

RESEARCH ARTICLE

IMPROVING EMPLOYEE AND WORKPLACE PERFORMANCE VIA LEAN MANUFACTURING PRACTICES: A CASE STUDY IN TEXTILE COMPANY

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ABSTRACT - This study explores the possibility of enhancing employee and workplace performance by implementing lean manufacturing practises in a textile industry. It addresses the the limited availability of empirical data concerning lean practices, with a particular focus on the textile industry. Qualitative approaches were employed involving direct observations and in-depth interviews with important stakeholders, followed by a thematic analysis of the data. The findings highlight the effects of lean manufacturing practises (Just-in-Time (JIT), flexibility, and continuous improvement) on worker performance, workplace productivity, quality, and overall organisational performance. The outcomes of this research offer valuable insights and practical recommendations for textile companies aiming to enhance their employee and workplace performance through the adoption of lean manufacturing practices. Such implementation will help to reduce lead time, improve customer satisfaction, and increase productivity and efficiency.

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1.0 INTRODUCTION

The textile industry has long been a substantial and vital contributor to the global economy due to the continuously rising demand for textiles and garments in both developed and developing nations. This industry has seen significant changes throughout the years in response to technological advancements and pressure from the competition to increase production, efficiency, and sustainability. It is important to investigate Malaysia's position on the global market in greater depth, given the widespread adoption of lean manufacturing practices in the textile industry.

Lean manufacturing, which was originally inspired by the Toyota Production System, has been extensively deployed across a wide variety of industries to solve the issue of waste reduction and boost overall efficiency. The textile industry has found lean manufacturing to be particularly efficient in streamlining production processes, lowering lead times, enhancing quality, and enabling more agile responses to changes in the market. Shah et al. (2003) define lean manufacturing as a holistic approach that integrates various practices to improve operational performance. The case study by Mulugeta (2021) demonstrates how lean manufacturing can improve workplace performance in the textile industry. It showcases the potential for reduced lead times and improved production flow through waste reduction and process optimisation. As a result, companies that successfully implement lean concepts are better equipped to meet the constantly changing demands of the global textile sector.

In the context of Malaysia, the textile industry has been a critical contribution to the economy for a significant amount of time. Additionally, the textile and apparel growth rate in the Malaysian Gross Domestic Product (GDP) peaked in 2021 at 93.6%. Although the textile and garment business does not contribute significantly to the Malaysian economy, it has the potential to grow (Farhana, Mahmude, & Mica, 2022). Nevertheless, increased competition from other low-cost producing nations and the growing need for more sustainable production practices have compelled the Malaysian textile industry to investigate and adopt lean manufacturing principles.

Torielli et al. (2011) conducted a systematic literature review that emphasised the association between lean manufacturing practices and environmental sustainability. The findings demonstrated a significant association between lean practices and sustainable performance. This highlights the significance of lean manufacturing in fostering the creation of environmentally friendly products. As Malaysia works to further grow its textile sector, the use of lean manufacturing concepts will become increasingly important to the country's efforts to increase its competitiveness and contribute to creating a more sustainable future.

1.1 Research Problem

This study aims to investigate and provide a solution for the difficulty that the textile sector encounters in boosting employee and workplace performance by utilising lean manufacturing practices. The textile sector has been rather hesitant to implement lean manufacturing practices, even though it is effective in several other industries. The industry is characterised by unique challenges that necessitate tailored methods to problem-solving. As a result, it is important to

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identify the challenges unique to the industry and propose ways to deal with them. The high cost of production is one of the most significant problems the textile industry is currently facing. The industry relies heavily on manual labour, which is time-consuming, expensive, and labour-intensive. Additionally, quality control is a crucial problem to consider because providing subpar items can result in significant financial losses. The textile industry is heavily regulated and companies operating in it must comply with strict safety and environmental laws.

1.2 Research Gap

The lack of empirical data and case studies especially addressing the use of lean practices within the textile industry is what causes the research gap in the context of enhancing employee and workplace performance via lean manufacturing practices in the textile company. Although there are numerous studies on lean manufacturing techniques and how they affect performance across different industries, there is a scarcity of in-depth studies and case studies that specifically address the special difficulties and opportunities confronted by textile companies. Consequently, a case study that investigates the implementation of lean manufacturing practices in the textile industry and evaluates their implications on employee performance, workplace productivity, quality, and overall organisational performance is required. This could fill the knowledge gap in the field and advance knowledge of how lean practices can be successfully applied in the textile sector to boost worker and workplace performance. This study seeks to explore the application of lean manufacturing practices and their impact on employee and workplace performance within the textile industry. The objective is to advance knowledge of the particular difficulties and opportunities faced by textile companies in enhancing operational performance. It builds on the works of Naeem et al. (2021) who conducted case studies on the implementation of lean in the textile manufacturing industry. This study draws on the lean framework proposed by De Silva et al. (2022) in the apparel manufacturing industry to further develop useful recommendations and insights for improving employee performance, workplace productivity, and overall organisational performance in the context of the textile sector.

1.3 Research Questions

The following are the research questions that this project aims to address:

- a) What is the level of employee and workplace performance in a textile company?
- b) How to improve employee and workplace performance in a textile company?

1.4 Research Objectives

The research objectives are stated below:

- a) To identify employee and workplace performance in a textile company.
- b) To improve employee and workplace performance in a textile company.

1.5 Scope of Study

This investigation is limited to the textile industry's wholesale apparel business and its implementation of lean manufacturing practices. The case study analysed a wholesale clothes company to examine how lean manufacturing in the textile sector might enhance employee and workplace performance in production. The study took place in Cheras, Selangor and involved data gathering through management and staff interviews, production process observation, and record analysis. It looked at how lean manufacturing practices can be applied to the textile sector's unique problems, including inefficient workplaces and quality control. The study could suggest appropriate strategies on how to improve employee and workplace performance via lean manufacturing practices to be more efficient in the company.

1.6 Significance of Study

This research will add to the existing body of knowledge on lean manufacturing in the textile industry and provide useful information to business leaders who want to boost their companies' productivity. The potential for lean manufacturing practices to improve organisational performance has attracted a growing interest in operations management. Focusing on the textile industry, this study seeks to advance theoretical knowledge of the connection between lean manufacturing techniques and employee and workplace performance. This research offers insights into the theoretical importance of lean manufacturing practices in enhancing worker and workplace performance by conducting a case study in the textile industry. Its practical value resides in offering prominent implications for textile businesses looking to improve employee and workplace performance through adopting lean manufacturing practices. This research offers valuable insights and doable advice for organisations in the textile industry to successfully implement lean practices and achieve improved performance results by looking at a real-life case study in a textile company. The findings can help managers and practitioners comprehend the relevance of lean manufacturing practices in the real world and how they might improve worker and workplace productivity.

2.0 THE CASE COMPANY

This case study focused on a company named Ulfaz Collection Sdn Bhd, which was founded by Encik Muhd Fazli bin Zulkifli and his wife. The idea for the company's name was coined by combining their names Ulfa (the wife) and Fazli (the husband). The company was established on 1 July 2014 with a capital of RM5,000 and began its journey as a

small-scale business at a late-night bazaar downtown in Cheras. In early December 2014, Ulfaz Collection acquired its own headquarter and factory located in Bandar Mahkota Cheras. Ulfaz Collection is a wholesaler of clothing that specialises in selling Malay traditional clothing, such as *baju kurung* and *baju melayu*, as well as women's apparel like hijabs, cardigans, and blouses.

Their design philosophy is to provide clothing that will satisfy their customers, especially those who care about the comfort and style currently wanted by Muslim women who play many roles in everyday life. The business purpose is established following the interest of venturing into the business sector. Interest and perseverance coupled with studying the market demand will make the business naturally grow. Ulfaz Collection started its business as an online retailer that operates on many social media platforms such as Facebook, Instagram, and TikTok. The company belongs to the Secondary Industries business category, which entails the manufacturing of basic materials into another product either through human or machine labour. Ulfaz Collection is expanding its range of products to bring timeless and stylish designs. The company has been increasing investment in marketing in the hope of further expanding their products throughout Malaysia and penetrating the Singapore and Brunei markets.

Muhd Fazli Bin Zulkifli serves as Ulfaz Collection's Chief Executive Officer (CEO) while his wife, Ulfa Binti Hosen, is the company's Chief Operating Officer (COO). Ulfaz Collection has 10 employees distributed across the production, sales, marketing, and management areas. The founders hope to open a physical boutique that can take Ulfaz Collection's brand further and better known throughout Malaysia. As one of the players in the modest fashion industry, Ulfaz Collection is aware of the fierce competition from other retailers, including more established brands like Jakel or Creacion by Datuk Siti Nurhaliza.

3.0 LITERATURE REVIEW

3.1 Workplace Performance

Workplace performance describes a worker's capacity to conduct their responsibilities successfully, effectively, and with the desired outcomes. It considers a worker's effectiveness, productivity, and total value to the business in addition to their job's standard, quantity, and timeliness. Organisations frequently use key performance indicators (KPIs), performance reviews, feedback processes, and routine team and individual accomplishments monitoring to evaluate work performance. They can also increase productivity, employee satisfaction, and general success by assessing and improving workplace performance.

Any organisation must prioritise workplace performance, which has grown even more critical in recent years due to the COVID-19 pandemic, which prompted many businesses to use lean manufacturing techniques to compete effectively in the market. Lean manufacturing practices are a set of guidelines that aims to decrease waste, enhance quality, and boost productivity at work. Several studies have been done in the last three years to examine how lean manufacturing practices affect productivity at work. Yadav et al. (2018) investigated how lean manufacturing techniques affected worker performance in the Indian industrial sector and found positive associations, particularly in the aspects of output, quality, and job happiness. They also found that engagement in lean manufacturing practices and employee involvement is essential in raising workplace productivity.

The effect of lean on job satisfaction was the subject of a study by Varadaraj (2020). According to the findings, lean manufacturing techniques increase work satisfaction and staff engagement. The study also found a strong correlation between employee engagement and participation in lean manufacturing practices and workplace productivity. The way a company measures workplace performance can vary depending on the organisation's goals, industry, and specific job roles. This is the indicator of workplace performance measurement. Managers in the sales department can gauge the performance of their staff by assessing how successful sales persons meet or surpass their sales targets. The capacity to meet these goals will be used to judge each representative's success. They may set each representative's own sales goals, such as the revenue generated, the number of new customers acquired, or order volume. Past research also examined the relationship between job satisfaction and sales staff performance with adaptive selling practices. A company may use indicators related to customer satisfaction to gauge employee performance for customer service personnel. This can entail tracking consumer opinions, holding polls, or calculating client retention rates. Hence, businesses may establish standards for good customer service and gauge employee performance using these criteria. Additionally, Kanaslan and Ivem (2016) emphasised the importance of utilising 360-degree feedback as an effective tool for evaluating employee performance in a comprehensive manner.

Job satisfaction has been found to play a significant role in predicting workplace performance Wright et al. (2000). The authors highlighted the importance of considering job satisfaction as a significant predictor of workplace performance. Monitoring the calibre of the output in the manufacturing division would allow the company to gauge workplace performance. When tracking indicators like defect rates or client returns, they may set criteria for product quality. Employees who consistently generate high-quality items that meet the established requirements would be seen as performing well at work. Project completion metrics may be used by the company to evaluate workplace performance for employees who participate in project-based work. They might evaluate a worker's capacity for completing deliverables on time and completing the project as a whole.

The efficiency of order fulfilment could be used by the company to gauge workplace performance in the warehouse or logistics division. They might keep track of how many orders are shipped out accurately—without mistakes or missing items—and gauge each employee's success based on accuracy rates. Inventory turnover rates may be used by the business to gauge workplace performance in the purchasing or inventory management departments. The capacity to optimise inventory levels, reduce stockouts, and increase profitability might be used to assess individual performance. They could also examine how rapidly inventory is sold and replenished. In the digital age, organisations face new challenges in measuring and managing performance effectively Nudurupati et al. (2016). Therefore, organisations must modify their performance assessment and management strategies as the digital landscape changes to take into consideration the particular benefits and difficulties of the digital age. Nudurupati et al. (2016) underscore the need for organisations to incorporate digital performance metrics and adapt their performance management practices to the demands of the digital era. This includes the need to track the overall production yield, the volume of fabric processed in a specific period of time, or the total number of units produced each hour in addition to the number of workplace mishaps, injuries, and near-misses. This indicator aids in determining how well the textile company's safety procedures and practices are working. Additionally, the time taken by the textile industry to finish a particular procedure or operation must be determined as it will aid in assessing the workflow's efficacy and efficiency.

3.2 *Employee Performance*

Employee performance is the degree to which an employee meets the aims and objectives of the company within a specific time frame. It entails a range of actions, including job performance, task fulfilment, and goal achievement. Employee performance is routinely assessed using key performance indicators (KPIs), which are metrics for determining how well an organisation is doing toward its goals. Many things can affect an employee's performance, including personal and professional problems, individual characteristics like motivation, talents, knowledge, and personality, as well as organisational elements like leadership, culture, resources, and work design. The study by Vadivel et al. (2022) explored Impact of lean service, workplace environment, and social practices on the operational performance. Their conclusions show that lean training programs improve knowledge, skills, and commitment to lean concepts, which in turn positively affect employee performance.

Employee effectiveness and contribution are evaluated using a variety of metrics that make up employee performance measurement. Quantitative metrics like sales numbers, productivity levels, customer satisfaction scores, and project completion rates are among these indicators. Additionally, qualitative assessments assess qualities including cooperation, verbal and written communication, capacity for problem-solving, and adherence to organisational principles. Organisations may thoroughly assess employee performance, pinpoint areas for development, recognise remarkable accomplishments, and make educated decisions about promotions, awards, and training opportunities by combining these metrics. A culture of accountability, continuous improvement, and employee engagement are ultimately fostered through effective performance measurement, which benefits both the individual and the organisation.

Moreover, organisations can assess employees' performance by looking at how effectively they meet or surpass their sales goals. Order accuracy and timeliness measures can be used by companies to evaluate employee performance in positions involving order processing, warehouse management, or logistics. They may evaluate how many accurate orders were completed within the allotted time, minimising mistakes, holdups, or client complaints. For instance, one person continuously makes sure that orders are accurately chosen, packaged, and dispatched on time. The person does well in maintaining order correctness and timeliness as evidenced by the low error rate and capacity to meet shipment dates. Benzinger (2016) emphasised the role of effective organisational socialisation tactics in facilitating the integration of employees and enhancing their performance during the early stages of employment. This highlights the value of using efficient organisational socialisation techniques to improve newcomer performance and, eventually, organisational success. For example, companies can track the number of garments sewn or yards of fabric woven by an employee in a day or week and track the number of defects per unit or the percentage of products that pass quality inspections. They can also determine or track the time taken to complete a specific operation or the amount of material wasted during the production process. These indicators to measure the employee performance are implemented by the company in the case study.

3.3 *Lean Manufacturing*

Lean manufacturing is a management style that places a strong emphasis on eliminating waste at every step of the production process. Since its first introduction as the Toyota Production System Lean, many organisations throughout the world have adopted the method to decrease lead times, enhance production flow, and increase overall efficiency, ultimately resulting in reduced production costs and increased output (Mulugeta 2021). Anything that a customer is willing to pay for is said to have value. The complete process of providing value to the consumer is referred to as a value stream. The smooth and continuous flow of value during the industrial process is referred to as flow. Pull describes the practice of only producing products and services as they are required. The production process is constantly being improved and is referred to as perfection.

Lean manufacturing deployment has been demonstrated to significantly improve organisational performance. Past research denotes that productivity gains are one of the key advantages of lean manufacturing. Khalfallah and Lakhali (2020) revealed that lean manufacturing practices have a significant impact on operational and financial performance.

Furthermore, improved financially is another advantage of lean manufacturing. According to Womack and Jones (1997), lean thinking emphasises the elimination of waste and the creation of wealth in corporations, thus resulting in increased client satisfaction and loyalty.

Furthermore, work happiness, motivation, and engagement of employees can all benefit from lean manufacturing. A positive mediating role of job characteristics in the relationship between lean manufacturing practices and employee well-being. Additionally, lean manufacturing can enhance collaboration and communication among employees, subsequently creating a more favourable work environment. While lean manufacturing can be advantageous in many ways, it can also be difficult to adopt with resistance to change being one of the key difficulties.

The requirement for constant improvement presents another difficulty to adopt lean manufacturing. In order to succeed, organisations must be dedicated to continued training and development because lean manufacturing is a process of continuous improvement. Furthermore, lean manufacturing can be expensive and time-consuming, but the advantages sometimes exceed the drawbacks. Therefore, lean manufacturing can be regarded as a management approach that emphasises on reducing waste and boosting value in production processes, with value, value stream, flow, pull, and perfection serving as its foundational ideas.

3.4 *Lean Manufacturing Practices*

The incorporation of Industry 4.0 technologies is a key trend in lean manufacturing practices. Artificial intelligence (AI), automation, the Internet of Things (IoT), and smart manufacturing have completely changed how lean manufacturing practices are used. Businesses can enhance quality control, streamline production, and increase overall efficiency by utilising these technologies (Pagliosa et al. 2021). Beyond the factory floor, the entire supply chain is now governed by lean concepts. Organisations are putting more emphasis on lean supply chain management to shorten lead times, lower inventory levels, and boost customer response. Additionally, collaborative partnerships and information sharing have been prioritised to streamline material flow.

In recent years, there has been an increase in the application of lean manufacturing practices and Six Sigma approaches. Organisations aim to achieve operational excellence, improve product quality, and lower defects by combining the ideas of waste reduction from lean with statistical process control from Six Sigma (Tampubolon and Purba, 2021). The importance of sustainability in lean manufacturing practices has grown with more organisations are actively looking for ways to minimise their negative impact on the environment, save resources, and integrate green practices into their lean operations. Lean manufacturing practices now include efforts like waste reduction, energy optimisation, and eco-friendly material sourcing as essential elements (Kumar and Mathiyazhagan, 2020).

The manufacturing-centric lean principles are increasingly being used in service-related businesses. Lean practices have been embraced by businesses in industries like healthcare, banking, and hospitality to increase process efficiency, boost customer happiness, and cut costs. Service environments have been tailored to fit lean technologies like value stream mapping and standardised work (Vignesh et al., 2016). Employee involvement and organisational culture have both been identified as essential components of a successful lean implementation. Businesses have concentrated on creating a lean culture that stimulates problem-solving at all levels, empowers people, and supports continuous development. To promote a culture of lean thinking, engagement activities have been put in place, including training programs, suggestion systems, and recognition programs (Kilroy and Flood 2021). Small and medium-sized businesses (SMEs) are also rapidly adopting lean manufacturing practices to be competitive in fast-moving marketplaces because they see the advantages of waste reduction, increased production, and increased customer satisfaction. The adoption of lean practices has been assisted by tailored strategies and support programs created especially for SMEs (Driouach et al. 2019). Lean manufacturing practices can increase productivity by reducing waste and streamlining processes. For instance, arranging workstations in a flow structure can save material handling and boost the effectiveness of fabric cutting and sewing activities. Ultimately, employee efficiency is improved, leading to shorter lead times and higher overall output.

Early defect identification and avoidance are key components of lean manufacturing practices. Employees can recognise and handle quality concerns early by employing visual management tools, such as error-proofing measures and quality checkpoints. As a result, there is a rise in customer satisfaction, decreased rework, and increased product quality. Employee empowerment and participation in process improvement are encouraged by lean manufacturing practices. For example, employees can take responsibility for their work by developing a suggestion system where they can submit suggestions for improving processes and increasing efficiency. Higher levels of performance are the outcome of this involvement, which also promotes a sense of engagement, motivation, and dedication. Meanwhile, the goals of lean manufacturing practices are to reduce lead times and create low inventory levels. Textile companies can reduce the requirement for surplus inventory by employing Just-In-Time (JIT) principles, such as Kanban systems, to synchronise production with consumer demand. This not only increases cash flow but also frees up personnel to manage and handle surplus inventory and concentrate on tasks that generate value.

3.5 *Pull Flow System*

A pull flow system involves producing or replenishing products or components based on actual customer demand rather than pushing products based on forecasts or assumptions. It relies on a "pull" signal from downstream processes or customers to initiate production or supply. Pull flow systems, such as the Kanban system mentioned earlier, help eliminate

overproduction, reduce inventory, and improve flow efficiency. According to Fowler et al. (2019), the pull mechanism works essentially backwards, beginning with the customer's order and using visual cues to initiate action at each previous level of the cycle. The product is removed from the production line in response to customer demand. The pull method facilitates quick material flow by utilising a number of fundamental approaches, including the Kanban technique (Mouaky, Berrado, & Benabbou, 2019).

3.6 *Total Quality Management (TQM)*

Total quality management (TQM) is a continuous process or operation that identifies, mitigates, and eliminates manufacturing errors to maximise performance and profitability (Romero et al., 2019). It mixes managerial principles with practices for ensuring product quality and workforce involvement. In this regard, when quality increases throughout the board of operations, "quality and standard of value" measures frequently begin with enhanced quality systems in the manufacturing sectors (Al-Doori, Alhorani, & Alreiqat, 2019). It is possible to decrease production costs and waste while also increasing customer loyalty by enhancing employee abilities through training and development programs, statistical process management, supplier controls, and quality engineering controls like tolerances and specifications. TQM places a strong emphasis on a quality-conscious culture throughout the organisation, continuous improvement, defect prevention, and customer happiness. By putting TQM principles into practice, organisations can improve product quality, reduce defects, and increase customer satisfaction.

3.7 *Continuous Flow*

The purpose of continuous flow, commonly referred to as "one-piece flow", is to move goods or workpieces through the production process without pauses or delays. It entails reducing batch sizes and work-in-progress (WIP) inventory to provide a seamless and constant flow of products from one process to the next. Continuous flow improves overall process efficiency by lowering lead times, waiting times, and inventory costs. It frequently calls for close synchronisation and coordination across teams and procedures. Additionally, continuous flow attempts to reduce work-in-progress inventories and do away with batch processing. According to Naufal, Jaffar, Noriah, & Halim, (2013) the adoption of continuous flow systems improves operational performance, including shorter lead times, greater production flexibility, and increased productivity.

3.8 *Kaizen*

Kaizen, which refers to "continuous improvement" in Japanese, is a philosophy that supports making minor, incremental changes to procedures, goods, and systems to continuously improve them. It entails regularly recognising issues and inefficiencies and involving all staff in finding solutions. Improvements in productivity, quality, and customer happiness are the results of fostering a culture of continuous learning, innovation, and problem-solving through kaizen. It frequently uses strategies like recommendation systems and PDCA (Plan-Do-Check-Act) cycles to fuel efforts at continuous development. To increase productivity and quality, kaizen emphasises providing personnel with the resources they need to identify issues and propose possible solutions. The research by Atta-Ankomah et al. (2022) showed that kaizen implementation has a positive impact on operational performance, including higher productivity, quality, and employee engagement.

3.9 *Just-in-Time (JIT)*

The fundamental idea of Just-In-Time (JIT) is to push through rather than pull through. The goal is to ensure that the manufacturing process does not begin until the consumer has placed their order. Stock is distributed much more frequently because commodities are provided quickly (Pinto et al., 2020). Downstream JIT is a production system used to accommodate customer demands stated at the proper time. The JIT manufacturing system aims to eliminate wasted waiting, overproduction, and excess inventory. Corporations implement JIT procedures with a low margin to reduce inventory and achieve delivery deadlines (Chung, Talluri, & Kovács, 2018).

Upstream JIT requires providers to continuously meet the needs of incoming inspections at the point of usage, in limited numbers, and with guaranteed overall performance. To benefit from lean practices, a company's suppliers must balance JIT manufacturing and delivery to minimise lot size and invalidate their suppliers. Customers submit accurate and timely orders and suppliers support JIT's quick delivery (Schonberger & Brown, 2017). Furthermore, JIT strives towards zero or low inventory (Halim et al. 2015). JIT procurement and the continuous evolution of the JIT idea and JIT manufacturing precede JIT production and JIT distribution. Halim et al. (2015) examined JIT from the perspectives of supplier JIT delivery, speeding up equipment conversion, and pull system, and used the regression analysis to evaluate the correlations between JIT time, enterprise cost, delivery time, and quality.

3.10 *Supplier Partnership*

Supplier relationships are complicated and require companies to continuously improve their supplier-based performance to go beyond their present suppliers and reorganise their supply base (Amoako-Gyampah et al., 2019). Collaborative actions between organisations and suppliers are becoming increasingly important in the supply chain with the exception of limited product lifecycles, fierce global rivalry, and rising customer demands (Amoako-Gyampah et al., 2019). According to the marketing literature, relationship commitment is a key factor in the success of long-term

relationships (Mungra & Yadav, 2019). Profitability can also increase in long-term relationships whereby higher earnings allow the provider and the buyer to become better acquainted and valued to improve their relationship (Joshi et al., 2017).

3.11 Customer Relationship

Long-term client relationships must be established and maintained in every manufacturing business (Basu et al., 2017). To satisfy consumer demands and wants at the appropriate moment, an organisation needs to keep close ties with its customers, which include employers and society. Customer satisfaction and loyalty are the primary goals of the operational supply chain. By comprehending customer expectations, a business can efficiently coordinate machinery, equipment, and human resources in manufacturing activities to decrease process variations, downtime, and lead times (Santouridis and Veraki, 2017).

4.0 METHODOLOGY

The present study employed the qualitative methodology to examine how lean manufacturing practices can improve workplace and employee performance in textile firms. First, a thorough literature review was conducted to compile existing information and hypotheses about lean manufacturing practices and their effects on worker and workplace productivity. This served as the theoretical foundation of this study. In-depth interviews with key stakeholders, including employees, managers, and management staff, were then conducted using the case study approach to collect their perspectives and experiences regarding the current state of employee and workplace performance as well as their perceptions of lean manufacturing practices. Puan Ulfa was interviewed to gather information regarding the company’s background and employee performance. The head tailor was interviewed to explore the flow of the production process. Direct observations were also used to gain information about how lean practices were used and how they affected performance. The qualitative data was thematically analysed to detect recurrent patterns, themes, and significant findings. This technique offered a deep and in-depth understanding of the performance-influencing aspects as well as the possible advantages and difficulties of introducing lean manufacturing practices in the textile industry. Figure 1 illustrates the flow of this research.



Figure 1. The flow of research

5.0 RESULTS AND DISCUSSION

Ulfaz Collection Sdn Bhd faces the challenge of constant delays in completing orders due to having an insufficient number of employees in the production department. During the interview session, Ulfaz Collection stated the significant difficulty in finding employees who possess the skills and talent that are relevant in the textile industry, such as sewing skills. To prove that the company lacks manpower, the researcher conducted a calculation to determine the number of employees needed to meet the customer demand.

The productivity of employees also needs to be highlighted to know if the current employees are productive and efficient. Therefore, the number of current employees still can be considered because productivity remains high.

Results from the interview revealed that Ulfaz Collection is unaware of the lean manufacturing practices concept. Therefore, the company struggles to identify and solve the issues effectively. Lean practices facilitate the identification and elimination of waste and defects, resulting in higher product quality and reduced rework. This improvement can contribute to customer satisfaction and loyalty (Naeem et al., 2021). This paper constructed an analysis to show the flow process in Ulfaz Collection and better understand the underlying problem.

Demand product at the rate of 200 units per day. This product has three operations: A (sewing), B (ironing), and C (packing), which require 6, 7, and 5 man minutes, respectively. The company works for only one shift per day and the working time per employee is 520 minutes. The normal efficiency of the company's operations is 85%.

Calculation:

The demand of P per day (n) = 200

Man minutes per product (t) = 6 + 7 + 5 = 18 man minutes

Working time per employee (w) = 540 minutes

Number of shifts per day (s) = 1

Manpower required per shift = $((200 * 18)/540)/1 = 6.67$

Manpower required per shift considering 85% efficiency = $6.67/.85 = 7.85 = 8$ employees

Hence, in this situation, this company needs 8 employees per shift to satisfy its customer demand.

The standard expected output per operator in Ulfaz Collection is 25 pieces of cloth per day and the operator productivity is 20 cloth per day.

Productivity = $(20 / 25) \times 100$

Productivity = 80%

The productivity in terms of efficiency becomes 80%

Every employee does the same process from the beginning till the end repeatedly every day from cutting, sewing, repairing, and finishing. Making a concept or idea for the garment is the first step in the design process. The desired style, silhouette, and features of the clothing are captured by designers through sketches, patterns, or digital designs. At this stage, they might also think about colour and fabric alternatives. Making patterns entails designing templates or designs that serve as a guide for cutting the fabric. The design criteria are used by skilled pattern makers to create patterns that specify the size and shape of each garment component. Paper is usually used to create patterns. The next step after creating the pattern is to find the fabric. Garment producers collaborate with suppliers to obtain the necessary fabrics, trimmings, and accessories. The patterns are placed and traced onto the fabric upon being stretched on a large cutting table. The cloth pieces are then cut by competent tailors according to the patterns. The cut fabric pieces are put together during the sewing and assembly stage to create the finished garment. The fabric components are stitched by skilled sewing machine operators using particular stitching methods and guidelines. This stage involves finishing touches like hemming, buttoning, installing zippers, and stitching seams.

A crucial stage of the clothing production process is quality control. At various stages of production, inspectors or quality control staff check the clothing to ensure that they adhere to predetermined quality standards. This includes examining the overall quality of the goods, correct measurements, good alignment, and sewing flaws. Sewing is followed by pressing and finishing the clothing. Steam irons or pressing machines are used to iron out wrinkles, flatten seams, and give clothing a polished appearance. Labelling, tagging, and other branding components are also attached to the clothing during this phase. The clothes are given a last examination to make sure they satisfy quality standards after pressing and finishing. The overall appearance, dimensions, and any residual flaws in the garments are examined and clothes that have been approved are subsequently packed, folded, and ready for shipping or distribution. The last step involves distributing the finished products to buyers or retailers. Users may also receive their purchases directly through online shopping sites. To meet client requests, distribution entails managing inventories, logistics, and timely delivery. Based on the observation, this process should be improvised to reduce lead time and avoid delay or hold process. Having one person to only do one process, such as the cutting process, is better to reduce lead time, eliminate waste, and increase proficiency instead of each person doing everything. The root cause of inefficient production processes was determined by analysing the interview data and supplemented by the workplace observation.

Figure 2 shows the 5-Why Analysis used to find the root cause of the problem in the Ulfaz Collection company. The results found that Ulfaz Collection's employee and workplace performance may be low as a result of ineffective processes, a lack of standardised work practices, insufficient training, poor communication, and a lack of employee motivation. The lack of specific guidelines and standardisation of work practices may contribute to the inefficiency of the processes in Ulfaz Collection. Task execution may not be consistent, which could result in a range in productivity and output quality. A few things, such as the absence of continuous improvement projects and a failure to track and disseminate best practices throughout the organisation, might be blamed for the lack of clear rules and standardisation of work operations. Lack of resources and management commitment to lean manufacturing practices may be the cause of a lack of continuous improvement activities. The advantages of lean practices may not be widely known and there may be opposition to change within the organisation. Financial limitations, competing priorities, and a lack of awareness of the potential benefits of lean practices on enhancing employee and workplace performance are just some of the causes of limited resources and a lack of management commitment to lean manufacturing practices. Furthermore, there could be insufficient training or knowledge to efficiently execute lean practices.

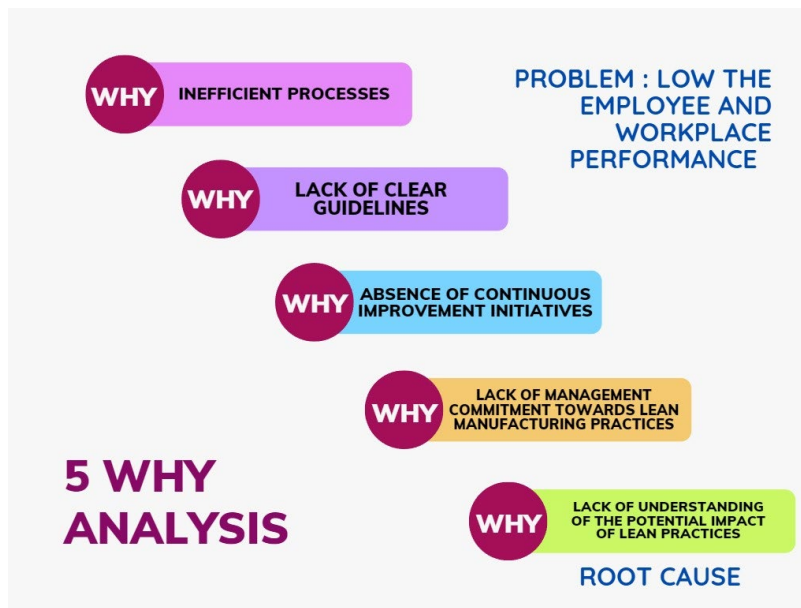


Figure 2. 5-Why Analysis for the inefficient production process in Ulfaz Collection

The implementation of lean manufacturing practices led to a significant improvement in employee productivity and workplace efficiency. From the literature review, lean practices that are suitable for this problem are Just-in-Time and continuous improvement. Just-in-time manufacturing is appropriate to be used in Ulfaz Collection since it reduces the amount of time, labour, and materials used in production. It involves manufacturing items as needed with the intention of having a production system that is simplified and maintains small batch sizes, little on-site raw material inventory, and short production wait times. To reduce inventory and improve the flow of materials, Ulfaz Collection might use the JIT method by establishing daily or hourly delivery of small quantities of parts from suppliers. The certification of supplier quality supports the requirement for thorough receiving inspections. By condensing the production area, it is possible to transfer goods that are currently being worked on directly to the next work centre, cutting down on wasteful transportation and lead times. To assure product quality, on-site inspections of each in-progress product from the prior work centre assist in quickly identifying and resolving problems. Pauses in production are another way to maintain JIT concepts and prevent excess inventory and overproduction. Additionally, the business places a focus on shipping finished goods to consumers right away when an order is fulfilled, reducing lead times and raising customer satisfaction.

A production system that is adaptable to changing production quantities, product mix, and customer demands can be created. It entails the ability to quickly alter production procedures, design layouts, and resource allocation without compromising effectiveness or quality. Ulfaz Collection may be better able to adapt to changing conditions while still achieving high levels of productivity and client satisfaction. The company can set up flexible work centres in its production area. This design makes it simple to alter and reconfigure to change production requirements. The business may swiftly change production lines, manage resources effectively, and handle various product requirements or volume changes by flexibly arranging workstations and equipment.

The workplace's existing design may have concerns with poor flow and congestion. This happens due to the equipment, common rooms, or workstations being disorganised or put in awkward places. Employees may have trouble navigating the area, resulting in lost time and lower productivity. Congestion can also happen in places with high traffic especially when more than one employees need to use the same space at once. Employees may become frustrated and face delays and bottlenecks, which will affect their productivity and general working environment.

The current production layout in Figure 3 shows that the packing area is in the centre of the warehouse. It disturbs the amount of movement in the production area. In addition, the tailor workspace prevents light from entering the warehouse. It also makes the movement time higher than standard time. From raw materials to finished goods, garments in the tailor workspace will be carried to the iron cloth area before packing. It can be seen that the iron cloth area is a bit far from the tailor workspace. From a real point of view, there is limited, messy, and uncomfortable space in the whole production area with unorganised stock. It may lead accident to occur and reduce employee and workplace performance. A recommended production layout will be provided to reduce lead time and solve inefficient production processes in the production area.



Figure 3. Current production layout of Ulfaz Collection Sdn Bhd

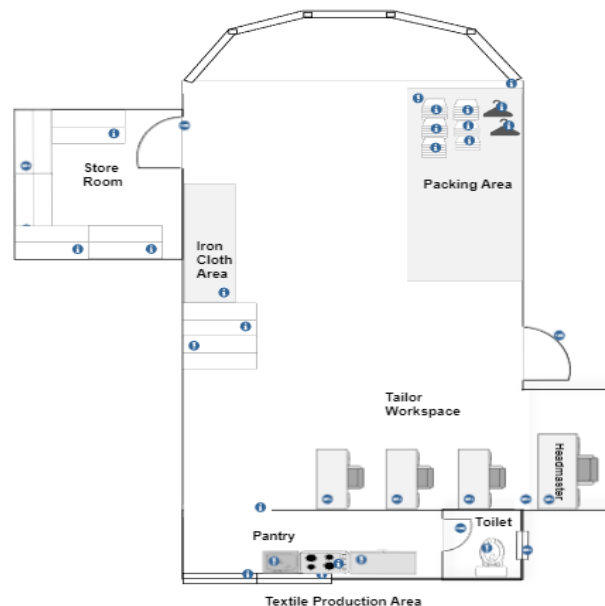


Figure 4. Recommended production layout of Ulfaz Collection Sdn Bhd

Figure 4 shows an improvised version of Ulfaz Collection’s production layout with some of the furniture, tables, and racks have been reorganised. It also changes the place of each area. The packing area is now placed close to the window and store room. This is because quality check could be done easily before packing in an area that is near to the source of natural light. Next, the ironing area is positioned near to the tailor workspace and packing area to minimise the amount of movement and lead time. The tailor workspace was moved to the bottom of the head tailor area so that the head tailor can check their team. The centre of the whole warehouse seems to be empty because it eases the employees’ movement to transport stock, move from one place to another, and makes the area wider. It can reduce lead times and faster order fulfilment, enhance resource utilisation, and optimise production flow along with employee empowerment and engagement, leading to higher productivity.

Making continuous and modest improvements is the emphasis of continuous improvement, which aims to reduce waste, streamline procedures, and increase efficiency. It entails establishing an environment conducive to creativity, teamwork, and problem-solving across the entire organisation. Employees at all levels are encouraged to find and suggest changes through continuous improvement, which results in a more empowered and engaged workforce. This emphasises how employees actively participated in the process of change. Employees are encouraged to point out opportunities for improvement, make suggestions, and get involved in activities that involve problem-solving. This participation builds a culture of ongoing learning and creativity, increases employee morale, and fosters a sense of ownership. Having

standardised work procedures is essential for ongoing development. the creation of standardised work processes to get rid of variation, increase consistency, and boost productivity. Standardised work gives improvement efforts a baseline and enables methodical discovery and application of improvements.

Several studies have shown that lean manufacturing practices can lead to improved employee performance and enhanced workplace efficiency in the textile industry (Esfandyari et al., 2014; Saleeshya et al. 2012). The implementation of lean manufacturing practices reduces the amount of problems that occur in production, such as reduced lead time and waste. There are changes in efficiency and productivity.

$$\begin{aligned} \text{Efficiency} &= [\text{Total minutes produced} / (\text{Total hour worked} \times 60)] \times 100 \\ \text{Efficiency} &= [480 / (9 \times 60)] \times 100 \\ \text{Efficiency} &= 88.89\% \end{aligned}$$

Therefore, the efficiency increases from 85% to 88.89% by implementing lean manufacturing practices.

$$\begin{aligned} \text{Productivity} &= [\text{output} / \text{input}] \times 100 \\ \text{Productivity} &= (23 / 25) \times 100 \\ \text{Productivity} &= 92\% \end{aligned}$$

Therefore, the productivity increases from 80% to 92% by implementing lean manufacturing practices.

6.0 CONCLUSION

In conclusion, the present case study on improving employee and workplace performance in the textile industry through lean manufacturing practices has highlighted numerous examples of noteworthy results and consequences. Ulfaz Collection was able to significantly optimise a number of its operational processes by using lean principles and practises, which in turn improved worker productivity and workplace efficiency. Lean manufacturing techniques also helped the business respond more quickly to changing market conditions and consumer requests. The organisation reduced lead times, enhanced reaction times, and improved customer satisfaction by putting Just-in-Time manufacturing and flexible manufacturing concepts into practice. In turn, this improved the company's market position and allowed it to keep a competitive edge in the textile sector.

It is significant to note that the dedication and involvement of senior management as well as the active participation and support of employees at all levels are critical to the success of the lean manufacturing practices. Initiatives for continuous improvement are essential to foster a culture of lean thinking and guarantee the long-term effectiveness of the adopted practices. Overall, the case study demonstrates how a textile company can significantly increase employee and workplace performance by using lean manufacturing practices. The organisation may increase efficiency, productivity, and competitiveness in the fast-paced textile industry by putting a strong emphasis on waste reduction, encouraging staff engagement, and boosting response to client requests.

6.1 Research Contribution

This study offers significant contributions to the body of knowledge both theoretically and practically. The case study was conducted to help retail, textile, and clothing wholesale companies to implement lean manufacturing practices for improvement. Theoretically, this case study adds value to the field of lean manufacturing practices. Ulfaz Collection was chosen as the company was one of the SMEs that is slowly growing to achieve their long-term goals. The company was also selected as it suits the current scope of study concerning the production area of the textile industry. This case study practically offers useful advice for textile businesses looking to implement lean manufacturing practices to boost employee and workplace productivity. These useful suggestions can help other textile businesses embrace lean concepts and boost performance. The findings of this study also offer insights into the accomplishments, difficulties, and lessons discovered during a textile company's adoption of lean practices. Other organisations can use this practical expertise to foresee and avoid probable traps and roadblocks in their lean implementation journeys. It offers advice on how to overcome obstacles and maximise the results of lean initiatives. The case study also supports the practical efficacy of lean manufacturing practices to enhance employee and workplace performance in the textile industry. It highlights the importance and applicability of lean practices in attaining operational excellence and organisational success by providing a real-world case with tangible outcomes.

6.2 Recommendation

This study offers several recommendations for future research. It is recommended for future studies to conduct longitudinal research to determine the long-term effects of implementing lean manufacturing practices on worker and workplace performance. This would entail monitoring organisational performance metrics over a long period of time, including productivity, quality, employee satisfaction, and overall organisational performance. future studies can also analyse how management and leadership styles contribute to the effective adoption of lean manufacturing. Further examination can be conducted on the precise managerial stances, communication techniques, and behaviours of leaders

that support the adoption of lean practices by employees and their continued execution. It is also crucial to explore ways on how technology can help lean manufacturing practices to be implemented and used more effectively. Future researchers can analyse the use of digital tools, automation, and data analytics in the textile firm to streamline processes, cut waste, and improve overall performance.

6.3 Limitation

This case study only investigated one textile company, which makes it difficult to reach wider implications. The complete spectrum of variation and complexity that exists within the textile business might not be adequately represented by a single case study. The conclusions would be more generally applicable if they were replicated in different businesses. Furthermore, this case study was undertaken within a short timeframe, which could have limited the ability to analyse potential long-term consequences or changes. It is crucial to remember that the effects of lean manufacturing practices may change with time, and a longer-term investigation would give a more thorough understanding of the results. Employee opinions or engagement data included in the case study may be based on self-reported metrics. The validity and dependability of the results might have been impacted by the possibility of response bias or subjective interpretations. Hence, future research may enhance the validity of their results by adding objective performance metrics.

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8.0 CONFLICT OF INTEREST

The author(s), as noted, certify that they have NO affiliations with or involvement in any organisation or agency with any financial interest (e.g., honoraria, educational grants, participation in speakers' bureaus, membership, jobs, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or non-financial interest (e.g., personal or professional relationships, affiliations, expertise or beliefs) in the subject matter or materials addressed in this manuscript.

9.0 AUTHOR CONTRIBUTIONS STATEMENT

Each author involved and contributed evenly to this manuscript. All authors read and approved the final manuscript.

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APPENDICES

Appendix A: Collection Raya Sedondon for 2022 from Ulfazhq



Appendix B: Collection of Women's Apparel from Ulfazhq



Appendix C: Warehouse of Ulfaz Collection Sdn Bhd



Appendix D: Storage room at the warehouse



Appendix E: Interview session with the CFO of Ulfaz Collection Sdn Bhd



Appendix F: Mrs. Ulfa briefly explained about their products



Appendix I: Interview session with the Head of Production



Appendix J: Semi-structured interview protocol

No. Interview Question:

1. What are the common problems that occur in your company?
 2. Why do you think you lack manpower?
 3. How many clothes can be done in one day?
 4. How many days or weeks do you give to your employee to complete the product?
 5. What is the problem commonly occurring in the production area?
 6. What product do you specify in this textile industry?
 7. What do you think about workplace areas in production?
 8. Can you tell me how the production process runs in manufacturing from the beginning till the end?
 9. How is your employee performance so far?
 10. How many years of experience that you have in sewing?
 11. What is the vision for your company in the textile industry?
 12. How many employees that the company have?
 13. When was this company established?
 14. What is your target for the company in the textile industry?
 15. How has your company grown so far?
-

No.	Interview Question:
16.	Where do you start to study about business?
17.	How much capital to start running the business?
18.	What is your plan for this business in the future?
19.	Why is employee and workplace performance low in the company?
20.	Why are the processes inefficient in the company?
21.	Why is there a lack of clear guidelines in the company?
22.	Why is there a lack of continuous improvement initiatives in the company?
23.	Why is there a lack of management commitment towards lean manufacturing practices in the company?
