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EFFECTIVENESS OF QUALITY AUDITING IN THE AUTOMOTIVE INDUSTRIES – CASE STUDY

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6.1 INTRODUCTION

For quality audit, apart from an effective detection of potential non-conformances, being minor or major, its other intent is to push organization towards continuous improvement efforts and hence to monitor their resources to meet with the process requirements and to avoid failure to the system.

In doing so, a quality management system (QMS) based on the ISO9001 standard or the automotive version ISO/TS16949 would be carried out through a series of effective auditing by various interested parties. This is in line with a claim by Russel (2006), who stresses that quality auditing is one of the most important tools for management.

Practically, the purpose of quality audit has always been misunderstood and labelled as a cost added activity that signifies high Direct Cost i.e. auditing fees, time consuming, etc; and also high Indirect Cost i.e. the system maintenance, etc. The negative mindset has resulted in high failure rate to deliver positive results in the audit being carried out.

Although the definition for an effective audit is to help improved on organization performance, there are still many organizations do not believe in this fact. Auditors might even be accused of conducting ineffective audits whenever non-conformances were raised. According to Hepner, Wilcock and Aung (2004), many organizations who registered or certified to the QMS but unfortunately perceived auditing activities as a traditionally "cost added" activity have ended up failing to improve in their organizations' performance.

As changing of mindset is expected but never been so easy, the lack of literature in the QMS audit effectiveness has also made the situation appalling (Beckmerhagen, Berg, Karapetrovic, & Willborn, 2004). Beckmerhagen et al argued that most of the current literature discussions are concentrated more on the QMS standards rather than the effectiveness of the auditing process itself.

As such, the research objectives will be to provide further discussion on performance of quality auditing and to explore the factors that correlate to the performance.

6.2 LITERATURE REVIEW

6.2.1 Introduction

As compared to the much earlier financial internal auditing, quality auditing standard has only started to be seriously discussed as early as in the 1990s.

As such, there are various studies found on the effectiveness of accounting or financial related audit (Pike; Ali; Mohd-Sanusi and Mohd-Iskandar) but unfortunately not as many studies are readily

available on quality audit as the development of this issue is still considered at conceptual stages (Berkmahagen, Berg, Karapetrovic, & Willborn, 2004).

According to Oxford Dictionaries, 1989, the word effective is defined as producing intended result. So, an effective audit should mean the audit that will produce an intended audit result. The intended result from a certification audit included pleasing the client (Karapetrovic & Willborn, 2000) and ensuring that organizations are also able to improve their performance (Ramly, Mohd Yusof & Mohd Rohani, 2007).

6.2.2 Review on effective quality audit model

Many discussions conducted were referred to several auditing models before finally an effective auditing framework was proposed. The focal point here was to establish a framework that can prevent the problem of QMS audits ineffectiveness that should help improve the audit performance, and hence reflects on the organization's overall performance improvement. On the other hand, this review of the management system audit was necessary to look at how the auditing system could produce an effective audit outcomes.

In 1997, a quality audit handbook was first published. It was revised in the year 2000 to discuss in detail about the auditing ethics and process that included its tools and cases study. The handbook was able to provide the much needed information on how to conduct an effective audit.

Later in 2002, the ISO19011 has been successfully introduced replacing ISO10011, summarizing the handbook contents into a guideline that further enhanced the ethics and quality of an effective auditing process. However, neither the handbook nor the guideline was able to provide empirical evidence about the

significance of ethics and process in producing effective quality audit result.

The work of recent years has successfully described the certification process for an organization management system as it appears in the ISO 17021 model (2006), see Figure 6.1, which is an addition to the existing guideline for auditing under the ISO 19011 (2002). This model manages to describe~~s~~ about the:

i. Credibility of certification for management system.
ii. Quality management system requirements for Certification **B**odies.
iii. Audit process requirements.

Somehow, the model does not define the audit effectiveness ~~and~~ while the technique to be used to evaluate its effectiveness is not presented such as the witness audit, a specific quantitative method, etc. There was also no discussion about the audit failure.

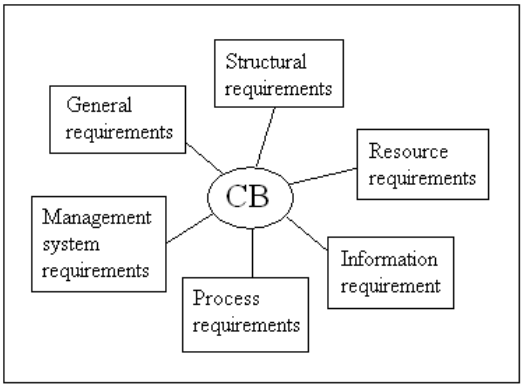

Figure 6.1: ISO 17021 (2006) model

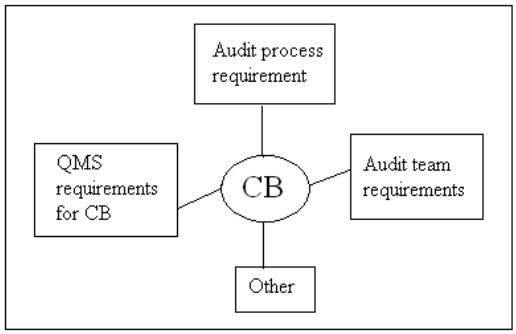

Figure 6.2: IATF model

The International Automotive Task Force (IATF), the governing body for ISO/TS16949 has made reference to the draft of the ISO 17021 for its IATF model. The model emphasized a wholistic process towards an audit effectiveness. It clearly defines the audit effectiveness through the achievement of ISO/TS 16949 goals. The model in Figure 6.2 was extracted from the rule of achieving IATF recognition (2004). The IATF publication series include the ISO/TS 16949 (2002), the Rule for achieving IATF recognition 1st edition (2002), the Rule for achieving IATF recognition 2nd edition (2004) and IATF CB Auditor Competency Criteria (2006).
Stringent requirements are imposed on auditors' qualifications from their selection to join the training i.e. mandatory requirement of 10 years work experienced in automotive industries that include at least 4 years in quality related function. These auditors shall undergo training, performance evaluation and continuous qualification programs in every three years.

Apart from that, the audit effectiveness is monitored through a witness audit (even though the report only used internally (unpublished report) by IATF oversight body) and also an IATF complaint management. At the same time, this audit result shall ensure that the company certified to ISO/TS16949 delivered quality product and services.

On top of that, Karapetrovic and Willborne (2000) have provided a critical framework of an effective audit that has helped defined a potential audit failure model. Their work was further enhanced and clarified by Beckmerhagen et al (2004) which included two cases study on effective audits from the nuclear industries. The practices of an effective auditing have been made clearer.

In order to achieve the intended results, various aspects of auditing need to be considered. Karapetrovic and Willborn (2000) suggested that the audit efffectiveness can be measured in order to improve the audit effectiveness. The model of measurement is based on the probability calculation of audit availability, reliability and suitability as shown in Figure 6.4. On the audit realibility, Karapetrovic and Willborn identified the potential audit failure as ~~per~~ shown in Figure 6.3. Beckmerhagen et al., (2004) refined the model by clearly identified the principles for measuring audit effectiveness (i.e. the criteria for an effective audit measurement).

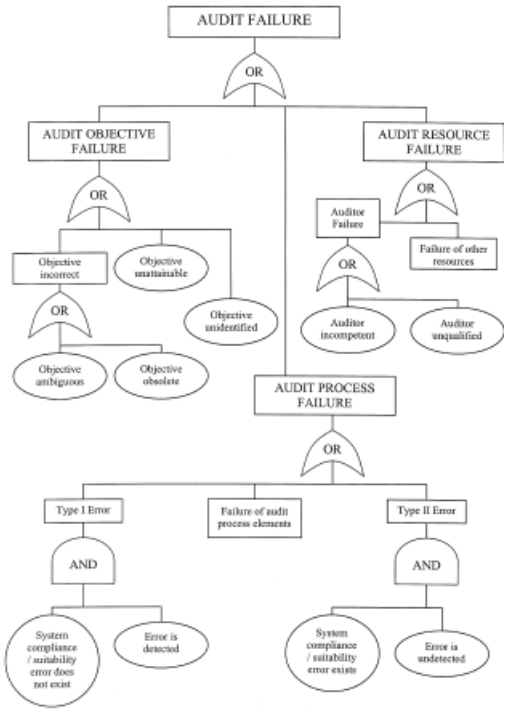

Figure 6.3: Audit failure tree diagram (Karapetrovic & Willborn, 2000)

The audit failure tree diagram above ~~model~~ has been developed based on initial work of Willborn (1993) and through his research on management system audit. The model had proposed:

i. The measurement of an audit system effectiveness.
ii. The concept of audit reliability, availability and maintainability.
iii. The details of audit failure prevention.

This model is generic for any audit~~s~~ and it clearly defined the audit failures and the root causes of the failures. This model had defined an audit effectiveness as an audit free of error. For audit failure case, Beckmerhagen added there is also a result-related failure.

Other typical of audit problems or failures are due to the lack of audit preparation, audit criteria elements or checklist driven, auditor skills and knowledge, commitment from the management, and bureaucratic reporting (Askey & Dale, 1994; Karapetrovic & Willborn, 2002; Barthelemy & Zairi, 1994).

Nevertheless, it is still in conceptual model and needs further development. There was no real case study to validate this model. It also did not mention about any technique for evaluating the audit system i.e. whether through the witness audit, self-assessment, peer-review, or any other specific quantitative method. In fact there was no focus on how the audit system might deliver the performance improvement.

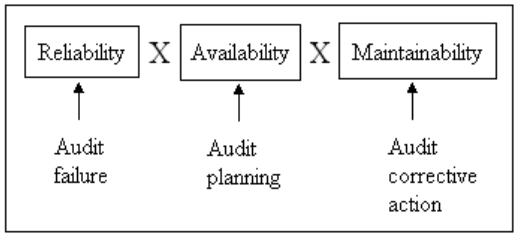

Figure 6.4: Karapetrovic and Willborn model

This model is generic for any audits and it clearly defined the audit failures and the root cause of the failures.

After all, Beckmerhagen still indicates that more discussions and cases study are necessary to improve on the audit measurement and its effective model.

6.2.3 Proposed Model

For this reason, Ramly et al (2007) has conducted a thorough study ~~about~~ on various organizational auditing models guided by the International Automotive Task Force or IATF (the governing body for ISO/TS16949). Some comparisons were made amongst the

Karapetrovic, the ISO19011 and also the IATF models. An effective quality audit conceptual model was proposed, ~~and~~ presented and finally concluded that the potential latent factors for an audit to be effective shall include the audit program, the audit tools and techniques, and last but not least the auditor and auditees as per figure 6.5.

The quality audit programs have been described in detail in ISO19011. For example, the audit program shall include the audit planning, opening and closing meeting, audit reporting and its follow-up. The audit tools and techniques include process approached auditing by using turtle diagram, audit checklist, interview techniques and other tools or techniques that can be adopted during the audit.

An auditee or an audited organization may also be considered as ~~the~~ a factor for an effective audit. This includes the maturity level of the management system, size of the organization, level of competency, and management commitment. Where else, an auditor should possess a high degree of knowledge and interpersonal skills, plus other relevant competency, which include training capability, management experience, professional skills and also qualification that may count as the factors for an effective audit.

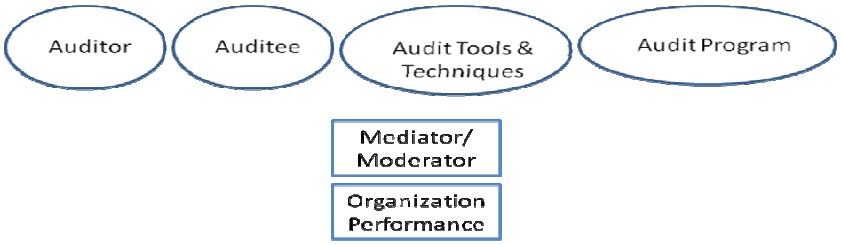

Figure 6.5: Proposed Measurement model for effective audit

However, the study done did not involve any structural modelling, measurement modelling, case study, or historical. Thus, this paper

will emphasize more of historical cases that is required in order to explore the auditing model and at the same time providing answer on "how" and "why" the factors above may correlated with effective audit.

6.3 METHODOLOGY

6.3.1 Research question

The main focus of this research is to ensure how a quality audit program can be effectively executed from the point factors of the auditors, auditees, and auditing tools and techniques used.

As we know, auditors and auditees selection has always been critical in any audit engagements. The auditees are assigned to assist auditors in the audit programs while the auditors are responsible for completing all work according to professional standards and for communicating any critical or potentially significant findings to organizational management. In order to achieve an effective audit, all actions planned need to be followed-up in a timely manner, monitored and evaluated to ensure that the quality management systems can be maintained over time.

In order for these factors to be correlated with the organization performance, various techniques used shall be clearly defined to encourage both auditors and auditees efforts to bring positive outcomes. And of course, the various team members roles have to be recognized and applied through coaching, guidance, and other facilitation techniques and quality tools necessary for an effective team functioning.

6.3.2 Type of research strategies deployed

This research article used a qualitative case study approach. The major reason for using the case study approach is to focus on specific issues and actions rather than on abstract theories (Mbawo, 1995). According to Wood and Catanzaro (1988) case study can be defined as: an intensive, systematic investigation of a single individual, group, community, or some other unit, typically conducted under naturalistic conditions, in which the investigator examines in depth data related to background, current status, environmental characteristics and interactions.

The methodological procedure adopted needs to be capable of providing in-depth, relevant, up-to-date and reliable information. According to Bell (1993), research styles can be action, ethnographic, surveys, case study and experimental.

Since the research has attempted to test a real audit approach by Ramly's (2007) model with the participation of several organizations, it will also consider the use of an established action research methodology (Dane, 1990). Furthermore, Yin (1989) suggested that "the case study allows an investigation to retain the holistic and meaningful characteristics of real life events". This is a reason for the choice of this method for this study. Historical cases or a case study is very important to explore the factors on effective quality audit field.

6.3.3 Data collection & Protocol

The research undertaken involved two cases studies by using historical cases and captured the performance through longitudinal study. Dane (1990) asserts that it is through the action research that researchers are able to test the application against other research results. This way, researchers will be able to assist managers in deepening their understanding of the issue(s) in hands so that they can resolve the problem(s) confronting them (Stringer, 1996).

The study was then conducted through a series of actual three to five days of ISO/TS16949 certification audits that evolved around initial audits and also surveillance audits (whereby the main author was a third party auditor). The third party audit has been selected due to the extensive information being provided on the ISO/TS audit (selected standard).

6.3.4 Analysing evidence

Since the study is conducted based on longitudinal method the performance is analysed yearly through surveillance audit. The evidence being analysed might be through non-financial result that include new customers, quality improvement success, customer complaints, and etc.

On the other hand, the evidence required by an auditor on the financial performance can be gathered from i.e. profit, cash flow, financial statements, and other sources of the company whose accounts are being audited such as its tangible assets, management and employees, its customers, suppliers, and any dealings with third parties.

Normally, the techniques involved in gathering the audit evidence may come in the forms of inspection, observation, enquiry, analysis, and computer-assisted audit techniques. The results will consequently be disseminated to the management after fulfilment of the company's control procedures that determine the effectiveness, accuracy and completeness of the auditing process.

6.4 THE CASES STUDY

Case Study 1

An automotive Company ABC is a tier two automotive supplier that has been awarded with an ISO9001 certificate for more than five years. The company had undergo many audits ever since and it seemed that there was not even a single major issue managed to be raised by the external auditors. These great audit performances even though were excellent achievement, have never really drawn a serious compliment from the management, and this was so long as customers' demand were still high being their main focus.

Quite recently, Company ABC secured a sub-contract job from a new customer who required them to comply with the TS16949 standard. This has triggered quality personnel to start redo proper quality checking, analyzing, filing and improvement activities. No major issue on documentation and performance indicator of the organization was found during the full-day stage 1 audit. Apparently, the organization announced cease of the company's business as it moved its operation to one of the neighboring country.

So, has the quality audit really failed to identify the issue(s) faced by the Company ABC?

Case Study 2

Company XYZ, a well known automotive player in the Southern Region, has implemented many of their previous new projects successfully. Although there was no proper planning in their documentation and procedures during execution of the new projects, the management has always emphasized that the outcomes should meet the customers specification and requirements without fail. Without a good plan, that looked too

ambitious a target and might produce an unexpected result.

In the initial audit of the ISO/TS 16949, the organization has been issued with a few minor non conformances. As a result, the organization has to take some corrective actions whereby these actions need to be successfully implemented and assured to be effective. In term of the sales performance issue raised, the organization has to improve on the monitoring of the sales process significantly. To achieve this, there should also be quotation number for a clear monitoring and reviewing of the performance in sales.

Apart from that, the new QA Manager was required by the management to attend a seminar on the Internal Quality Auditing early last year in Kuala Lumpur. The QA Manager has suddenly realized that there was an easy way to manage their organization more effectively if only his company were serious about the auditing aspect of the quality system. This would mean having a systematic review of the processes and activities every now and then that could surely enable Company XYZ to detect problems or even avoid them with proper counter measures and corrective actions. His point of view was taken note and accepted for immediate implementation in the management meeting conducted two months later.

The new projects that came up later were managed in strict order by carrying out process audits based on the products checklists.

6.5 DISCUSSION

What has happened to Company ABC?

In reality, the importance of managing the business performance

through an effective management review has been overlooked. Only through records of the management review, will an auditor find it easier to understand the organization current situation, its activities plus its processes. By then, the auditor should be able to raise his concern over which processes he felt needed to be improved.

When these data (record) is unavailable or in the worst case being hid, the tendency will be the construction of fake quality data by the company's personnel that reflected the ineffective and unreliability of the audit results. So, the case study of Company ABC revealed that there was no issue at all about the audit not being effective. It was in fact the management ignorance of their commitment towards the quality system as being the root cause of the audit failure!

How about Company XYZ? What can be said?

In this scenario, ISO/TS16949 audit criteria clearly states that process design and development of the manufacturing shall be included. On the other hand, according to ISO9001, the design and development processes can normally be excluded when an organization does not design the product. If the audit is based on the ISO audit criteria, the organization will not be issued with a non conformance if it doesn't have a plan for product design.

It is a different case with the ISO/TS as it requires the organization to plan their design and development processes being it for product or process design. As a result of that, the organization should be capable to manage their new project without fail and thus is able to implement more new projects effectively.

Turtle diagram has been used specifically to describe, identify and analyze the issues in the cases study. For example, in the sales process, the tool was helpful to ensure that all process elements

were clearly defined, documented, implemented and improved. Two process elements of sales being identified were the performance measurement and monitoring. Results from subsequent audits (including surveillance audits) have proven that the sales have improved, encouraging and should contribute to the organization survival during the economic downturn.

6.6 CONCLUSION

Both cases study has successfully enhanced the information needed about factors correlating to organizational performance. And it was indeed the passion for an effective quality audit that has actually contributed towards these performances.

Hence, the auditees or the organization commitment has been the most important factor that determined an effective audit achievement.

The second factor identified in the research is the use of proper auditing tools and techniques. For instance, the turtle diagram has been effective in defining audit criteria and choosing of the right corrective action plan.

The factor of an effective auditor's criteria shall not be neglected as well. It includes his ability to utilize auditing tools or techniques, to understand auditing process and to possess the knowledge level of world class best practices in carrying out organizational auditing.

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