management Commitment. The transformation into a TQM organization always depends on the extent to which oil and gas companies had successfully implemented critical factors of quality management practices (Seetharaman *et al.*, 2006). Top management commitment was found to be rank number 3 of 6. In fact, top management has to play a special role to establish sustainability of an effective TQM implementation in oil and gas industry. Top management commitment to the process of continuous improvement, a dedication to empowering people to change, and a periodical desire to raise goals for improvement are viewed as the most critical human departmental needs (Kasul and Motwani, 1995 cited in Seetharaman *et al.*, 2006). Seetharaman *et al.* (2006) stated that four major areas where top management can show

their support on the TQM implementations are allocation of budget and resources for oil and gas exploration projects; control through visibility (e.g. total productive maintenance policies at the workstation); monitoring progress of the long-term improvement; and organizational change on transferring management support to the lower level employees.

The impact of effective leadership on the successful sustainability of TQM program is very crucial. The leadership must ensure that the principles of sustainability of TQM are implemented continually. Moreover, participation by top management is not enough. Only total leadership and commitment can demonstrate that sustainability of TQM is supported by top management and that they are committed to quality (Yusuf *et al.*, 2007). By doing so, the oil and gas managers can realize that top management commitment as one of critical factors for the successful sustainability of TQM implementation. Puffer and McCarthy (1996) provide a framework for leadership and top management commitment in a TQM context and argue that top management's ability to create a vision and promote change is at the heart of successful TQM implementation. In other words, top management needs transformational leadership skills (Reed *et al.*, 2000).

For successful TQM implementation, however, transformational leadership must translate its commitment into a set of actions. These actions should be aimed at enhancing the ability to:

- a) Effectively compile and analyze the relevant external information to the oil and gas companies (contextual factors of the oil and gas companies, which may effect TQM implementation such as WCC andOE);

- b) Collect and make a better use of quality related to information within the oil and gas companies (design quality management, internal quality information usage);
- c) Ensure better application of quality information by employees (employee involvement, employee empowerment, and employee training) (Ahire and O'Shaughnessy, 1998).

In order to make the top management effectively realize these actions, however, human resource management must be properly aligned (Adler, 1988; Cole, 1990 cited in Ahire and O'Shaughnessy, 1998). Total quality-oriented human resource management is a key link in successful implementation of these strategies. It shapes the TQM environment in the oil and gas companies through:

- 1) Employees Empowerment enabling the employees to make decisions related to quality;
- 2) Infrastructure Assurance is in place that supports full employee involvement and participation through quality circles and cross-functional teams;
- 3) Employees training in the technical and managerial aspects of their role in TQM implementation program (Ahire and O'Shaughnessy, 1998).

6.2.2 Infrastructure Practices: Supervisor Leadership, Supplier Involvement, Training to Improve Products/Services, Cross Functional Relationships among SBUs.

QMPs are primarily intended to improve the quality of products/services. Yet, they are also expected to have a positive impact on all six competitive priorities—quality, cost and price, flexibility, delivery, innovativeness, and service, and, thereby, should enhance plant competitiveness through collaborative manufacturing system (CMS)

(Ahmad and Schroeder, 2002). The implementation of CMS in the oil and gas industry requires the translation of customer/society requirements into objectives core practices of operations known as infrastructure practices.

Infrastructure practices of the study include supervisory leadership, supplier involvement, the training to improve products/services, cross functional team relationships among SBUs. According to Ahmad and Schroeder (2002) and Seetharaman *et al.* (2006), by developing infrastructure of operations, teamwork is improved; also employees and suppliers are motivated and encouraged to control, manage and improve the core processes which are within their responsibility. Ahmad and Schroeder (2002) identified teamwork, cross-functional activities, communication, empowerment, involvement, training, and education as important enablers of TQM implementation. However, all of these enablers have little impact unless an act of focusing on culture and behavior is realized. Transforming the vision of a total quality organization into reality requires a complete change in the prevailing attitudes and culture within the company (Richbell and Ratsiatou, 1999 cited in Ahmad and Schroeder, 2002). These changes will be a lot easier with people whose values, attitudes, and behaviors are conducive to TQM implementation (through learning organization practices).

Oil and gas companies increasingly rely on teams to improve quality, efficiency, and adaptive change. Cross-functional teams help to improve coordination among the different parties involved in carrying out a joint project (an exploitation/exploration of crude oil/gas project). The potential advantages of teams include greater employee satisfaction and commitment, better quality of products (goods and services), and greater efficiency and productivity. However, the benefits do not occur instantly, and

successful implementation of team management (the truly extra-ordinary team and the flying geese formation team) depends on a variety facilitating conditions (infrastructure practices), including supervisor leadership, supplier involvement, training to improve products/services, and cross functional relationship among SBUs. These infrastructure practices are used to increase cohesiveness, facilitating social interaction among members, informing members about group activities and achievements, conducting alignment programs, fostering appreciation and tolerance for diversity, and creating reward and recognition for mutual cooperation (Yukl, 2006).

6.2.3 Core (Value Creation) Practices: Quality Improvement Program and Top Management Commitment

Based on the study's finding, the most important QMP was found to be a quality improvement program and a top management commitment. This tends to reinforce the importance of these two QMPs in creating the appropriate organizational culture and climate to improve quality conductively (Tamimi, 1995). The importance of quality improvement program and top management commitment are reflected by the area of oil and gas industry in implementing low cost effectiveness strategy. Hence, oil and gas companies in Indonesia should be suggested to develop learning and training processes based on the combination between mechanistic and organic approach. Yusuf *et al.* (2007) thought that effectiveness of management efforts towards quality improvement activities can have some positive effects in establishing a learning organization. The aim of quality improvement program is to attain levels of performance that are more significant than current levels, so the company can attain long-term survival and development (Hodgetts, 1996). It focuses on the process, not on the events (Yusuf *et al.*, 2007). Prajogo and Sohal (2004b) have affirmed that the actual quality improvement program is based on the interrelation among systematic, incremental, and habitual

improvements of processes and breakthroughs and innovative advances. As the key aspects of sustainability of TQM implementation, quality improvement and innovation mean that everyone should accept that there is always room for improvement, and there is always a need to look for better ways to do things—never ending process improvement and innovation or *Kaizen*: quality improvement and innovation are not the destination, but the journey (Choi, 1995 cited in Yusuf et al., 2007). In addition, the oil and gas managers should establish formal reward and recognition system to encourage employee involvement and participation, support teamwork (high performance team through the transformational leadership) and provide feedback to the employees.

Second, the research provides several implications (as the conclusions of the study) for improvement of the understanding of the structural relations among QMPs, WCC, OE, CNFP, and CFP, especially in the oil and gas industry. Researchers studying sustainability of TQM implementation program in the oil and gas industry in Indonesia might focus on world-class performance in operations (WCC, OE), and CNFP. The results advocate that QMPs are preferable to increase CFP by concerning in WCC, OE, and CNFP. The empirical results also suggest that four QMPs bring positive and significant indirect effects on CFP through OE, and CNFP becoming the partial mediators in the final model. Therefore, the partial mediators in turn must consider to improve oil and gas companies' performance and to achieve a streamlined sustainability of TQM implementation model. Several major managerial interpretations from the second conclusion can be suggested as follows:

1. The main purpose of sustainability of TQM implementation in the oil and gas industry is to establish the streamlined operations (value-chain) in order to reach long-term organizational effectiveness and survival. However, there is no precise method to analyze and identify the actual impact of sustainability of

TQM implementation on oil and gas companies' performance improvement and growth because of the absence of generally accepted performance measurement systems and indicators.

2. The structural relations of sustainability of TQM implementation reinforce and build a more effective TQM system in the oil and gas sector. The perceptual evaluation of the utilization of performance measurement systems with the successful sustainability of TQM implementation indicates a statistical significance, but being involved in terms of world-class performance in operations (WCC and OE). However, a correct measurement of long-term organizational effectiveness and survival of oil and gas company's performance (i.e. financial and non financial performances) can be determined only by acceptable performance measurement systems and indicators. This is one of main reasons behind the tremendous amounts of efforts and resources invested by oil and gas companies to find reasonable performance measurement systems and indicators.
3. Oil and gas managers in Indonesia should be realistic about what is expected from sustainability of TQM implementations model. They must always keep in mind that TQM is merely a foundation to develop a good management system in which if it is implemented properly, it can be a very powerful vehicle by which the organization can achieve excellence in business performance (Seetharaman *et al.*, 2002). In addition, Huq (2005) stated that TQM is a change effort that aims at simultaneity of multiple components of an organization. There are some mediating contextual variables that can affect TQM implementation in oil and gas industry such as WCC, OE, and CNFP. From the theoretical perspective, the study found additional evidence (to broaden the knowledge of TQM) that OE and CNFP (as partially mediators)

appear to affect quality improvement or top management commitment on CFP. Oil and gas companies can increase their financial performance (financial performance, market performance, operating cost efficiency) by means of developing these partially mediator variables.

4. The findings of the study also demonstrate the importance of understanding the consequence of CNFP in the oil and gas industry. Managers must be aware that the impact of CNFP in managing CFP, which include customer satisfaction, employee satisfaction, and community involvement, does not only directly enhance company financial performance but also indirectly strengthen long-term organizational effectiveness and survival. CNFP can be improved in several ways, such as conducting sustainable development program (community development program, corporate social responsibility or CSR program, global warming anticipation), which will involve internal as well as external customers in determining processes related to benefit decisions, providing adequate information on how reward and punishment are determined, and managing society's complaint well and timely. Furthermore, managing CNFP may serve to minimize the customers' reaction to perceived unequal outcome (e.g. a pay raise policy based on merit pay system) (Rifai, 2005).
5. The potential implications of the study also can be viewed from the integrated oil and gas chains. Internal development of organization (both upstream and downstream sectors) is deemed as an important precursor to adapting to external environment (API, 2003). In other words, the mechanism to adapt external environmental requires the organizational members to realize the sustainability of quality improvement program (i.e. continuous process improvement and innovation) beyond the job requirements as well as their

formal job descriptions. The successful sustainability of TQM implementation model for oil and gas industry has to be determined as the beneficial organizational impacts in the long-term (to establish streamlined operations in order to reach long-term organizational effectiveness and survival or sustainable competitive advantage) in the oil and gas industry. Davila *et al.* (2006), related to this, stated “Organization with internal environments that foster a developed portfolio of continuous process improvement and innovations projects might be able to adapt to external environment changes more fluidly in order to sustain growth—sustainable competitive advantage.”

6. Any oil and gas company operating in Indonesia, which wishes to employ sustainability of TQM should develop quality improvement program, top management commitment, and OE for more appropriate implementation. This would help oil and gas managers with the allocation of resources to those categories that have the most significant effect on CNFP.

6.3 Recommendation: Policy Reflections

Some findings of this study reveal the indirect effect of the critical factors of quality management practices on CFP mediated by WCC, OE, and CNFP. These findings indicate that CFP measures (financial performance, market performance, operating cost) are partly explained by QMPs. On the other hand, QMPs provide a better explanation on CFP through WCC, OE, and CNFP. In a similar vein, CNFP has a strong positive impact on CFP.

Two significant changes in the legal and regulatory environment (i.e., a new development paradigm under the regional autonomy, the amendment of law of the Republic of Indonesia) were introduced. **First**, a new development paradigm was

started in 2001 under the regional autonomy, transferring development authority to local government-led development mechanism. However, there are two common sayings of lack of budget, and authority and dignity on law enforcement in government sectors almost all over Indonesia. These are the obstacles for implementing regional development in Indonesia (Tanimoto, 2004). **Second**, the crucial amendment of law of the Republic of Indonesia had been regulated related to Law No. 22 of 2001:

1. Preparations of future State Owned Oil and Gas Company (Pertamina) organization gradually until 2006;
2. Organization restructuring that had been applied during 2002 is a termination of Production Sharing Management Directorate from Pertamina Organization in order to make all activities taken over by Executive Board of Oil and Gas according to Government Regulations No. 42/2002 and No. 67/2002.

State Owned Oil and Gas Company (Pertamina) has legally transformed to be PT. Pertamina (Persero) since September 17, 2003 by enactment of Government Regulation No. 31/2003. Pertamina is now under a coordination of the State Minister of State-Owned Enterprises. Similar with other contractors, as a business player, Pertamina also holds Cooperation Contract to Oil and Gas Regulatory Body. Due to the transformation to be a Limited Liability Company, Pertamina becomes a pure business entity, which is more profit oriented (Pertamina Quality Management System, 2003).

The findings of the study provide a basis for useful managerial implications to upstream and downstream managers as well as the Executive Body (Oil and Gas Upstream Implementing Body) or BPMIGAS and the Regulatory Body (Oil and Gas Downstream Regulatory Body) or BPH MIGAS to consider the implementation of the six QMPs and

world-class performance in operations strategy (WCC and OE); and its prioritization as the foundation of the practices of CMS— **quality, cost/price, flexibility, delivery, innovativeness, and service.**

The overall implication is that the priority of the six QMPs and world-class performance in operation strategy (WCC and OE) presumably provides a sound systemic foundation for managing the real reformation (the issuance of Law No. 22/2001 on Oil and Gas). Oil and gas companies, through this priority, can further build their competence and capabilities as well as sustainable development program (Community Development and Corporate Social Responsibility or CSR practices) to achieve multidimensional competitive advantage, including reward and law enforcement system.

6.4 Limitation of The Study

Despite the fact that this study develops a comprehensive TQM implementation model in the field of total quality management, it should also be acknowledged that the study is a subject to some methodological limitations.

First, it would be highly suggested that the size and nature of the sample must be enhanced to ensure variability and control for possible extraneous variation. It would be strongly recommended that data should be gathered from various countries of ASEAN (*Association of Southeast Asian Nations* or *Ten Nations One Community*—Indonesia, Singapore, Malaysia, Brunei Darussalam, Thailand, Philippines, Cambodia, Laos, Myanmar, Vietnam) including both various manufacturing and service industries.

Second, the data in this study are collected from managers at top, middle, and low level on the basis of their subjective evaluations, and objective performance indicators should be employed in the analysis.

Third, the research reported here is of a purely cross-sectional snapshot. The researcher was unable to test and account for the lags between the existence of practices and performance changes, nor to trace the progress of particular oil and gas companies in this study, which is a limitation of all such studies. The researcher also encourages thinking about whether the model of the study variously changes at certain times, either because the constructs are theoretically important in other times or because the theoretical effect is unstable for some reasons. Next research should be conducted longitudinally to observe the progress of improvement efforts.

Fourth, there is a need for further research to develop further TQM dynamics model both in theory and in practice. To do so, neural network model and triangulation method could be utilized in the future studies to gain additional insights in exploring the structural relations among QMPs, contextual factors of an organization, and company performance.

Finally, in this study, SEM was employed to examine more complicated structural relations among one or more dependent variables and two or more predictor (mediating or independent) variables simultaneously (i.e. TQM implementation model for oil and gas industry in Indonesia) that cannot be handled by the other techniques such as path analysis. Basically, SEM expects a large sample size to achieve more accurate solution. SEM is based on covariances. Parameter estimates and chi-square tests of fit are also very sensitive to sample size (Tabachnick and Fidell, 2001). Besides that, SEM requires

both assessment of normality—univariate (through the use of outliers, skewness, and kurtosis) and multivariate (through the use of Mardia's coefficient) normality indexes. If the univariate distributions are non normal, then the multivariate distribution will be nonnormal. In this study, the normality of the distribution of the data is about the perception of the oil and gas managers that in reality seldom a perfect normal distributed. It is reasonable to expect that variables to be skewed in the population. The sample size in this study is a reasonably large ($n = 1,332$), serious problems that violates the departures from normality lead to skewness and kurtosis of normality assumption. In this study only QMP1 shows slight departure from normality.

6.5 Delimitation of The Study

1. Although the survey of this study was sent to approximately 1,332 oil and gas managers in Indonesia, a geographic or cultural/experience bias potentially could be a factor into responses. The data in this study were collected from top, middle, and low level organization on the basis of their subjective evaluations (their own experiences/perceptions). As the study presents new primary data and empirical insights into the structural relationships between quality management practices and company performance in oil and gas companies operating in Indonesia, objective performance indicators are not employed in the analysis.
2. The fact is that the survey tool was distributed to the three levels of managers through traditional postal questionnaire surveys, and internet or e-mailed questionnaire/web surveys in order to decrease the chance that the respondent would not be familiar with the research topic, and to increase the opportunity for input from quality managers. In fact, the possibility existed that the quality managers might see TQM implementation as being more specific in the oil and gas sector.

6.6 Suggestion for Future Research

This study developed a sequential sustainability of TQM implementation model for oil and gas industry based upon a quantitative research approach. In terms of future research topics, several possible areas can be derived from this study.

One of the most promising research topics is to investigate the causal relations (structural relations) among the QMPs with three possible mediating variables, WCC, OE, and CNFP and one dependent variable, CFP in the oil and gas industry. In order to conduct this type of study, researchers need to keep in mind six crucial elements.

First, researchers should clearly define the numbers and characteristics of measurement instruments to develop the structural relations among the research constructs. As suggested by Demirbag *et al.* (2006), more holistic perspective can be carried out in a broader conceptualization of sustainability of TQM implementation model. As a consequence, of course, the data should be gathered from various parts of Indonesia or ASEAN countries including both various manufacturing and service industries.

Second, researchers must carefully design the research model to minimize reliability and validity problems. This type of research needs to be precise enough to demonstrate that a potential cause and effect could have covaried. In addition, all research constructs, which are confounding variables must be ruled out.

Third, a cross-cultural comparative study can be suggested as another promising research topic based on the same measurement scales. Since the measurement scales for this study are largely focused on the managerial elements related to sustainability of TQM implementation model and organizational improvement, the assessment and

analysis of management activities in a different cultural setting may prove quite interesting. To accomplish this cross-cultural comparative study, researchers must carefully select the sample country so that sustainability of TQM implementation model is already in place there. At a minimum, very similar principles of TQM should be employed organization-wide. The promising benefit of this type of study is that researchers can identify how cultural differences affect the same management philosophy.

Fourth, the development of a measurement for the sustainability of TQM implementation model in oil and gas sector is a possible topic. Although this study employed factor analysis for grouping measurement scales and other statistical techniques to verify reliability and validity of measurement instruments, the measurement instruments should be further refined. However, as described previously, this study represented the first attempt to develop sequential TQM implementation model for oil and gas industry in Indonesia. Thus, retest of the measurement instrument with different sample sizes and groups may produce several different results. In addition, there is a possibility of achieving different results based on geocentric and polycentric differences (ByeoungGone, 1997).

Fifth, it is reasonable to assume that firms reserve the capability to choose among various contextual factors of a firm, which may affect sustainability of TQM implementation model, and have not been given much consideration in TQM implementation (Shah *et al.*, 2003 cited in Sadikoglu, 2004). The future researches should provide an empirical examination of the integration between the successful sustainability of quality, innovation, and knowledge management practices and their

impact on the success on sustainable development program using a longitudinal research design.

Sixth, in the Indonesia's oil and gas industry, the TQM principles have been implemented since the mid 1980s. In spite of actual utilization of TQM principles in most oil and gas companies, the pros and cons of numerous TQM elements, techniques, and real benefits are still not clearly identified and measured. From this point of view, any future research that might develop a correct measurement instrument and reinforce TQM principles with advanced concepts will be valuable. To date, there have been very few researches aimed at providing empirical evidence of the linkages in the implementation of TQM criteria. This research model is explicitly required in establishing the relations among the various criteria (e.g., QMPs, OE, WCC, CNFP and CFP). This step of study should provide the realization of this research framework that enables researchers and managers to gain an improved insight into the successful sustainability of TQM program by providing a generic framework for TQM implementation model. An empirical test of the linkages among the ten constructs of this research framework can help to provide a roadmap for firms from multiple industries seeking to progress towards total quality cultures and quality of life (Curkovic *et al.*, 2000).

6.7 Summary of Conclusion

Despite some attempts on the applicability of TQM practices and the contextual factors of an organization, which may relate to sustainability of TQM implementation program as well as their impact on company performance of manufacturing/service firms, there is a lack of comprehensive empirical evidence regarding the extent of sustainability of TQM implementation model and its effect on performance of oil and gas companies.

This study presents new data and empirical insights into the structural relations among QMPs, WCC, OE, company performance (CNFP and CFP) in the oil and gas companies operating in Indonesia. In this study, the researcher was interested in two contextual factors of oil and gas industry (WCC and OE). The specification of the research framework consists of a set of hypotheses (H1-6) resulting a strong fit structural relations among variables in the framework. Although six QMPs affect WCC and four QMPs affect OE, only OE play a partial mediator between two critical factors of QMPs, CNFP, and CFP.