

Benchmarking as a tool for improvement of production management within the manufacturing sector

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Abstract

This research looks at how Benchmarking is being used as a tool to improve production management in the manufacturing sector. Managers look at ways and strategies to improve their production in terms of processes and final products. The purpose of this research paper is to analyse previous research on how the Benchmarking tool has been used to improve production management on a global scale. The focus areas are on three levels: International, continentally, nationally, and further extrapolate the benefits of using the Benchmarking tool in each area. The research puts into perspective the functionality of this tool in a manufacturing sector and evaluate the outcomes. The information presented in this research paper is derived from different articles, journals, and books. Upon looking at these writings, understanding them, and simplifying them, further recommendations are given on how the aspect of Benchmarking can further be improved for use in the industry. Knowledge gained in this research makes it possible to answer the research questions and also identify the research gaps.

Keywords

Benchmarking, Manufacturing Sector, Production Management, Improvement Tool

1. Introduction

In several countries, the use of Benchmarking and other performance indicators in manufacturing and production sectors is growing rapidly. However, it is very important to realise that in every country, this is done differently. Some of the terminology used is not very common. What matters is how the tool is used effectively to achieve the organisational goals that each company would have set.

Benchmarking was established in the late 1970s, through a study conducted by Xerox Corporation, as a philosophy to identify, understand and reproduce the best practices that helps the company to maximize its performance (Boxwell, 1994). In the context of production and manufacturing, it is defined as the comparison of two or more firms against the firm that is doing well, or that is regarded as the best in terms of their operations and their services (Anand, 2008). According to Bhutta and Huq (1999), benchmarking is the process of identifying the highest standards of excellence for products, services, processes, or practices and then taking the necessary actions to achieve those standards. Furthermore, benchmarking is very useful to a company because it brings to the fore the aware of the current situation and then highlight areas of improvement. This is possible because the company would have the opportunity to be compared with other companies that are operating within the same sector.

1.1 Research gap

When conducting the research, keywords such as 'Benchmarking', 'production', 'manufacturing' and 'South Africa' were used to search for the relevant articles. However, it is shocking that there was not enough information that covered the scope of a local case. The only available information was how benchmarking is being used in other countries. There was only one article, and that too did not really give enough information. That being noted, there arose a need for the modification of the topic and then further recommend for more research to be done on a South African Case. This research is a first to many.

1.2. Aim of the research

The aim of this research is to identify how the use of benchmarking tool yields better production management in the manufacturing sector.

1.3. Research objective

The objective of this study is to provide a critical review on how benchmarking is used as a tool for improvement of production management within the manufacturing sector

1.4. Study rationale

This study seems to be very common on an international perspective and there are few relevant research conducted on the South African context even though the manufacturing sector is present within South Africa. However, by the end of this study, this gap is addressed accordingly, and recommendations are given appropriately.

1.5. Scope

This study focuses only on the manufacturing sector on a worldwide scale that include internationally, continentally and nationally.

2. Literature Review

According to Boyer (2015), Benchmarking is a tool used in organisations to compare best industry practices against one organisation with the purpose of improving on the procedures used. A benchmark can be used as a scale or scope of referral in an organization to pinpoint areas that needs to be improved or monitored closely for better performance (Boyer, 2015).

Benchmarking is a part and parcel of Total Quality Management (TQM) program, and this is the latter way of considering management compared to the old traditional ways of management. This process is mainly about finding best ways that have been used before in terms of the standard of manufactured products compared to specifications, the service delivery of the product, the financial aspects of manufacturing the product, and the systems in place that present the processes of manufacturing the product (Evans, 2015).

The followings are the original stages of implementing benchmarking:

- **Step 1:** Find the process or product to benchmark,
- **Step 2:** Establish a task team of benchmarking,
- **Step 3:** Find benchmarking associates,
- **Step 4:** Research and evaluate the benchmarking data,
- **Step 5:** Implement the philosophies to match to exceed the benchmark.

In the manufacturing sector there are always team players at the forefront of production that one can adopt the benchmarking from (Evans, 2015).

2.1. Presenting arguments between two philosophies on what they say about benchmarking.

- Philosophy of change states that organisations are able to transform their current state of production and improve it. Simply put, the philosophy focuses on change itself, endless improvement, and continuous learning (Heizer, 2020).
- Philosophy of competitive benchmarking is about being in line with the competitors and finding ways to improve or do better (Heizer, 2020).

In the endless improvement of processes and products, the manufacturing firms have a system that drives the continuous enhancement ideologies. There are standard guidelines that other companies do follow from a textbook with popular approaches and others come up with their own unique ways to carry out this process in their own culture. This means manufacturing firms have a responsibility to further re-skill and train their employees to understand the processes continuously so, and the discipline of those employees is very important.

Furthermore, the process and product similarity are a common type in benchmarking that deals with the research and evaluation of other processes or products of the external and internal competition of greatness or almost perfection in the manufacturing sector as a whole, whether locally or internationally. The information that is being researched on will be used to compare the current production processes with the collected data, furthermore even the products that are produced are further compared to a greater standard - benchmark.

2.2. The prevalence of the usage of benchmarking in the manufacturing sector:

2.2.1. International perspective

According to Olena and Mariia (2021), for the sake of developing the market economy particularly in Ukraine, the article assessed the benefits of using benchmarking as a strategic tool for increasing the productivity. However, usage of this tool seemed to have been very limited in Ukraine. In order for it to be aware on how to implement this tool, the article pointed out that it is best to come up with a procedural framework on how to implement it. As a result, the benefits will be noticing other benefits used by other firms and adopt them, gaining a competitive advantage, eliminating any barriers that hinder the growth of the business. Applying the benchmark tool also meant that the firm will analyse how it is doing in comparison to other countries and then compare the processes along with the results achieved, then make necessary changes if need be to decrease the gap incurred (Khadzhynova, 2021).

A research article which was done by students from Turkey defined benchmarking according to the Turkish language simply put as 'sampling' (Erdil, 2019). This sample is based on how an organisation that is currently doing the benchmarking is doing in relation to the one which would have been regarded as the best overall. In that way, it is possible to evaluate how it achieved the exceptional performance level, as a result the firm that will be carrying out the benchmarking can adopt the ways and use them for their future organisational goals and objectives. The article also highlighted how automotive manufacturing firms are using this tool to their advantage. For example, General Motors, Toyota, and Ford. Benchmarking tool has been identified not only as a useful tool to improve the production, rather it also plays a role in producing quality products (Erdil, 2019).

2.2.2. African perspective

In Ethiopia, Addis Ababa, the use of the benchmarking is common in the food manufacturing industry. A research article by Garamu (2019), mentioned that benchmarking means learning from others and also accepting that other products are better, and a business should be able to learn how to keep up or even exceed the better performing firm. Considering that the food firm contributes a large percentage to the country's economy, dairy products are a major factor to the growth. In order to increase the effectiveness in these industries that are producing dairy products, companies in the sector carry out benchmarks as way to share ideas and compare their performance with each other so as to improve if there are any gaps which would have been identified. Benchmarking will also allow these firms to be aware of areas of improvement, in a way it serves as a SWOT Analysis. That being done, the firms will be able to align the vision and mission statements according to the desired results (Garamu, 2019).

In Zimbabwe, there are many companies that manufacture goods. These companies have systems put in place to manage the quality of the goods being produced. One of the systems which was noteworthy amongst the common ones turned out to be the use of the benchmarking tool. An article which discussed the management of quality by Basera (2019) pointed out the quality systems are used to control an organisation when it comes to producing quality products (Basera, 2019). In the very same article a definition by Holt (2015), defined benchmarking as a continuous process whereby a business will be examining its performance against other businesses. He also pointed how benchmarking stimulates the business to learn how to satisfy customer expectations, in turn, this reduces wastes, costs defects in products and improves the sales of the business, market scope and relationships (Holt, 2015).

2.2.3. South African perspective

There is lack of research when it comes to benchmarking being used in South Africa. However, the tool is used in other sectors such as the service sector. Although research showed that there were many limitations that restricted the use this tool which can be summarised as confusion to choose a specific benchmark model to work with, they see the task as very complex and has a lot of data also limited financial aid will hinder the implementation of benchmarking (Kleynhans, 2017).

2.2. How has benchmarking helped to improve production management?

As a result of Benchmarking, the Toyota Company was able to improve their production and this allowed them to remove bottlenecks and ensure continuous improvement. These were some of the strategies implemented and adopted:

- By means of benchmarking, it was easy to remove and minimise bottlenecks.
- It was easier to achieve better processing times per produced unit or batch.
- The quality control system was greatly improved.
- By making enhancements in the maintenance of machine output
- Conduct a research and then change of layout for a better production flow.
- Raise the accessibility of the resources used in their production.
- Modification of current products to lessen the processing time.
- Study the ergonomics of the whole operation and ensure that they are user friendly to the people, thus improving the production and morale.

Many other companies have also adopted these strategies implemented by Toyota and it benefited them. Toyota Production System has been one of the major reason many companies are successful today. This helped companies to overcome defects and achieve quality assurance, timely delivery, good retail, and good relationship with suppliers (Krishna, 2018).

2.3. The Benefits of Benchmarking to improve production cycle in the manufacturing sector.

Benchmarking is an important tool to emulate existing best practice in industry at large for achieving continuous improvement in production in any business operation for it sustains the trust and worthiness because it's usually applied by organisations that have seen it work in other organization hence that organization decided to benchmark itself against the organization that is winning at that time.

Benchmarking also positively affects management commitment, organizational culture, and the implementation of benchmarking. Sameer Kumar Charu Chandra Sameer Kumar, this means more than just being beneficial to factors that might have been a problem in the organization it tests the daily running of organization because the implementation thereof requires the above to be properly in place. Benchmarking without a doubt benefits organizations with organizational learning. Benchmarking can be seen as a strategy for knowledge acquisition (Gavin 1993)

According to Talli et al, (2014) benchmarking enable organisations to perceive an intended meaning of their performance standards with a close monitoring of their competitions, and will assist with a fraction improvement of the productions systems. However when one takes to consideration other competitive organisations, it will double or sometimes even triple the production systems in place and the current standards at large.

4. Methodology

Researches from 2015 to 2021 were identified from the following online databases: Scopus; Google Scholar. The inclusion and exclusion criteria (Table 2) were applied in the process of data search to acquire the chosen articles.

Table 2. Inclusion and exclusion criteria research gap

Inclusion criteria	Exclusion criteria
Research written in English	Non-English researches
Researches published from 2015 up to date.	Researches published before 2015
Researches relevant to the topic.	Researches not relevant to the topic.

The methodology emphasizes on the nature of the research, the year published, research area, the sample size, methodology, and the results and recommendations for future study. The key word used to identify relevant publications was “benchmarking”, “production management”, and “review”. The search only focused on publications published in English that were carefully evaluated by means of titles and abstracts. Each publication identified was critically studied before deciding whether one can be incorporated in the analysis; however, publications that were not relevant to the study were not considered.

5. Results and Discussion

After carrying out this research on how the Benchmarking Tool is being utilised for continuous improvement in production within the manufacturing sector, the following can be concluded:

There are so many ways benchmarking is carried out and this varies from one organisation to the other, also based on the geographical location. However, all these benchmarks that are carried out fall under specific umbrella terms namely process, performance and strategic benchmarks (Sharfuddin and Un, 2018):

- When an organisation carries out a process benchmark, this means that they are mainly looking at the tasks that are done on a daily basis. To improve these operations by means of benchmarking, a firm can do so versus their partners
- Performance benchmarks are done on the basis of the services and goods being produced, comparing the characteristics versus other products within the competition range.
- Lastly strategic benchmarking is carried out on management level and this affects the long term results. The benchmark in this aspect is based on how organisational targets are met.

The research has also noted that benchmarking tool is a well-structured tool which should be implemented step by step and it should serve a purpose. An organisation has to be aware as to what success factors are being measured, against who and also the implications that may result whilst the benchmarking is being carried out and if the changes will yield any productivity improvement or not.

The benchmarking tool is being used to ensure that there is positive change in the organisation. It is being used on a world wide scale by many manufacturing and even firms operating within other sectors. Based on research, it is evident that there are many benefits that come from the usage of this tool towards organisational excellence.

6. Conclusion and recommendation

6.1. Recommendations for future studies

More research should be done on the South African context and clearly explain how the Benchmarking tool is being effectively utilised in the existing manufacturing firms that are operating in the country.

A Comparison of data within studies should be done and not across them. Every industry benchmark is based on a specific methodology, with its own target audience, sampling approach, timing, collection mechanism, questions, and calculations. Every one of these variables affects the results.

6.2. Conclusion

It is important for companies to use benchmarking as a tool to gage themselves against competitors. It is also important to use it as a tool to advance their productivity and continuously keep evolving. Only companies that use benchmarking can know where they are lacking and seek to improve. In the data base of South Africa benchmarking is hard to find, however it can be agreed that benchmarking is used in many manufacturing companies in South Africa and across the world to seek improvement. The following research proclaim the functionality of benchmarking in manufacturing sector both in Africa and locally and had proven its importance to ensure productivity and growth in organisations.

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