

A Review paper on "Improve the Quality of product"

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Abstract

Quality is a factor that must be prioritized in the manufacturing industry's competitive market in order to gain market share. Quality improvement and performance-based thinking must go hand in hand. This objective is the focus of the concepts of Lean Manufacturing, Six Sigma, Lean Six Sigma, Total Quality Management, Theory of Constraints, and its combination. This study is a survey of the literature on the application of various philosophies to raise the quality of systems' processes and outputs. It also discusses how these philosophies compare and contrast with the Zero-defect Manufacturing (ZDM) philosophy. A total of 45 publications have been examined for this investigation. These publications were chosen after a search using particular keywords across a number of scientific libraries. The methodology is founded on a table of data that was taken from each study. the data consulted.

Keywords: Theory of constraints, total quality management, lean manufacturing, six sigma, philosophy of quality improvement, and review.

INTRODUCTION

Artificial companies and manufacturers have to be competitive as they face new challenges in the artificial world. Advanced quality, lower waste, and effectiveness are important factors to achieve success in the request (Falck & Rosenquist, 2012; Torstar om, Apprizes, Christianson, & Eklund, 2008). Companies have always tried to attain lesser effectiveness and the least cost in their processes. Numerous disciplines were thus introduced, similar as Taylor's proposition, total quality operation (TQM), Six Sigma, the Toyota Production System, spare operation, and kaizen (Lileah & Mufti, 2012). The main idea of these tools is to define a set of principles and mechanisms to induce methodical enhancement in the process to achieve client satisfaction and reduce waste (Torstar om ital., 2008). " still, utmost of the quality operation approaches focuses on styles and tools to gain advantages, while mortal aspects have been ignored or paid little attention to. Reports in the literature have stated that, without considering the ergonomic approach, quality operation disciplines won't achieve their pretensions (Hines, Hollweg, & Rich, 2004; illegal & muftis', 2012; Tale Ghani, 2010;

to reduce costs. This misconception in companies therefore prevents ergonomics allowing within enterprises' product systems or quality operation systems (Neumann & Dull, 2010). Although utmost manufacturers have lately established product system approaches as top procedures for product, the part of ergonomics has been seen more as forestallment of musculoskeletal diseases (MSDs) than as a tool for quality development. According to the literatures, adverse ergonomic threat factors impact not only mortal well-being but also mortal performance, similar as adding rejection rates and dwindling product quality (Govindarajan, Panther, & Mittal, 2001 Kazimierz, Neumann, & Winkel, 2007). The costs of crimes and failures were estimated about 10 - 40 of a company's income (Falck & Rosenquist, 2012). Several studies suggest that crimes, rejection rates, and revamping would drop significantly with the integration of ergonomics in the product system (da Silva, Puffer, & Amaral, 2012). The new strategy of the SCANIA group for the time 2020 is to produce,000 exchanges,000 motorcars, and,000 machines with the same staff. They believe that it would be possible to reach this thing if they could achieve zero failures.[1][2]

Williams ital., 1992). nonetheless, directors see ergonomics as a rigorously health and safety tool that's useful for injury/ illness forestallment rather of feting its eventuality to ameliorate productivity and quality and A study in this group showed that ergonomics and the work terrain could help to help the frequent circumstance of product failures (poor quality; illegal & muftis, 2012). The Volkswagen group verified the need for ergonomics in the product system to help health hazards, to optimize product time, and to ameliorate product quality (Toledo, 2012). Dull and Neumann (2009) showed a link between business factors and ergonomic design of the plant, and Neumann, Ekman, and Winkel (2009) emphasized the integration of ergonomics in the product system. Bettini, Facciolo, Persona, and Sugarbush (2011) developed a new 14 step integrated methodological model to achieve productivity and quality performance in an assembly system in which different tools, similar as assembly time dimension, ergonomic evaluation, and ergonomic advancements, were integrated. This frame was tested in two case studies and showed enhancement in line inflow and in inflexibility (Bettini ital. 2011). Integration of ergonomics in enterprises' strategies or product systems of manufacturing has therefore surfaced. Companies should be

induced that objectification of an ergonomic approach in a establishment's product system would be profitable in the short and long term, as its goods may vary, from mortal aspects, including reduction of discomfort, pain, and fatigue, to system aspects, similar as speed of performance, dropped rejection rates, and good quality of service (Genady, Salem, Karnowski, Paetz, & Tunicle, 2007). The main purpose of this composition is to validate empirical substantiation that supports the proposition that incorporating an ergonomic approach in a establishment's product system should be considered a crucial business ideal because the benefits of ergonomics would haven't only goods on health and injury forestallment but also on product and process quality by reducing crimes and the costs of poor product quality.[1][2][3]

✚ How do customers define quality?

Both L.L. Bean and Caterpillar get a lot of information directly from them to understand how their customers perceive quality. But even with that information, understanding what consumers really want can be challenging. On the one hand, consumers are not always able to articulate their quality requirements. They often complain that they "bought lemons" or that the manufacturer "doesn't make them like they used to".

Consumer priorities and perceptions also change over time. Taking the automobile as an example, market data compiled by SRI International show that consumer priorities shifted from design in 1970 to fuel economy in 1975 and to design and performance quality in 1980.[4]

✚ What are your customer service goals?

Many companies don't set customer service goals or understand the role that customer service should play in their business and marketing strategy. Every business has what percentage of its revenue is expected to come from service sales and whether the goal is to be profitable, breakeven, or suffer losses due to competitive advantage. you need to figure out what it is.[4]

✚ What services do you give?

It's useful to develop a grid caching which services your company provides or could give for each of the products in your line. These might include client education, financing arrangements, order evidence and dogging, predelivery medication, spare- corridor force, form service, and claims and complaints handling.[4]

✚ How do you compare with the competition?

A analogous grid can be used to chart the client services your challengers give. Through client checks, you can identify those areas of client service in which your company rates advanced or lower than the competition. In areas where your company is weak, can you invest to

ameliorate your performance? Where you're strong, how easy is it for challengersto match or exceed your performance?[5]

✚ What services do your guests want?

There's little value in developing superior performance in areas of client service most guests consider only hardly important. An essential component of the inspection is, thus, to understand the relative significance of colorful client services to current and implicit guests. Distinct client parts can frequently be linked according to the precedence's they attach to particular services.[5]

✚ What are your guests' service demand patterns?

The position and nature of client service demanded frequently change over the product's life. Services that are top precedence at the time of trade may be less important five times latterly. Companies must understand the patterns and timing of demand for client services on each of their products.[5]

RESEARCH METHOD

The purpose of this paper is to do a methodical review of the quality enhancement tools used in the manufacturing sphere. In order to acquire a representing sample of papers, the following way have been followed. The first step was to produce a hunt query for conducting the hunt. The query used can be seen below.

This query was used in different scientific databases; more specifically, the hunt was done in EngineeringVillage (Compendial and Inspect), Scopus, Web of Science, and Science Direct. In total, 383 papers were set up, after removing the duplicates. The coming step was to filter them grounded on the applicability and if the full composition was available. After this filtering, 45 papers have been named to conduct the analysis.[3][6]

- **Lean Manufacturing:** Lean manufacturing Lean manufacturing is a production technique whose main purpose is to reduce the response time and dwell time of suppliers and consumers in the production system. It shares many similarities with another idea known as just-in-time manufacturing (his JIT manufacturing for short). Just-in-time manufacturing prioritizes efficiency, productivity (with a commitment to continuous development) and because producers and suppliers of goods match production to demand by selling only what is ordered. to minimize "waste". Just-in-time strategies are used in lean manufacturing and also emphasize shortening cycles, flows, and lead times by keeping tasks away that don't add customer value.

[1] Lean manufacturing also involves people who work in customer service and marketing and are not directly involved in the production process.[7]

Six Sigma: A statistical approach focused on lowering product or process variability. To ensure customer satisfaction, the ideal outcome is determined based on the client's needs and perception of the defect. Six Sigma (6σ) is a set of process improvement techniques and tools. It was launched by American engineer Bill Smith in 1986 while working at Motorola. Six Sigma strategies aim to improve production quality by identifying and eliminating the causes of defects and minimizing variability in manufacturing and business processes. For this, empirical and statistical quality management methods are used and people who are experts in Six Sigma are employed. Each Six Sigma project follows a defined methodology and has specific value objectives, such as reducing pollution or increasing customer satisfaction.

The term Six Sigma comes from the statistical modeling of production processes. The maturity of a production process can be described by the sigma estimate, which indicates its performance or the percentage of intact products produced - more precisely, how many within the standard deviation of the normal distribution correspond to the proportion of intact results.[8] [9]

• **Lean Six Sigma:** Lean Six Sigma is a team-oriented management approach that aims to improve efficiency by eliminating waste of resources and defects. LM and SS are combined to form Lean Six Sigma. The premise is that while LM concentrates on accelerating the process, SS does a good job of focusing on quality. When combined, they provide statistical control and operational advancements. It combines Six Sigma methods and tools with a lean manufacturing/lean business philosophy. It aims to eliminate waste of physical resources, time, effort and talent ensuring the quality of production and organizational processes.

Simply put, Lean Six Sigma teaches that any use of resources that does not create value for the end user is considered waste and should be eliminated.[10]

• **Theory Of Constrains:** Proposition of Constraints is a gospel is grounded on the idea that a manufacturing system is constrained. Its quality can be measured by output, force, and functional charges. The thing is to maximize output while dwindling the force and functional charges. This is done by relating the constraints, deciding how to exploit them, aligning the system on the exploitation decision, elevating the system's constraints, and by repeating, if during the process, one of the constraints has been broken. Theory of Constraints is a method of identifying the most important limiting factor (i.e. a constraint) that prevents the achievement of a goal, and then systematically improving that constraint until it is no longer a limiting factor. In manufacturing, a limit is often referred to as a bottleneck.

Theory of Constraints takes a scientific approach to improvement. It assumes that any complex system, including production processes, consists of several related activities, one of which limits the entire system, and the limiting activity is the "weakest link in the chain" and so what is the ultimate goal of most manufacturing companies? Make a profit - both short and long term. The Theory of Constraints provides powerful tools to help achieve this goal, including.[11]

Total Quality Management (TQM) And Iso9000: Total Quality Management is a gospel concentrated on the association's culture of quality. It's substantially a mindset that everyone in an association must be devoted to give its stylish in order to give high norms quality on the result of conditioning done. The thing is to reduce crimes, ameliorate client and hand experience. The rapid expansion of ISO9000 certification and TQM reflects a strong interest in the academic literature. Although TQM and ISO9000 do not contradict their basic principles, the two fields have become confused (Martínez-Costa and Martínez-Lorette,200). There is common confusion in the literature between ISO9000 and TQM implementation, as they share some points in common. However, ISO9000 indicates to others that the company follows general standardization procedures, while TQM is intended as a management system that improves internal quality (Martinez-Costa and Martínez-lorette,200). One of the advantages of the standard is that it is a good first step towards a TQM system; creating quality awareness among employees and a good atmosphere for its implementation (Sun,2000; Scandians et al.,2001). Several works have been published on the motives of companies to certify according to the ISO9000 standard. According to Totoras and Goetzman (1996), there are four main reasons that explain why companies adopt total quality management and cost management systems: improving the image and reputation of the company abroad, meeting foreign demand and market pressure, facilitating and simplifying procedures and contracts. between the company and its customers and finally in increasing productivity and internal control and existing quality systems.[12]

➤ **Benefits of Perfecting An Product:**

- Get a superior product which outperform the competition.
- Possible reduction of product costs.
- Use of further Eco-responsible accoutrements.
- Enhancement and recognition of the product brand.
- New mode for the product.
- Free advertising with social media.
- Increased request share.

➤ **Disadvantages of Product Development Strategies:**

- Risk. It's safer to stick with what you and your customers already know, than to venture into uncharted territory.
- Additional charges apply.
- Developing market.
- Contests.

CONCLUSION:

The purpose of this review was to look into how the ergonomic approach affected product quality, especially in the automotive industry. There were 25 empirical investigations total. The studies looked at gave proof of the negative effects of inadequate ergonomics. Approach to quality issues, particularly in the automotive sector. However, there is still no evidence of how various ergonomic dimensions—physical, organizational, cognitive, and psychosocial interact with one another or how they affect quality. There is currently a dearth of data on how cognitive ergonomics and psychosocial factors affect quality.

Manufacturing managers still view ergonomics as a tool for preventing illness and injury rather than as a way to cut costs and waste, according to surveys of these managers.

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