[MAN 4] QUALITY IMPROVEMENT PRACTICES IN AEROSPACE INDUSTRY

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ABSTRACT

The study focuses on the Quality Improvement practices in aerospace industry, quality improvement implementation in this industry and the benefits. Implementation of quality improvement practices is quiet tough to carry out in an organization, however it will bring a lot of benefits to the organization itself. Such concerns have brought quality professionals to reassess their current quality strategy and their future plan. Unnecessary cost is incurred if the organization's quality is poor in any task performed. To help quality professionals configure good quality conscious product and services, the research from a survey of a company with poor quality risks are reported. Quality improvement is a formal way to deal with the implementation of performance and efficient accomplishments to enhance it. The general focus of this study was based on the qualitative approach. Thus understand the applicability of quality improvement practices in all aspects of ways to implement those quality improvement practices in the aerospace industry through interview, case study and observation. From the interviewed, there are aims to identify variables promote or inhibit the successful implementation of quality improvement practices and to evaluate the effects of high level of quality to customer focus at lower cost by reducing waste and maximize the productivity. Nevertheless, successful implementation of quality improvement practices needs time and afford to achieve.

Keywords: *quality, quality improvement practices, aerospace*

INTRODUCTION

Quality improvement is a formal way to deal with the examination of execution and efficient endeavors to enhance it (Goetsch & Davis, 2010). They are types of continuous push to improve execution. Understanding and legitimately actualizing quality change to a well-working practice, and are nonnegotiable for any practice inspired by enhancing proficiency in an industry. As the desire of clients develop step by step, it is critical for an aerospace business to ceaselessly enhance their quality. Exclusive expectations don't simply happen by chance anyway it develops over some time as a consequence of experience. There are numerous conceivable outcomes that industry can take toward enhancing the level of administrations that they offer to their clients. An industry overall can embrace important aptitudes which will push the coveted standard of value to all representatives.

In the manufacturing of any aerospace industry it is generally goes through various stages in the process to produce an aircraft. In this case, there are high chances that defect might occur at any of those stages. Due to low quality, aircraft modification and repairing with low level automation requires high cost rate throughout the production cycle (Tekin & Kapan, 2016). To avoid this problem quality improvement practices must apply in the aerospace industry for better production. To achieve efficiency and maintain competitiveness in any aerospace industry will only occur when that industry recognize the necessary to promote high level of quality. Moreover, the cost to fix a product or parts in the field before it fully produces is much more cheaper compared to fix it once it reaches a customer (Linton, 2016). This is why quality improvement practices should take to avoid such problems that might affect the industry financially. Besides, the implementation of quality improvement practices in the aerospace industry will maximize the resource efficiency (Leonard, 2011). Quality improvement is required for quality in this aerospace industry, since pressure apply to product and service as well. Aerospace industries making effort to their implementation in quality improvement practices to improve production of aircraft so that the root cause can be identified earlier if new problems arise.

STATEMENT OF THE PROBLEM

The aerospace industry today is a purchaser driven business sector, where they need to apply quality improvement practices in the industry. Since their business manufacturing product and services are constantly changing day by day, they fail to give priority on quality improvement practices. In an aerospace industry, the majority of them think that it's hard to assess their quality improvement practices and distinguish the key variables in charge of their success or failure. Customers and their needs are the essential core interest. Thus, with no request places by customer, the creation ought not to begin to deliver any item to prevent from wastage. There is no preferred expense to wipe out over the expense of low quality. Scrap material and lost work hours increase the value of the operation (Dursun & Soutis, 2014). In order to eliminate these wastes, a vital way to deal with quality improvement is essential. Many aerospace industries fail to study or identified quality issues in the earlier stages that their process should endure even though many performed carefully and have detailed prior to implementation. The aerospace industry does not understand the impact of poor quality improvement practices will affect the production, quality of the product produce, time and cost. Inability to consistently enhance the procedure, service and product quality sooner or later will come about total lost. Quality improvement practices concentrates on identifying sub-optimal procedures in an organization and transforming them to reduce defects. Organization used to actualizing quality improvement changes are better prepared to adjust their organization to changing markets than those that utilize inflexible procedures, such association occupied with large scale manufacturing (Magalhães, 2016)

Research questions and research objectives

My research question in this paper is more on formal statement that happened when quality improvement practices on aerospace industry. The research question states clearly what the study will investigate or attempt to prove that shown as below:

- What are the quality improvement practices that aerospace industry can implement?

- How does the aerospace industry carry out quality improvement practices?
- What are the importances of quality improvement practices in aerospace industries?

Therefore, the objective of this research is:

- To find the appropriate systematic approach to quality improvement in the aerospace industry.
- To identify the steps taken to improve quality in the aerospace industry.
- To analyze the benefits of quality improvement in the aerospace industry.

Significant of the study

This research trying to identify the significant of quality improvement practices in the aerospace industry and how they trying to overcome the complicate of implementation of those practices to achieve their targets. Improvement is required for quality in this aerospace industry, since pressure apply to product and service as well. Aerospace industries making effort to their implementation in quality improvement practices to improve production of aircraft so that the root cause can be identified earlier if new problems arise. By the implementation of quality improvement practices, it is profitable to the organization and will become a fundamental to the success and development in future. All too often, through quality improvement practices able to fix the symptoms of threats rather the root cause in aerospace industries.

LITERATURE REVIEW

Nowadays, many organizations facing barriers due to the poor quality in an organization. Lower quality standards of an organization will affect the organization's production and competitive market. Every organization's important element is quality (Gurau, A., 2015). Unnecessary cost is incurred by the organization if the quality of that organization is poor in any task performed. High level of chronic wastage is caused by insufficiencies in the original planning. According to Srinivasan and Kurey (2014), in many industries, quality has never mattered more. New advances have enabled the industry and customer to search out and analyze a perpetual exhibit of items from around the world. Perhaps the root of poor quality cause the product takes longer time to complete than it should and indirectly will leads to increase in cost to produce the product. Furthermore, Ratesh (2012) stated that lack of top management commitment cause for the implementation of quality improvement practices.

Every organization has their own way of producing products or services. This is called as culture of the organization. The tradition in processes and procedures in an organization define how the management and employees contribute to achieve their objective and goals (Lotich, 2016). Indeed, it is essential sticking to those cultures in delivery the organization's mission. However, re-adjustment or called as quality improvements have to be taken along with the economic and technological changes as to improve the production efficiently and effectively (Duggan, 2016). Thus, it is important for an aerospace industry in implementing quality improvement practices to improve their production. The pre-planning stage is important in any organization to achieve success in quality improvement practices. Moreover a broader definition of

quality improvement is needs not only in the industry's production but in every division of the organization. The best way to achieve improvement in the aerospace industries is by implementing quality improvement practices.

Quality

Quality is about making sure that whole organization is effective and efficient by improving their products, processes and services. Quality means what is an organization's product or services are intended to do. Poor quality of a product or services will affect the organization and also will cost the customers, the end user. Through quality is how an organization's product or services will compare with the competitor. Quality of an item or administrations is its capacity to fulfill the requirements and desires of the client. From an assembling angle quality is essentially conformance to detail. At the point when attempting to beat rivalry, quality can be translated as creating the absolute best item or giving absolute best administration.

Quality improvement practices

Dr. Joseph Juran defines quality as fitness for use. In this way, his idea all more nearly incorporates with the perspective of customers. He believed that quality is related to customer's satisfaction and dissatisfaction with the product, thus emphasized the need for continuous quality improvement through a progression of small improvement practices carried out in the organization. Currently, aerospace industry was ranks among the world biggest manufacturing industry in term of employees and value output from one destination to another (Weiss & Amir, 2014). However, due to unstable quality maintenance, aerospace industries face decreases in their performance of producing products. The problems might facing by the aerospace industries such the cultural divide, poor measurement of metrics, untrained employees, and poor skills development. Without a proper quality implementation, the production of aerospace will take long time to produce product and also will cost high. Proper quality implementation involves all aspects of the industry, right from the production until the supplier and customers (Mitra, 2016).

The quality improvement processes depends on the chosen processing methods. The major reasons to implement quality improvement practices are to improve the product efficiently and effectively, reduce and maintain the cost of production, and to increase the customer's satisfaction (Drean, 2011). To achieve efficiency and maintain competitiveness in any aerospace industry will only occur when that industry recognize the necessary to promote high level of quality to customer focus at lower cost by reducing waste and through optimizing the value chain aerospace industries using lean manufacturing approaches, based on the Toyota production system. It is being used by these aerospace industries to eliminate waste and unnecessary inventory. The goal of the lean manufacturing system is doing more with less time, space, human effort while giving the customer what they want in a highly economical manner (Paranitharan et al., 2011). The aerospace industries must provide safe and consistent products at affordable price to satisfy their customers. This must be done while coordinating products sourced from worldwide suppliers and deliver the products to various customers who have differing quality requirements. System quality standard was developed in the aerospace industry to ensure the consistency of quality.

Implementation of quality improvement practices

Good quality can upgrade an organization's image, ensure it against risk, increase its productivity, and help its benefit and position to continually developing (Gurau, 2015). Quality improvement is a process by which an organization can endeavor its business procedures and results through checking and breaking down information. As their ability to handle information has enhanced definitely because of innovation, organizations can make improvement to their working techniques in the production that can radically improve performance. Successful implementation of quality improvement practices can happen with the right team member in the organization (Lopes et al., 2011). In all business practices, it is important that a systematic review of quality improvement programs be carried out, in order to establish whether the scheme is meeting its objectives and goals.

Successful implementation of quality improvement practices can happen with the right team member in the organization. The team members in an organization must be chosen based on their knowledge and involvement for effective quality improvement practices. A broad policy should be set up with specific targets and priorities. In all business practices, it is important that a systematic review of quality improvement programs be carried out, in order to establish whether the scheme is meeting its objectives and goals. In order to produce a standard and conformance to the quality significant product, quality improvement practices are to be emphasized and the output result is in the range of great expectation.

RESEARCH METHODOLOGY

Qualitative approach adopted in this research, thus understand the applicability of quality improvement practices in all aspects of ways to implement those quality improvement practices in the aerospace industry through interview and case study. Aerospace manufacturing industry has been chosen in this research study.

Interview

Researcher have chosen face-to-face (in-depth) interview with the Quality Manager of aerospace industry for conducting this research because it will enable the researcher to gain more information from the respondent with full cooperation. More information has been collected in a written form throughout the interview. The interview was conducted based on the study of this research "Quality Improvement Practices in Aerospace Industry". Question been asked regarding quality improvement practices in an aerospace industry mainly on how they implement the quality improvement practices and the benefits or outcome of those practices.

Case study

Case study method is an experimental request that researches a contemporary phenomenon within the real-life context, when the limits amongst phenomenon and connection are not obviously clear, and where numerous sources of evidence have been used. Researcher investigate case studies regarding quality issues in aerospace industry

and come up with the research topic which enables to nearly analyze the information within a particular context.

DISCUSSION AND IMPLICATIONS

Interviewee biodata

Name	Mr. Paneerchelvam Vadivel
Gender	Male
Position	Senior Quality Engineer Manager
Department	Quality Department
Total Employees under Interviewee	91 staffs
Years been working in the company	11 years

Types of quality issue facing by aerospace industry

There are various quality issue facing by aerospace industry especially product defect. When a product have defect it will personally cause to numerous quality problems such resulting in high cost to reproduce that particular product. Besides, non-confirm material might cause excessive material in the industry. Process also one of the quality issues facing by the aerospace industry, it occurs when a process not done properly to meet the targeted specification.

Quality improvement practices in aerospace industry

According to the Senior Quality Engineer Manager of Aerospace Industry, not only quality department should involve in quality improvement, thus all departments should work together to improve quality in the aerospace industry. This organization comply with procedures and processes in accordance with AS 9100 Aerospace Management Systems certification to make sure their products achieve the environmental objectives that set by the organization. AS 9100 is a qualification to supply major aerospace manufacturers and provide the complete framework needed for an effective traceability database. For aerospace manufacturers, being fully informed regarding the AS 9100 quality standards is fundamental keeping in mind the end goal to supply parts to the industry.

The aerospace industry eliminates waste through lean team whereas they form especially to identify excess material and eliminate material wastage, hence it save cost at the same time. The defect ratio for the aerospace industry is 0.04% which shows high level of quality improvement practices been implementing in the industry. Aerospace industry also have been supportive of the quality improvement initiative by operation and quality team mainly working together to reach the slogan ‘do right at the first time’ to avoid.

The aerospace industry implements quality improvement practices by several ways. First of all, by Kaizen improvement team where the industry form a small management team to work on quality improvement process in respective areas. Besides, through “Partnering for Success”, it play vital role in identifying all waste in term of process

and materials. Moreover, the aerospace industry will use "Quality Trouble Shot Team" where they focus on long term chronic problems and work with a high pay back value to improve quality. When a product in the industry has a very high defect, then the team formed will involve in the project to improve the process to eliminate the defect. Furthermore, quality improved under auditors by ensure manufacturing technicians and operators have done their job properly confront to the process and product. The management of the aerospace industry also often have meeting among them. For example, quality action board meeting daily 2 session in the morning and afternoon to identify all the issues related to the process and product, it comprises production department, quality department, manufacturing department and engineering department. Weekly meeting with the senior managers and monthly meeting with the directors of the industry to present the performance and outcome of any decision took regarding quality improvement practices.

Benefits of quality improvement practices in aerospace industry

Quality improvement plays an important role in aerospace industry. First of all, it can decrease the number of errors made by the organization through frequent monitoring and increase adaptability. According to Hamel (2016), processes in an organization seeking quality improvement constantly will experience incremental changes. Since aerospace industry producing aircraft parts which deal with human life, they gives more importance to their customer by quality improvement, hence it increase customer satisfaction and productivity by adding value to the industry where customer willing to stay with the organization for a long period. Besides, it improved employee's morale and have a tendency to be more productive. According to Rapaport (2015), staff morale is very important in any organization for their success. Through quality improvement, the aerospace industry can sustain in the business by create value to their stakeholders. Moreover, it will foster better relationship among the employees and managers, as employees given more freedom tend to form better working relationship.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

There are several limitation faced by the researcher when conducting this study such as the outcome of the study might be limited of data since it was collected from a single company. Besides, it consumes a lot of time to carry out an interview session. Furthermore, there are some difficulties to collect data more deeply since they keep it confidential. With the result of current study, there are some recommendations for future research such as conduct the research in other plant with same aerospace industry to get more data. Moreover, the researcher may give more importance to conduct the research through observation in the industry to obtain more depth information.

CONCLUSION

Quality improvement is an action taken throughout the organization that adds benefits to both the organization and customers by increase the efficiency and effectiveness of product and services. This research focuses on quality improvement approach of

aerospace industry and the efforts to improve their performance. As a result of this study, researchers have a better understanding of quality improvement practices in aerospace industry. This study provides useful information of aerospace industry on how to achieve efficiency, maintain competitiveness and to sustain in the industry through promoting high level quality.

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