

# Evaluation of Training Effectiveness on Advanced Quality Management Practices

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## Abstract

The main objective of this study is to evaluate effectiveness training programs conducted by Company X. Training effectiveness is made by comparing participants' level of quality knowledge, understanding and practices before and after attending the training programs. This study evaluates participants' perceptions with respect to the overall training program, teaching materials, delivery methods, equipment and facilitators. The research methodology used was postal survey. A set of survey questionnaire for postal survey was developed as a tool to achieve the study main objective (i.e. evaluation of training program effectiveness). Two hundred and forty sets of postal survey questionnaire were sent to participants that had attended training courses organized by Company X. Sixty six sets of completed postal survey questionnaire were received from training courses participants giving a response rate of 33%. Analysis of postal survey results shows the training programs conducted by Company X had generated positive impact to the organizations and their employees. Positive effects of training programs to the employees were in terms of improved knowledge, understanding and practices of activities in quality management system. In addition, training programs gives positive impacts to the organizations with respect to improved competitiveness, business growth, market share development, increased annual sales and profit. Thus, it can be concluded the advanced quality management training programs had successfully improved participants and their organizational performance in national and international markets.

*Keywords: furniture, manufacturing, industry, training, evaluation, effectiveness*

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## 1. Introduction

Small and Medium Enterprises (SMEs) provide significant contribution to the growth and development of a country (Aziz 2002). In manufacturing, more than 80% of the total number of companies is SMEs (SME Corp. Malaysia 2012). To further strengthen SMEs contribution towards the country's development the government had identified five important factors, comprising of marketing, technology, skill development, finance and information (SME Corp. Malaysia 2012). The key to sustainable organizational and business survival in the marketplace is by creating and developing products and services as required by customers (Deros and Khamis 2009). Today industry leaders must satisfy their customers' expectations for high quality products and services, while dealing with the realities of high production costs, soaring raw materials prices and intense global competition (Deros and Mohamad 2009). Apart from external challenges, SMEs' also faced internal challenges issues that affects SMEs' competence, competitiveness and endurance. These effects are low productivity and quality, insufficient information, skills and knowledge (SME Corp. Malaysia 2012). These issues could be solved by equipping manufacturing engineers and managers with advanced skills in manufacturing engineering disciplines; cross functional team work skills across wide range of engineering disciplines, understanding of the complete product development and manufacturing processes (Mustaza et al. 2008). To overcome these challenges the Malaysian government has introduced a program for SMEs to enhance their skills (SME Corp. Malaysia 2012). Ministry of International Trade & Industry is given the responsibility to manage quality improvement programs through a few selected implementation agencies. Company X is one of the selected agencies to provide technical training and assistance to SMEs with respect to quality and quality improvement. Company X promotes quality programs through ISO 9001 and TQM to solve low productivity and quality issues. Company X has introduced programs based on SIRIMEX model; specifically designed for SMEs for improving their quality improvement practices (APK). Successful SMEs that had graduated from this APK program are encouraged to continue with the advanced quality improvement (APK-L) practices to further improves their Quality Management System MS ISO 9001: 2008. The training program comprise of 5S workshop, concepts and importance of quality, interpretation of the MS ISO 9001:2008 standard, APK

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documentation development, Quality Control Circle (QCC) and 7 quality control tools and internal audit. The main objective of this study is to evaluate participants' perceptions with respect to the overall training program, teaching materials, delivery methods, equipment and facilitators given by Company X. The information gathered from the evaluation of training effectiveness can be used to further improve the training program offered.

## 2. Definition of SMEs

Small and Medium Enterprise Corporation Malaysia (SME Corp. Malaysia) commenced on 2 October 2009 is a government agency under the Ministry of International Trade and Industry. SME Corp. Malaysia is now the central point of reference for information and advisory services for all SMEs in Malaysia. In general Malaysia had adopted a common definition SMEs to facilitate identification of SMEs in the various sectors and subsectors. This has facilitated the Government to formulate effective development policies, support programmes as well as provision of technical and financial assistance. An enterprise is considered a SME in each of the respective sectors based on the Annual Sales Turnover or Number of Full-Time Employees as shown in the Table 1.

Table 1. Definition of SMEs

Company Types	Micro-enterprise	Small enterprise	Medium enterprise
Manufacturing, Manufacturing-Related Services and Agro-based industries	Sales turnover of less than RM250,000 OR full time employees less than 5	Sales turnover between RM250,000 and less than RM10 million OR full time employees between 5 and 50	Sales turnover between RM10 million and RM25 million OR full time employees between 51 and 150
Services, Primary Agriculture and Information & Communication Technology (ICT)	Sales turnover of less than RM200,000 OR full time employees less than 5	Sales turnover between RM200,000 and less than RM1 million OR full time employees between 5 and 19	Sales turnover between RM1 million and RM5 million OR full time employees between 20 and 50

Source: (SME Corp. Malaysia 2012)

Referring to Table 1 for Manufacturing, Manufacturing-Related Services and Agro-based industries, "Small and medium enterprises in the manufacturing, manufacturing related services and agro-based industries are enterprises with full-time employees not exceeding 150 OR with annual sales turnover not exceeding RM25 million". Meanwhile, Services, Primary Agriculture and Information & Communication Technology (ICT), "Small and medium enterprises in the services, primary agriculture and Information & Communication Technology (ICT) sectors are enterprises with full-time employees not exceeding 50 OR with annual sales turnover not exceeding RM5 million".

## 3. Quality Improvement Practices

Quality improvement practices (QIP) program was specially formulated to assist SMEs to improve their performance to become more competitive and progressive (SIRIM 2010). QIP is a scheme for training, consultancy, and auditing related to quality improvement system. The main objective of this program is to assist SMEs in developing and implementing quality improvement system to ensure they are consistently producing high quality

products. In addition, it is also meant to nurture awareness, quality improvement culture and obtaining ISO 9001 certification in SMEs.

#### **4. Advanced Quality Improvement Practices**

Advanced quality improvement practices (A-QIP) is an advanced program followed by SMEs after they had graduated from QIP. SMEs that had successfully obtained the QIP certificate are encouraged to participate in the A-QIP. This program is a development and implementation process for MS ISO 9001: 2008 Quality Management System. The package for A-QIP includes training or workshop and consultancy. The consultancy is provided for developing documentation and implementing quality management system with respect to MS ISO 9001: 2008. The training packages comprise of 5S, Concept and Importance of Quality, Interpretation of Standard and Documentation for Quality Management System, MS ISO 9001: 2008, Quality Control Circle (QCC) and Seven Quality Control Tools (7 QC Tools), and Internal Audit.

#### **5. Methodology**

To conduct the evaluation on the training effectiveness for implementing A-QIP, the necessary information need to be identified, collected and analysed. Result from the analysis can be used to make a decision whether the training given to the participants or SMEs are effective or not. In this study, a survey questionnaire was used as the data collection instrument. The survey respondents were participants and SMEs that had attended the A-QIP training course or workshop. Survey questionnaire forms were sent to 240 participants and SMEs together with a cover letter explaining objectives of the survey. From the 240 survey questionnaire distributed, a total of 66 forms were completed and returned, giving a response rate of 33%. According to Krejcie and Morgan (1970), at this response rate, data collected is adequate to represent the entire population based on the sample sizing method. All data obtained from survey questionnaire forms were analyzed using the Statistical Package for the Social Sciences software (SPSS version 17.0). The respondents were asked to rate the statements in the survey questionnaire using a point Likert scale as follows: 5 – highly agree; 4 – agree; 3 – neutral; 2 – disagree; 1- highly disagree.

#### **6. Results & Discussion**

##### *6.1 Survey Analysis*

Qualitative and quantitative analysis were done on the data gathered from respondents based on several factors such as: participants' perceptions with respect to the overall training program, teaching materials, delivery methods, equipment and facilitators. Sixty seven percent of the respondents are males and the rest 33% are females. In terms of age, 28% of respondents are more than 40 years, 33% between 31 and 40 years and the rest are below 30 years old. In terms of educational qualification 9% of the respondents holds a PMR/SRP certificate, 42% with a SPM/SPVM certificate; 23% with a diploma; 11% with a degree; 2% with a masters degree.

##### *6.1.1 Participants' Perceptions to Training Program*

Table 2 shows the overall mean values of participants' perceptions with respect to workshop or training program packages provided by Company X with respect to appropriateness, achievement of the stated objectives, usefulness, positive effects, relevency with their work, suitable duration, importance to their work. Survey results shows they agreed with six of the seven statements with overall mean value ( $\mu$ ) at 4.07 that the workshop or training programs package provided by Company X are: appropriate, achieved their objectives, useful, suitable duration, positive effects, relevant and important with their work. They did not fully agree with the appropriateness of workshop/training course duration with mean value ( $\mu$ ) at 3.79.

Table 2 Participants' Perceptions to Training Program

Statements	Mean ( $\mu$ )
Appropriateness of training package provided	4.09
Achievement of workshop/ training course objectives	4.02
Usefulness of workshop/ training course	4.20
Positive effects from workshop/ training course	4.03
Workshop/ training course is relevant to my work	4.09
Appropriateness of workshop/training course duration	3.79
Workshop/training course is important to my work	4.26
Overall, mean ( $\mu$ ) values	4.07

### 6.1.2 Participants' Perceptions to Training Materials, Method of Delivery and Workshop/Training Tools

Table 3 shows the overall mean values of participants' perceptions toward the training materials, method of delivery and workshop/training tools. Survey results show they quite agree with five of the six statements with overall mean value ( $\mu$ ) at 3.96. They all agreed with the statement that exercises provided in workshop/training courses are effective. Meanwhile, the mean values of the other five statements are very close to 4, which means they quite agree that notes for the workshop/training courses are clear, easily understood, contains adequate information, exercise given are adequate and effective.

Table 3 Participants' Perceptions on Training Materials, Delivery and Tools

Statements	Mean ( $\mu$ )
Notes for workshop/training course are clear	3.98
Notes for workshop/training course are easily understood	3.91
Notes for workshop/training course contains adequate information	3.97
Adequate exercises are provided in workshop/ training course	3.92
Effective exercises are provided in workshop/ training course	4.02
Audio visual aid provided is satisfactory	3.96
Overall, mean ( $\mu$ ) values	3.96

### 6.1.3 Participants' Perceptions of the Facilitator

Table 4 shows the overall mean values of participants' perceptions toward the workshop/training course facilitator. Survey results show they agree with six of the nine statements with overall mean value ( $\mu$ ) at 4.03. They all agreed with the statement that facilitator provide them with real life example, know throughly the material he/she is presenting, clear presentation, easy to understand and learn, involves participants in discussions. Meanwhile, mean values of the other three statements are very close to 4, meaning they quite agree that the facilitator is well prepared, involves participants in his/her training activity and effective presentation.

Table 4 Participants' Perceptions of the Facilitator

Statements	Mean ( $\mu$ )
Facilitator is well prepared	3.98
Facilitator know the material he/she is presenting	4.06
Facilitator provide an real example	4.01
Facilitator presentation is clear	4.03
Facilitator presentation easy to understand	4.03
Facilitator involves participants during discussions	4.12
Facilitator involves participants in training activity	3.98
Facilitator presentation is effective	3.92
Facilitator presentation helps me to learn	4.09

#### 6.1.4 Level of knowledge

In general, the participants shows significant improvement with respect to knowledge on quality improvement practices at their respective companies after attending the training course. Referring to Table 5, survey results shows significant improvement in terms of participants' knowledge level after they had attended 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing training courses. Prior to these training courses, their knowledge mean value is 2 or less. This can be interpreted that they have limited knowledge on 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing. However, after attending the training courses their level of knowledge had almost double after attending the training courses.

Table 5 Level of knowledge before and after attending the training course

Level of knowledge	Before (mean)	After (mean)	% Improvement
5S	1.85	4.15	124.32
ISO 9001	2.00	4.05	102.50
QCC & QC tools	1.81	3.61	99.45
Internal Audit	1.90	4.00	110.53

#### 6.1.5 Level of Understanding

Referring to Table 6, survey results shows significant improvement with respect to participants' level of understanding after they had attended 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing training courses. Prior to these training courses, their understanding mean value is 2.07 or less. This can be interpreted that they have low level understanding of 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing. However, they had almost double their level of understanding after attending the training courses.

Table 6 Level of understanding before and after attending the training course

Level of Understanding	Before (mean)	After (mean)	% Improvement
5S	1.91	4.02	110.47
ISO 9001	2.07	4.04	95.17
QCC & QC Tools	1.87	3.77	101.60
Internal Audit	1.94	4.02	107.22

#### 6.1.6 Level of Practice

Referring to Table 7, survey results shows significant improvement with respect to participants' level of practices after they had attended 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing training courses. Prior to these training courses, their level of practice mean value is 1.98 or less. This can be interpreted that they have low level practices of 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing. However, they had at least double their level of practice after attending the training courses (i.e. level 4 or higher). This survey result revealed that once the participants understand of 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing process, their level of practices had risen significantly.

Table 7 Level of practice before and after attending the training course

Level of Practice	Before (mean)	After (mean)	% Improvement
5S	1.78	4.13	132.02
ISO 9001	1.98	4.19	111.62
QCC & QC Tools	1.87	3.74	100.00
Internal Audit	1.96	4.18	113.27

## 7. Conclusion

The basis of performing this study is to evaluate the effectiveness training programs conducted by Company X on Malaysian SMEs. Based on the analysis of mean values ( $\mu$ ) conducted with respect to the objectives of this study, it can be concluded that the participants are satisfied with the overall training courses, training materials provided, method of delivery, audio visual equipment and capability of the facilitators. It can be seen from the comparison analysis before and after attending all the training courses provided had shown significant improvement with respect to participants' knowledge, understanding and practices at their respective companies after attending the training courses provided by Company X. In other words, it can be concluded that the training courses had achieved their stated objectives. This survey results is in-line with Deros et al. (2011) findings that employers strongly believed in providing staff with appropriate training as a strategic factor for improving their product quality and productivity; and thus could enhance their companies' competitiveness. In addition, they also perceived training as a crucial factor for developing high skilled and knowledgeable employee that could satisfy customers' needs and requirements. However, the data collected and results from this analysis cannot be used to generalize the capability of all Malaysian SMEs with respect to 5S, ISO9001, quality control circle (QCC), quality control (QC) tools and internal auditing because the sample size was small. In short, these training courses had provided participants with more exposure in terms of quality management practices that must be implemented to stay competitive in the market place. In conclusion, the training courses provided by Company X are very useful and can be further improved to assist SMEs to be more progressive and competitive in national and international market place.

## References

- Aziz, R. (2002). Forward: Malaysian Policies, Incentives and Facilities for SME. <http://www.smidec.gov.my> (November 2004)
- Deros, B.M., Zohdi, S.M and Mohamad, D. 2011. Lack of Industry Involvement in National Dual Training System, Kongres Pengajaran dan Pembelajaran UKM 2011, Hotel Vistana, Pulau Pinang, 16-19 Disember, 2011, pp. 1-5.
- Deros, B. M. and Mohamad, K. F. 2009. Improving Course Content and Mode of Delivery for Master in Manufacturing Systems Engineering Using Customer's Feedback, International Engineering Education Conference, Madinah, Kingdom of Saudi Arabia, 16 -19 May 2009.
- Deros, B.M. and Khamis, N.K. 2009. Using Customer's Feedback in Improving Teaching and Learning Performance, International Engineering Education Conference, Madinah, Kingdom of Saudi Arabia, 16 -19 May 2009.
- Krejcie, R.V. and Morgan, D.W. 1970. Determining Sample Size for Research. *Educational and Psychological Measurement*. 60:607-610.
- Mustaza, S.M., Shazi, M.F.A., Hussain, A., Yahya, I. and Mustafa, M.M. 2008. Benchmarking academic program for the purpose of making improvement, quality assurance and accreditation. Seminar on Engineering Education and Built Environment, pp. 227-239.
- SIRIM. (2010). Nota Kursus: ISO 9001:2008 Sistem Pengurusan Kualiti- Keperluan- keperluan & Audit Dalam. Jabatan Perkhidmatan Kualiti Industri Berhad.
- SME Corp. Malaysia (2012). Official website. [www.smecorp.gov.my](http://www.smecorp.gov.my) (26 February 2012)