**1.1 INTRODUCTION**

This study delves into the production analysis of Adithya Birla fashion and retail limited (ABFRL), a leading player in the Indian fashion and retail industry. The focus is on understanding the production processes, operation challenges, and strategies implemented to enhance efficiency and quality. The analysis explores the integration of advanced manufacturing practices, including lean principles, to optimize resource utilization and minimize waste. production analysis supports decision-making by providing managers and engineers with valuable insights into system performance and capacity optimization. Operational conditions, such as system reliability, maintainability, and functional performance, can significantly affects production outcomes. These factors, if not adequately addressed, may increase risks and uncertainties within the business environments, leading to potential inefficiencies and higher costs.

To improve production performance, it is essential to focus on key areas such as equipment reliability, maintenance strategies, and overall system configuration. By understanding the underlying factors affecting production and implementing appropriate optimization strategies, companies can enhance operational performance, reduce risks, and achieve greater business success. As production environments evolve, the need for continuous analysis and improvement becomes crucial in staying Production competitive and meeting the growing demands of the market. continue to evolve, the in today’s highly competitive market, production analysis serves as a vital tool for organizations to maintain their edge by continuously assessing and refining their manufacturing processes. By employing various analytical techniques and methodologies, such as lean manufacturing, six sigma, or total quality management, businesses can streamline their operations, reduce waste, and enhance productivity. Furthermore, the integration of advanced technologies like automation and data analytics enables companies to gain real-time insights into production performance, allowing for more informed decision-making. As a result, production analysis is not only contributing to operational excellence but also supports long-term sustainability and growth in an ever-evolving industrial landscape.

Production analysis is indispensable for optimizing the performance and reliability of manufacturing processes. It provides organizations with the necessary tools to scrutinize every aspect to their operations, from machinery and workflow to labour and resource allocation. By doing so, companies can not only enhance their current production capabilities but also future proof their operations against potentials disruptions. As industries continuous application of production analysis will remain essential for ensuring competitiveness, operational efficiency, and long-term sustainability.

**1.2 SIGNIFICANCE OF THE STUDY**

In our manufacturing operations, there is an urgent need for comprehensive production analysis to address the existing inefficiencies. Despite significant investments in advanced technologies and process improvements, our production systems are not functioning at optimal levels. This has led to recurrent issues such as resource wastage, underutilization of equipment, and inconsistent production outputs, resulting in increased operational costs and missed production targets.

**1.3 THEORETICAL FRAMEWORK**

**Production analysis**

Production analysis is a crucial component of any organization’s strategy for optimizing manufacturing operations. It involves the systematic assessment of all aspects of the production process, from resource utilization and equipment performance to workflow efficiency and product quality. The aim of production analysis is to provide insights that help to improve the effectiveness, efficiency, and sustainability of production activities, while reducing costs and increasing output.

Through production analysis, organizations can identify inefficiencies such as bottlenecks, equipment downtime, excessive resource consumption and waste. These inefficiencies, if not addressed, can hinder operational performance, leading to delayed production timelines and higher production costs. By applying analytical tools and methodologies, companies can uncover the root causes of these problems and implements targeted solutions to enhance overall production efficiency.

In today’s rapidly changing manufacturing landscape, production analysis plays a crucial role in enabling organizations to adapt to new technologies, market demands, and competitive pressures. It provides a data-driven approach to decision-making, allowing managers to decision-making, allowing managers to optimize production processes, improve product quality, and ensure that operations are aligned with business goals.

**Importance of production analysis**

The importance of production analysis lies in its ability to provide valuable insights that can lead to improved operational performance and competitiveness. Several key benefits highlight the significance of production analysis:

* **Efficiency optimization:**

Production analysis enables organizations to streamline workflows and eliminate bottlenecks. By identifying inefficiencies in production processes, companies can make data-driven decisions to optimize machinery usage, labour allocations, and process sequencing. This leads to smoother operations and increased throughput, without incurring additional costs.

* **Cost reduction:**

By carefully analysing production performance, companies can identify areas where resources are being wasted or underutilized. This includes energy consumption, raw materials, and labour. Production analysis helps reduce unnecessary expenditures, enabling cost-effective manufacturing while maintaining or improving productivity.

* **Enhanced product quality:**

Through continuous monitoring and evaluation of production processes, organizations can ensure adherence to quality standards. Production analysis helps detect deviations or inefficiencies that might affect product quality, allowing businesses to implement corrective actions quickly and reduce defect rates. This results in higher customer satisfaction and lower costs associated with rework or returns.

* **Predictive maintenance and reduced downtime:**

One of the key benefits of production analysis is the ability to foresee potential equipment failures or performance degradation. With detailed data analysis, companies can shift from reactive to predictive maintenance strategies, reducing unplanned downtime and extending the lifespan of machinery. This ensures smoother operations and minimal disruptions to production schedules.

* **Better resource allocation:**

Production analysis provides insights into the optimal use of resources such as labour, materials, and machinery. By understanding the demands and limitations of each process, businesses can allocate resources more efficiently, balancing workloads and avoiding overburdening specific areas of production.

* **Data-driven decision making:**

The detailed data provided through production analysis empowers managers and decision-makers with ability to make informed, evidence-based choices. This reduces the reliance on guesswork and allows for more strategic planning in terms of production capacity, investment in new technologies, and overall process improvement.

* **Adaptability to market changes:**

In a rapidly evolving market, production analysis helps companies stay competitive by offering insights into how operations can be adopted to meet new demands. Whether there is a sudden increase in customer orders or shifts in market trends, production analysis equips companies to respond quickly and efficiently, maintaining a flexible and scalable production environment.

* **Long-term sustainability:**

Sustainability production practices are increasingly essential for businesses aiming to reduce their environmental impact. Production analysis can identify areas where waste and energy consumption can be reduced. Promoting greener practices and ensuring compliance with environmental regulations. This not only benefits the planet but also enhances the company’s reputation and market appeal.

* **Continuous improvement and innovation:**

Production analysis fosters a culture of continuous improvement by identifying areas where incremental changes can enhance overall efficiency and productivity. By consistently evaluating processes and outcomes, businesses are encouraged to innovate, whether by adopting new technologies, refining current practices, or introducing new product lines. This emphasis on continuous improvement allows companies to stay ahead of competitors and maintain operational excellence over time.

**Advantages and disadvantages of production analysis**

**Advantages of production analysis**

* **Improved operational efficiency:**

Production analysis helps identify inefficiencies in processes, such as bottlenecks, machine downtimes, or underutilization of resources. By addressing these issues, companies can enhance overall productivity and maximize the use of their available resources, leading to faster production cycles and smoother operations.

* **Cost savings:**

Through detailed data analysis, production inefficiencies and waste can be pinpointed and minimized. Whether it’s reducing material wastage, cutting down on energy consumption, or optimizing labour deployments, production analysis can lead to significant cost savings. These savings can directly contribute to higher profit margins and better financial performance.

* **Enhanced product Quality**

Continuous monitoring and analysis of production processes ensure that quality standards are consistently met. Early detection of defects or deviations in production allows for timely intervention, reducing the likelihood of defective products reaching customers. This not only improves customer satisfaction but also reduces the costs associated with rework, returns, or warranty claims.

* **Better decision making:**

With the data insights provided by production analysis, managers and decision-makers can make more informed choices. Whether it’s deciding on investments in new technologies, results in more efficient and effective operations.

* **Reduced Downtime**

By utilizing predictive maintenance tools and analysing performance data, companies can anticipate equipment failures before they happen. This proactive approach reduces unplanning downtime and ensures that production remains uninterrupted, leading to higher productivity and reduced maintenance costs.

* **Scalability and flexibility:**

Production analysis provides insights that enable companies to scale their operations efficiently when demand increases. let helps in understanding the capacity of the existing system and identifying areas for expansion or improvement. Additionally, the flexibility gained from production analysis allows businesses to adapt quickly to market changes or new production requirements.

* **Increased competitiveness:**

Organizations that consistently analyse and optimize their production processes and better positioned to respond to market demands and compete on factors such as cost, quality, and delivery time. Efficient production translates into a stronger competitive advantage, allowing companies to offer better prices and higher-quality products.

* **Strategic resource management**

Production analysis ensure that resources, including raw materials, labour, and machinery, are utilized optimally. This leads to a more balanced workload distribution, preventing underutilization or overworking of resources. As a result, companies can maintain steady output while reducing strain on their assets.

**Disadvantages of production analysis**

* **Time-consuming process**

Conducting thorough production analysis can take a lot of time, especially for complex operations. This may delay decision-making and process improvements.

* **High initial cost**

Implementing production analysis tools and systems can be expensive. The cost of software, equipment, and skilled personnel might be a barrier for smaller businesses.

* **Requires expertise**

Production analysis often requires specialized knowledge and skills to interpret the data effectively. Without proper expertise, the analysis might not yield useful insights.

* **Resistance to change**

Employees and management might resist changes suggested by production analysis, especially if it involves altering long-established processes or adopting new technologies.

* **Data overload**

Too much data can sometimes be overwhelming and Effi cult to manage. Companies may struggle to focus on the most important insights if they’re not well organized.

* **Short term disruptions**

Implementing changes based on production analysis may temporarily disrupt operations, leading to short-term productivity losses before improvements take effect.

* **Risk of over-optimization**

Focusing too much of operation optimizing might lead to unintended consequences, such as pushing machinery or labour beyond their limits, which could reduce long-term reliability.

**Production analysis management**

Production analysis management refers to the structured process of assessing, evaluating, and interpreting various elements within a production system. The objective is to enhance operational performance by identifying inefficiencies, optimizing resources, and aligning production activities with organizational goals. Production analysis helps businesses understand their production trends, pinpoint areas for improvement, and make data-driven decisions. The primary goal of production analysis management is to improve productivity, ensure resource efficiency, and maintain quality standards while minimizing costs and waste.

**Key components of production analysis management include.**

* **Data collection and assessment**

This involves gathering relevant data from production processes, including input resources, output rates, and equipment performance. It includes measuring production metrics such as cycle time, utilization, and waste levels to provide insights into the efficiency of the production system.

* **Performance monitoring**

Continuous tracking of production activities through real-time monitoring tools is essential. Monitoring key performance indicators (KPIs) such as production output, downtime, and resource utilization helps identify patterns, bottlenecks, and areas that require intervention.

* **Analysis and interpretation**

Using statistical methods and analytical tools, production data is interpreted to reveal inefficiencies, resource wastage, or variations is production quality. This helps determine the root causes of issues and supports informed decision-making for process improvements.

* **Optimization techniques**

Production analysis often leads to optimization, where processes are refined to reduce waste, increase throughput, and improve overall efficiency. Implementing lean manufacturing techniques, adjusting workflows, or investing in new technologies are common approaches for optimization.

* **Quality assurance**

Ensuring consistent production quality is an essential component of production analysis. It involves monitoring product quality, conducting regular inspections, and identifying deviations from quality standards. Effective production analysis helps maintain high quality standards while minimizing defects.

* **Feedback and continuous improvement**

Feedback from the production team and stakeholders is critical for continuous improvement. Production analysis encourages a cycle of regular evaluation and refinement of production processes, ensuring ongoing enhancement of productivity and efficiency.

* **Strategic decision making**

Insights gained from production analysis can support long term strategic planning and decision making. This includes identifying areas for investment, expansion, or changes in production capacity to meet market demands more effectively.

**Importance of production analysis management**

**Enhanced decision-making** production analysis provides valuable data-driven insights, allowing managers to make informed decisions regarding process improvements, resources allocation, and strategic planning.

**Improved efficiency:** By identifying bottlenecks, inefficiencies, and waste in production process, analysis management enables organizations to optimize operations, leading to improved productivity and better resource utilization.

**Cost reduction:** through effective production analysis, businesses can reduce unnecessary expenses related to overproduction, waste, or inefficient use of resources, thus improving overall profitability.

**Quality improvement:** regular analysis of production processes helps maintain consistent quality by identifying deviations from standards and implementing corrective actions to prevent defects or product recalls.

**Increased competitiveness:** companies that use production analysis to continuously improve their operations are better positioned to compete in the market by offering higher quality products, faster delivery times, and more cost-effective solutions.

**Adaptability:** production analysis enables organizations to quickly respond to changes in demand, market conditions, or technological advancements by providing insights that supports flexible and adaptive strategies.

**Risk mitigation:** identifying potential issues in production before they become major problems reduce the risk of costly disruptions, downtime, or compliance violations, ensuring smoother operations.

**Sustainability and waste reduction:** by analysing production data, companies can focus on minimizing waste, both in terms of materials and energy consumption, contributing to sustainable practices and reducing environmental impact.

**Employee productivity and engagement:** production analysis can highlight areas where employee performance can be improved, leading to better training, clearer roles, and overall enhanced productivity and morale.

**Long-term growth and innovation:** continuous analysis of production trends supports innovation and long-term growth, as businesses can identify opportunities for new processes, products, or technologies to stay ahead in the industry.

**Benefits of production analysis**

Production analysis offers numerous benefits, including increased efficiency, cost reduction, and improved production quality. By identifying inefficiencies and bottlenecks, it helps streamline operations and optimize resource utilization. Additionally, production analysis support data-driven decision-making, enabling better planning and risk management. It also promotes faster adaptation to market changes, improves productivity, and enhances customer satisfaction through consistent quality and timely deliveries.

**Increasing efficiency:** production analysis helps identify inefficiencies in the production process allowing businesses to streamline operations and make optimal use of resources.

**Cost reduction:** by identifying waste and unnecessary steps in production companies can reduce costs associated with excess materials, labour, and energy consumption.

**Improved product quality:** continuous analysis ensures that production processes meet quality standards, leading to better consistency in product quality and fewer defects or rework.

**Data-driven decision-making** production analysis provides valuable insights into operational performance, enabling management to make informed decisions about process improvements resource allocation and strategic planning.

**Employee engagement:** involving employees in the PPM process and emphasizing continuous improvement can enhance employee engagement, as it empowers them to contribute ideas for optimizing processes and increasing efficiency.

**Customer satisfaction:** The consistent delivery of high-quality products or services, on time and at competitive prices, contributes to customer satisfaction, fostering loyalty and positive word-of-mouth recommendations.

**Regulatory compliance:** PPM helps organisation monitor and adhere to regulatory requirements and industry standards, ensuring that production processes meet legal and quality compliance standards.

**Sustainability:** by optimizing resource use and minimizing waste, PPM supports sustainability efforts, aligning with environmentally conscious business practices.

**Continuous improvement culture:** PPM foster a culture of continuous improvement, encouraging organizations to adapt to changing circumstances, embrace innovation, and consistently seek ways to enhance their production processes.

**Production analysis in retail industry**

Production analysis is retail industry is the process of evaluating and optimizing the various operations involved in the flow of goods from suppliers to customers. Unlike traditional manufacturing sectors, where production often refers to the physical creation of products, in retail, production pertains more to the logistical and operational activities that ensure products are available on shelves or delivered to customers efficiently. This includes managing inventory levels, supply chain efficiency, demand forecasting, of production analysis in retail is maintaining optimal inventory ensuring that stock levels are sufficient to meet customer demand without leading to overstocking or stockouts, which could result in lost sales or excess storage costs. Furthermore, supply cain performance plays a critical role as it ensures timely and cost-effective transportation of goods from warehouses to stores or directly to customers. This involves analysing lead times, transportation costs, and suppliers’ reliability. Another important aspect is demanding forecasting, where data analytics are used to predicts future sales patterns, allowing retailers to align inventory and production processes accordingly. Accurate forecasting reduces the risk of overproduction or underproduction, thereby lowering costs and improving customer satisfaction. Order fulfilment is another area of focus, as efficient packing, shipping, and delivery processes are essential for meeting customer expectations, especially in an age of e-commerce and rapid delivery services. Retailers increasingly rely on advanced technologies, such as warehouse management systems and point-of-sale data, to monitor production metrics in real time, enabling quicker responses to changes in demand and market conditions. Additionally, the integration of lean production principles, such as minimizing waste and improving process efficiency can significantly enhance retail operations. By conducting A thorough production analysis, retailers can identify bottlenecks, reduce costs, streamline processes, and improve their overall competitiveness in a fast-paced market.

**1.inventory management:** maintaining optimal inventory levels to meet customer demand, avoiding excess, and using advanced inventory management systems.

**2.supply chain optimization:** minimizing lead times, reducing transportation costs, and improving visibility.

**3.Demand forecasting:** accurate predictions of customer needs using data analytics.

**4.Order fulfilment:** streamlining the picking, packing, and shipping process for timely delivery.

**5.Technology integration:** adopting technology to improve production performance through systems like point-of-sale and inventory management software. Refocusing on production analysis

**Production efficiency analysis:** measure how effectively the inventory management, supply chain, and fulfilling processes are functioning including bottlenecks and inefficiencies in the workflow.

**Cost-benefit analysis of technology:** Evaluate how the integration of advanced technologies like data analytics and inventory systems impacts production costs, time efficiency, and output.

**Capacity utilization:** assess how well the production capacity is being used in line with retail demand

**Lean production in retail:** analyse how lean manufacturing principles can be applied to reduce waste in inventory, improving fulfilment accuracy, and streamline production flow.

**1.4 OBJECTIVES OF THE STUDY**

* To assess the efficiency of the production process in Adithya Birla fashion and retail limited.
* To identify key factors affecting production timelines and output.
* To evaluate the impact of production strategies on overall product quality.
* To suggest improvements for optimizing production process.
* To analyse cost-effectiveness in the production process.

**1.5 SCOPE OF THE STUDY**

The study focuses on comprehensive production analysis of Adithya Birla fashion and retail limited (ABFRL). It includes a detailed examination of the manufacturing processes, resource utilization, quality control, and operational efficiency within ABFRL’s production units. The study aims to identify areas where the company can improve its production efficiency, reduce wastage, optimize resource allocation, and enhance overall productivity. This research will provide insights to streamline the production operations, leading to cost reductions and improved product quality, ultimately contributing to better business performance.

* 1. **METHODOLOGY OF RESEARCH**

Research methodology is the systematic process used to collect, analyses, and interpret data in a study. It includes the research design, methods, tools, and techniques employed to address the research problem, ensuring validity, reliability, and ethical standards

The study is designed as empirical one based on survey methods. Both primary and secondary data were used for the smooth conduct of the study. Primary data was collected through using survey method. secondary data was collected from different journals, books, websites, etc.

**Types of research:**

Research can be classified into different types based on its purpose and approach.

* **Descriptive research**: focuses on describing characteristics or phenomena.
* **Exploratory research**: investigates new or unclear topics to gain insights.
* **Explanatory research**: explains the causes and effects of phenomena.
* **qualitative research**: involves numerical data and statistical analysis.
* **Quantitative research**: focuses on non-numerical data like opinions and behaviours.

In this study, descriptive research is used. descriptive research is carried out for the purpose of collecting descriptive information like employee’s opinion, benefits, personal details, awareness, etc. and it is structured and formal.

**SAMPLE SELECTION METHOD CHOICE**

**Sample**

A sample refers to a smaller, representative subset of a larger population that is selected for study. It is used in research to draw conclusions about the entire population without having to study every individual. The sample is chosen using various methods to ensure it accurately reflects the characteristics of the population

Total number of respondents from the population is 120.

**Sampling procedure**:

Sampling procedure refers to the method or process used to select a subset of individuals or items from a larger population for the purpose of research or study. It involves defining the population, determining the sample size, and selecting the sampling technique to ensure that the sample is representative of the population and yields reliable results.

**Convenient sampling**

Convenient sampling techniques has been used to collect data. Convenience sampling involves selecting individuals who are readily available and accessible to the researcher. Here are some examples:

**Data collection methods:**

The types of research adopted by the investigator is primary as well as secondary research. Primary research involves studying the facts and figures collected by the researcher himself/herself, exclusively for the purposes of a particular study. secondary research involves the usage of data and facts and figures that has been collected by someone else.

**TOOLS USED FOR DATA COLLECTION, ANALYSIS**

In the present study the researcher has used both primary and secondary data as the base. Primary research involves studying the facts and figures that have been collected the researcher, exclusively for the purpose of the study. Secondary data is the data already collected by someone. Secondary data has been collected using: -

**Questionnaire**

Questionnaire are instruments used to collect information about a person's past or his private behaviour since inherently such behaviour is beyond the pale of observation. A questionnaire consists of several questions printed in a definite order or a form.

**Secondary data has been collected through:**

Apart from documents and discussions, the investigator has also collected the relevant information from the websites and books pertaining to the problem states in the study. These sources are very useful in understanding the problem and in carrying out the research in a systematic manner.

**Tools used for analysis:**

**Percentage analysis**

This is the univariate analysis where the percentage of a particular factor with different categories are calculated, in order to help one get their fair idea regarding the sample and thereby that the population.

The following is the formula,

Percentage of respondents = No. of respondents x 100

 Total no. of respondents

**Chi square test:**

The chi-square test is a statistical method used to determine if there is a significant relationship between categorical variables. It compares observed frequencies with expected frequencies under the assumption of no association. The test is used either to check if a sample matches an expected distribution (goodness of fit) or to see if two variables are independent (test of independence). A high chi-square value suggests a significant association between the variables.

* H0 (Null Hypothesis): This is the hypothesis that assumes no effect, no difference, or no association between the variables. It represents the status quo or a baseline assumption that is tested for possible rejection.
* H1 (Alterative hypothesis): This is the hypothesis that contradicts the null hypothesis. It suggests that there is an effect, a difference, or an association between the variables, and it is what the researcher typically wants to prove.

**1.7 LIMITATION OF THE STUDY**

* The limited time available for completing the project.
* The members of the society were not ready to give whole data.
* The staffs were very busy at their work so that they could find only less to give information.
* It was not possible to get in depth knowledge of each activity in the organization because of the busy schedule of the selected staff.

**1.8 CHAPTER SCHEME**

**CHAPTER 1: INTRODUCTION**

This chapter may contain introduction of the topic, statement of the problem, theoretical framework, scope, objectives, research methodology, limitations of the study on a specific basic is desirable.

**CHAPTER 2: REVIEW OF LITERATURE**

The chapter contain the literature review of the chosen topic.

**CHAPTER 3: PROFILE OF THE COMPANY**

The chapter contain the profile to the company industry relating to the topic of the project.

**CHAPTER 4: DATA ANALYSIS AND INTERPRETATION**

Logical presentation of the results of the study presented in tables, graphs and figures, if any along with necessary interpretation forms part of the chapter.

**CHAPTER 5: FINDINGS, RECOMMENDATIONS AND CONCLUSION**

The focus of this chapter is on broad observations made by the student against each objective specified in chapter 1 along with major conclusions drawn by the study. Appropriate suggestions for the policy makers/managers on the future course of action are Approached.

**2.1 REVIEW OF LITERATURE**

**Yoga Prewire, 2023.This** research focuses on reviewing the Lean manufacturing (LM)

Implementation which is widely applied in the manufacture company to overcome or reduce waste. The aim of this article is to find out more about the influence on the industry sector. This research was developed by collecting research from indexed databanks of Scopus, science direct, research gate, etc. this review study is significant to identify the application of lean manufacturing in leading with waste through implementation into several case studies. A total of 24 articles were publications of international publisher, which were selected through a systematic process. This study found that the application of lean manufacturing is a method that brings many advantages that work by minimizing losses and waste, and the Value Stream Mapping method is more often used as part of several lean manufacturing techniques to identify and analyse the occurrence of waste while providing solutions that lead to improvement. Process and cost reduction.

**Shapan Chandra majunder,2023**. This study wants to fill a gap in the empirical literature by looking at how the source of electricity affects CO2 emissions in south Asian countries. Because of the consistent production levels and economic growth in south Asian countries, energy generated is becoming a key issue. The data, which covers from 1972 to 2015, is subjected to quantile regression (QR). The quantile regression coefficients findings are statistically significant at a 1% level of significance. According to the regression results, all energy generation sources, and associated variables have a positive impact on CO2 emissions. Coal-fired power plants have a bigger impact on the environment than other types of pollution.

**Andres cisneros-barohoma,2023.** These articles aim to analyse the scientific production from the web of science (Wos) database, associated to teaching digital competence (TDC) in universities. Based on the PRISM methodology, the following research variables were taken into consideration: 1. Countries in which research are carried out; 2. Research interested in the topic; 3. Methodological designs used in the investigations; 4. Objectives stated in the studies and 5. Main findings or contribution. The research was delimited through ERIC thesaurus or its approximation, 187 scientific publications were located. It is evident that, at the European level, especially in Spain, there is a significant number of authors who concentrate their interest in the subjects, at the Latin America level there are isolated efforts and limited policies to develop digital teaching skills, so the status of study is germinal; research approaches are predominantly quantitative.

**Natalia Ueda Yamaguchi,2022.** This research is sustainable development goals (SDG) increases year by year since its approval in 2015. Typically, after a phase of exponential growth, the number of publications increases at lower rates, suggesting a consolidation process in which literature reviews become a relevant and high evidence type of document. In this context, the aim of this study was to perform an unprecedented bibliometric analysis of literature reviews on SDG to assess the evolution and consolidation of the scientific research. Article reviews on SDG from 2015 to 2022 were retrieved from web of science core collection and descriptive bibliometric analysis was performed by growth rate, research area, source, citation, and region.

**Virginia L.M. Spiegler,2021**. The purpose of the study is to evaluate how blockchain technology (BCT) can support the implementation of lean automation. We conducted a systematic literature review to understand how BCT is being implemented in the supply chain management (SCM) domain and to evaluate how this technology can be used to reduce inefficiencies in supply chains. Firstly, we developed a holistic taxonomy of wastes to identify the most common non-value activities. The, both inductive and deductive content analyses were performed, the latter being coded using the taxonomy. Our findings identified the most common BCT-based application themes in SCM and ways that this technology can be used to support future implementation of blockchain-enabled Lean Automation (B-Ela). Additionally, we proposed a future research agenda. The study provides important contributions at the intersection between BCT, lean production, and industry 4.0 within the context of SCM and seeks to exploit BCT’s potential to improve businesses’ efficiency, effectiveness and productivity.

**Marcello M. Mariani,2022.** Artificial intelligence (AI) is increasingly embedded into service firms’ operations. However, production systems and operations management scholars have not yet examined if AI-empowered service operations are positively judged by service customers. To bridge this gap, this study draws on the three-factor theory of customer satisfaction applied to online review data, to capture the effect of AI-empowered service operations on overall customer satisfaction, operationalised by means of online review ratings. Based on text analytics techniques applied to a sample of more than 50,000 TripAdvisor ORs covering 35 international hotels in Asia and America, we develop a penalty–reward contrast analysis. **Mohammad I,** **2022**.Artificial intelligence (AI) is considered a mechanism that can improve supply chain resilience. Organisations around the world are investing in implementing AI systems to improve their supply chain and become more resilient to pandemics and disruption. At the same time, practitioners are not fully aware of the factors that impact the implementation of these systems. Alongside this, the extant literature lacks a comprehensive study that evaluates the enablers impacting the implementation of AI in production systems. This research fills this gap by identifying, defining, and evaluating the critical enablers influencing the adoption and implementation of AI in production systems. We extracted twelve enablers, created a conceptual model, and categorised the enablers based on the Technology, Organization, and Environment (TOE) framework. After categorisation, we used the analytical hierarchy process to assess the importance of the enablers presented in the model using data collected from eight experts.

**Jian Yang,2024.** By consolidating scattered knowledge, the literature review provides a comprehensive understanding of the investigated topic. However, reading, conducting, or peer-reviewing review papers generally demands a significant investment of time and effort from researchers. To improve efficiency, this paper aims to provide a thorough review of reviews in the PAMI field from diverse perspectives. First, this paper proposes several article-level, field-normalized, and large language model-empowered bibliometric indicators to evaluate reviews. To facilitate this, a meta-data database dubbed Ripa MI, and a topic dataset are constructed. Second, based on these indicators, the study presents comparative analyses of representative reviews, unveiling the characteristics of publications across various fields, periods, and journals. The newly emerging AI-generated literature reviews are also appraised, and the observed differences suggest that most AI-generated reviews still lag behind human-authored reviews in multiple aspects. Third, we briefly provide a subjective evaluation of representative PAMI reviews and introduce a paper structure-based typology of literature reviews. This typology may improve the clarity and effectiveness for scholars in reading and writing reviews, while also serving as a guide for AI systems in generating well-organized reviews. Finally, this work offers insights into the current challenges of literature reviews and envisions future directions for their development

**Arpan Kumar Kar** ,**2023**. The adoption of technologies built on Internet of Things have seen a wide adoption and diffusion during digital transformation in the industry 4.0 era. However, the use cases of such application have not been synthesized in the existing literature. This study attempts to conduct a systematic review on the literature published in the space of IoT applications in Industry 4.0. Through a review on 79 studies finally shortlisted from over 917 articles published, based on different criteria, the study highlights dominant areas of research. Our study highlights trends among dissemination platforms and knowledge networks which have emerged internationally. The area demonstrates strong possibilities for future growth and is witnessing large focus among academic researchers. Further, the study elaborates major themes of such published literature in areas like smart technologies, smart production, smart working and smart supply chain.

**Tsung-Hui Chen,2024**. In the 4th industrial revolution era, manufacturers tend to integratepredictive maintenance into production systems to maximize the lifespan of equipment and avoid costly disruptions. Using interest of things sensors and data analyses predictive maintenance can significantly reduce the production downtime by detecting and predicting system problems before they become uncontrollable, resulting in a lower defective rate. Additionally, an advance-cash-credit (ACC) payment scheme is commonly applied in real-world business transactions to enhance cash flow flexibility among supply chain members. In this study, we developed a supplier–manufacturer chain, wherein a predictive-maintenance-adopting manufacturer received an ACC payment from a supplier, to demonstrate a supply chain management situation within the imperfect economic production quantity framework.

**Devinder Kumar** **2022**. Supply chain decarbonisation has become a strategic requirement in the era of a net-zero economy. Despite the significant role of Big Data Analytics (BDA) in decarbonising the supply chain (SC), no prior study has evaluated it systematically. The present study aims to provide a systematic literature review on the applications and outcomes of big data analytics in SC decarbonisation. A total of 69 papers on applying BDA technology for supply chain decarbonisation published between 2016 and 2021 have been selected following the PRISMA protocol. The findings show that the topic is evolving. Studies employed methods such as surveys (30), case studies (11), and conceptual research designs (8). Thematic analysis reveals that 65% of the studies are grounded in resource-advantage theories, organisational theories, and system theories. Studies from India and China (35%) dominate the topic, while most studies have been conducted on the food and manufacturing industries. Further, this study applied the Antecedent-Decision-Outcomes (ADO) framework in BDA- based SC decarbonisation.

**Xing,2023.** Production-oriented Approach (POA) is an indigenous pedagogy with Chinese characteristics proposed by Chinese linguistic professor Wen Qiu Fang. It is one of the most popular research hotspots in English teaching in China, aiming to solve the problems of the “input-output separation” and “instrumentality over humanity” in Chinese higher education. This study aims to shed light on limitations and future development based on POA-related research achievements, deepening and improving the POA theoretical system and promoting the theory application in a wider range. First, it gives an overall introduction to the formation process of POA, including its budding stage, the embryonic stage, the formative stage, the revised stage, and the further revised stage. Then, utilizing the China National Knowledge Infrastructure (CNKI) database as the data source, it retrieves papers with the theme of Output driven Hypothesis, Output-driven, input-enabled Hypothesis and Production-oriented Approach from 2007 to 2022 to analyses the research status. The non-empirical and empirical research achievements are sorted out and summarized on this basis.

**Orhan Giilican,2024**. Additive manufacturing technologies give engineers and researchers a high level of design freedom to produce complex components or entire assemblies previously impossible or impractical to manufacture by conventional means. Although additive manufacturing has many advantages compared to conventional machining, it has some drawbacks, two of which are higher surface roughness and dimensional inaccuracy of as-built part surfaces especially in overhang features. Support structures are one of the solutions to mitigate these drawbacks at a cost of additional post-processing efforts. The aim of the present study is to investigate the effect of different support geometries on the mechanical properties of laser powder bed fusion manufactured Inconel 718 overhang parts. The tested support geometries are comprised of several pieces to ease post-processing instead of using single piece supports filling all over the overhang surface. One of the tested support structures is contactless support with no direct contact between the part and the support itself. The others are tooth support where the contact is on the tooth faces and line support where the contact is along a line.

**Deio Zhu,2024**. In order to explore the characteristics and mechanism of biomass partial gasification for biochar and syngas co-production in the fluidized bed, a study on the influence of gasification performance and biochar characteristics after partial gasification with different air equivalence ratios was carried out in a self-built small atmospheric bubble fluidized bed The results indicate that when the air equivalence ratio rises from 0.07 to 0.16, the lower calorific value of wet producer gas keeps decreasing, and the maximum value can reach 9.16 MJ/Nm3. The biochar yield shows a declining trend, and the maximum value is 18.07 %. In addition, when the air equivalence ratio is lower than 0.14, the rising of air equivalence ratio makes biochar more disordered due to the newly formed C–O structures, and the total Raman intensity will thereby continue to increase.

**Ahmad Nawaz, 2024**. Global industrialization, leading to a number of complications such as fossil fuel exhaustion, electrical shortages, and pollution. Due to these challenges, it was necessary to discover and apply abundant renewable energy sources, especially biomass, using thermochemical conversion methods such as pyrolysis. Synergistic improvements can be made to fuel and value-added products by using plastic waste and solid biomass feedstock mixtures. The present research provides an indication of earlier investigations, current achievements, and upcoming possibilities in the co-pyrolysis of solid biomass and plastic waste for the generation of superior-quality biofuels. The properties of key plastic waste components are addressed, with an emphasis on the synergistic benefits that may be obtained by pyrolyzing them with biomass. A range of state-of-the-art experimental methodologies for the co-pyrolysis study is assessed using different types of reactors. The obstacles and prospects for advancement in the co-pyrolysis of various solid biomass and plastic waste mixes are also highlighted. This critical evaluation indicated that co-pyrolysis of solid biomass with plastic waste is more advantageous than typical biomass pyrolysis independently and it is a simple, effective, and optional method of accomplishing effective waste management, boosting energy security, and lowering reliance on fossil fuels.

**Miloš Hitka, 2024.** The reviewed literature highlights a range of quality management methodologies, including concurrent engineering (CE), total quality management (TQM), lean manufacturing, lean six sigma, and kaizen. These strategies encompass a variety of pro-quality tools, such as 5S, statistical process control (SPC), quality function deployment (QFD), and failure mode and effects analysis (FMEA). The strengths of these quality management strategies lie in their ability to enhance efficiency, reduce waste, increase product diversity, and improve product quality. However, the weaknesses concern implementation challenges and the need for culture change within organizations. Successful quality management in furniture production requires tailoring strategies to the specific context of the furniture production industry. Additionally, the importance of sustainability in the furniture industry is emphasized, which entails incorporating circular economy principles and resource-efficient practices. The most important finding from the literature analysis is that early detection and correction of poor quality yields the most beneficial outcomes for the manufacturer. Therefore, it is essential to strengthen the rigor of quality testing and analysis during the early stages of product development. Consequently, a deep understanding of consumer perspectives on required furniture quality is crucial. The review identified two research gaps: (1) the impact of unnecessary product over quality on the efficiency of furniture production and (2) the influence of replacing CAD drawings with a model-based definition (MBD) format on quality management in furniture production.

**Harald Dyckhoff,2022**. Joint production is a term with a long history in economics, encompassing a variety of ubiquitous production types that usually generate both main products as well as desirable and undesirable byproducts. However, studies in economic history show that important phenomena subsumed under this term were largely ignored by the theories of general economics and of business economics in the twentieth century. Our systematic, narrative literature review based on the web of science analyses the extent to which this and other terms corresponding to such phenomena have been taken up by researchers since then. Whereas the number of papers on undesirable outputs has soared, especially in the past decade, the economic literature regarding joint production and harmless byproducts is much smaller and hardly growing. This is in stark contrast to their relevance in practice, recorded in the noneconomic literature. Harmful by products result from coupled production, as a rule. However, this important manifestation of joint production is usually not distinguished from other specific types. In German-language literature, coupled production is defined as a kind of (truly) joint production in which an intended product cannot be manufactured without an additional type of output under consideration.

**Razieh Sadraei,2022,** Food waste is a tremendous systemic challenge, mainly at all stages of consumption and the supply chain process. In recent years, the global food supply challenge has called for new methods to decrease food waste or recover them to more valuable materials. Indeed, understanding the techniques for reducing and recovering food waste provides insights into exploring the impact of waste food recovery on the environment. This paper aims to review the literature on food waste in production processes. Hence, we employ a bibliometric and thematic analysis to explore a total number of 163 scientific articles published between 2000 and 2021. The present research uses the theoretical model of circular economy to analyse the literature on the topic both thematically and with cluster analysis. The results provide significant implications for academics and practitioners, drawing attention to a closer relationship between people and food waste, increasing the culture of the value of waste in all

processes from agricultural production to distribution and consumption. Finally, it reiterates the need to emphasise the pollution caused by food production.

**Alexandra Corina Faur,2024**. Breast cancer stands as the primary cause of cancer related mortality among women worldwide, often presenting with distant metastases upon diagnosis. Ovarian metastases originating from breast cancer represent a range of 3–30% of all ovarian neoplasms. Case Report: Herein, we present the histopathological, histochemical, and immunohistochemical findings of a rare case involving mucin-producing lobular breast carcinoma metastasizing to an ovarian fibroma in an 82-year-old female previously diagnosed with lobular breast carcinoma. Histopathological examination of the excised tissues revealed a biphasic neoplasm characterized by tumour cells expressing AE-1/AE-3 cytokeratin, mammaglobin, GCDFP-15, inhibin, and calretinin. Positive mucin staining was observed using

histochemical techniques, and reticulin fibbers were demonstrated using the Gordon–Sweets technique. A final diagnosis of mucin-producing lobular breast carcinoma metastatic to a benign ovarian fibroma was rendered. Conclusion: The occurrence of metastatic breast carcinoma overlaid on an ovarian tumour represents a rare and diagnostically challenging scenario.

**Dana Marsetiya Utama,2023**. An adequate sustainable production inventory model is expected to represent complex real-life cases involving fuel, emissions, and electricity costs as well as multi-materials, quality degradation, and probabilistic demand. Therefore, this study was conducted to develop this kind of model to determine the number of raw material shipments (), production cycle time (), and the number of finished goods delivered (n) to maximize the Expected Total Profit (ETP). The proposed model is based on a bibliometric literature analysis of the sustainable production-inventory problem which is visualized using the VOS viewer. Moreover, a sophisticated Harris-Hawks Optimization (HHO) algorithm was proposed to solve the problems identified in the sustainable production inventory model optimization. It is also important to note that three numerical cases were provided to evaluate the performance of the algorithm.

**Mua Charles,2023**. Even though firms collectively contribute to the socioeconomic development of the national economy, most firms nowadays are face difficulties in maintaining superior firm performance; occasioned by unmanageable business environment uncertainty and changes. It is for this reason that the idea of strategic outsourcing has evolved in response to changes in the business environment and uncertainty. Despite vast empirical research on the relationship between strategic outsourcing and firm performance, there is limited research on influence of strategic outsourcing on firm performance in developing countries. the majority of studies on the subject have contradictory results, and some have methodological, contextual, and conceptual gaps. Thus, there is currently conflicting evidence from the body of literature regarding the impact of strategic outsourcing and firm performance generally, so this research was necessary. The general objective of this study is to review conceptual, theoretical as well as empirical literature on the relationship between strategic outsourcing and, firm performance as well as the mediating effect of speed of service and moderating effect of competitive intensity on the relationship with the view of highlighting the knowledge gaps suitable to form basis for future research.

**Osama Massarweh,2023**. Recently, interest in developing H2 strategies with carbon capture and storage (CCS) technologies has surged. Considering that, this paper reviews recent literature on blue H2, a potential low-carbon, short-term solution during the H2 transition period. Three key aspects were the focus of this paper. First, it presents the processes used for blue H2 production. Second, it presents a detailed comparison between blue H2 and natural gas as fuels and energy carriers. The third aspect focuses on CO2 sequestration in depleted natural gas reservoirs, an essential step for implementing blue H2. Globally, ∼ 75% of H2 is produced using steam methane reforming, which requires CCS to obtain blue H2. Currently, blue H2 needs to compete with other advancing technologies such as green H2, solar power, battery storage, etc. Compared to natural gas and liquefied natural gas, blue H2 gas results in lower CO2 emissions since CCS is applied. However, transporting liquefied and compressed blue H2 entails higher energy, economic, and environmental costs. CCS must be appropriately implemented to produce blue H2 successfully. Due to their established capacity to trap hydrocarbons over geologic time scales, depleted natural gas reservoirs are regarded as a viable option for CCS. Such a conclusion is supported by several simulation studies and field projects in many countries. Additionally, there is much field experience and knowledge on the injection and production performance of natural gas reservoirs.

**Christian Stockmann,2023**. n production systems, the concept of robustness is widespread due to various applications, purposes, and interpretations. However, little is known about the conceptual characteristics of robustness in production settings and even less about its distinctions from other related terms – such as flexibility or agility. That is why this paper systematically reviews production literature to identify the contexts in which robustness is mostly applied and to analyse existing concepts. It is found that despite a vast literature body addressing robustness in varying forms, few studies cover it on a conceptual basis. Within this small sample, a rather general agreement on the meaning of robustness in production systems is found. However, details, interpretations, mentioned interlinkages to related terms differ across the identified literature. Based on the findings of the review and with the help of established literature on adjacent concepts, a comprehensive understanding of robustness in

production systems are developed.

**Tamatios Papadakis, 2023.** ChatGPT is an artificial intelligence program released in November 2022, but even now, many studies have expressed excitement or concern about its introduction into academia and education. While there are many questions to be asked, the current study reviews the literature in order to reveal the potential effects of ChatGPT on education as a whole. The potential implications, possibilities, and concerns about the use of ChatGPT in education are disclosed as mentioned in the literature. Materials/methods – The data of the study were collected and then subjected to a systematic review. Research findings were analysed according to the themes and categories identified. Results – The results of this research were examined under themes according to the positive and negative aspects of ChatGPT. The positive categories and sub-categories of ChatGPT’s integration into education were determined, and the relationship between education and artificial intelligence determined. Similarly, the negative category highlighted the potential negative impact of artificial intelligence on educational processes. Conclusion – The reviewed research evaluated and discussed the impact of AI on education and training processes. In conclusion, this review revealed the critical applications of ChatGPT for educational settings and the potential negative impact of its application. The findings established how ChatGPT and its derivatives would create a new paradigm in education.

**3.1 INDUSTRY PROFILE**

The Indian fashion retail sector is a vibrant and dynamic industry that plays a crucial role in the country’s economy. As one of the fastest-growing retail markets globally, India's fashion retail sector is a significant contributor to the nation's GDP and employment. The sector is characterized by a rich tapestry of cultural influences, evolving consumer preferences, and a rapidly expanding middle class with increasing disposable incomes. Historically, Indian fashion has been deeply rooted in traditional attire, but the sector has evolved significantly over the years, incorporating global fashion trends while maintaining its unique cultural identity.

The word “Retail” comes from an old French word “Retailer” which means “to cut off” in terms of tailoring. Retailing is the set of activities that markets products or services to final consumers for their own personal or household use. It does this by organizing their availability on a relatively large scale and supplying them to consumers on a relatively small scale. A Retailer is a person or an agent or an agency or company or organization who is instrumental in reaching the goods or merchandise or services to the end user or ultimate consumer. Retail involves the process of selling consumer goods or services to customers through multiple channels of distribution to earn a profit. Demand is identified and then satisfied through a supply chain. Attempts are made to increase demand through advertising. In 2000s, an increasing amount of retailing began occurring online using electronic payment and delivery via courier or via postal mail. Retailing as a sector includes subordinated services such as delivery. The term “retailer” is also applied where a service provides services the small orders

of many individuals, rather than large orders of a small number wholesale, corporate or government clientele. Shops may be on residential streets, streets with few or no houses or in a shopping mall. Shopping streets may restrict traffic to pedestrians only. Sometimes a shopping street has a partial or full roof to create a more comfortable shopping environment that protects customers form the weather conditions such as extreme temperatures, wind or precipitation. Some forms of non-shop retailing include online retailing and mail order. Shopping generally refers to the act of buying products. Sometimes this is done to obtain final goods, including necessities such as food and clothing; sometimes it takes place as a recreational activity. Recreational shopping often includes window shopping and browsing, it does not always result in a purchase.

**3.1.1 Global Scenario**

Retail has played a major role world-wide in increasing productivity across a wide range of consumer goods and services. The impact of this can be best seen in countries like U.S.A., U.K., Mexico, Thailand and more recently China. Economies of countries such as Singapore, Malaysia, Hong Kong, Sri Lanka and Dubai are also heavily helped by the retail sector. Retail is the second-largest industry in the United States both in number of establishments as well as in number of employees. It is also one of the largest world-wide. The retail industry employs more than 22 million Americans and generates more than D3 trillion in retail sale annually. Retailing is a U.S. D7 trillion sectors. Wal-Mart is the world’s largest retailer. Being the world’s

largest employer with over 1 million associates, Wal-Mart displaced oil giant Exxon Mobil as the world’s largest company when it reported D219 billion in sales for fiscal 2001. Wal-Mart has become the most successful retail brand in the world due its ability to leverage size, market clout, and efficiency to create market dominance. Wal-Mart heads Fortune magazine list of top 500 companies in the world. Forbes Annual List of Billionaires has the largest number (45/497) from the retail business.

The retail industry has witnessed several changes during the study period with changing economic conditions across the world. The global economy, which slowed in 2019, crashed in 2020 due to the COVID-19 outbreak, resulting in a challenging forecast period for the retail industry. As the majority of products in the industry are sensitive to the economic cycles, the retail industry is expected to show slow recovery during the initial forecast period, yet the customer necessity for the majority of products is anticipated to drive the market once the situation settles down. The global retail industry is mature and highly competitive in the developed economies of Europe and North America. On the other hand, the developing economies of Asia-Pacific, the Middle East, and Latin America have been instrumental in driving the market growth. Countries, such as Singapore, Malaysia, and Thailand, are popular shopping destinations in the Asia-Pacific region, with visitors contributing substantially to the retail sectors in the respective markets. Tourists are augmenting the demand for products related to fashion, apparel, and electronics. Consumer spending, which typically accounts for more than two-thirds of the GDP, has been a key indicator of the health of the retail market. Moreover, the increasing strength of online shopping has been a major driver (especially during the COVID-19 crisis). Apart from this, the growing smartphone penetration across countries is driving the e-commerce channel. Also, IoT, augmented reality, and other disruptive technologies are reshaping the retail industry. However, price variation between online and brick-and-mortar stores can challenge the retail market growth.

**3.1.2 Retail scenario in India**

Retailing in India is one of the pillars of its economy and accounts for over 10 % of its GDP and around 8 % of the employment. The Indian retail market is expected to be US D 1 trillion by 2020 driven by urbanization, attitudinal shift and income growth The overall retail market is expected to grow at 12 % per annum; modern trade would expand twice as fast as 20 % per annum and traditional trade at 10 %. India’s Business to Business (B2B) e-commerce market is expected to reach USD 700 billion by 2020. Online retail is expected to be at par with the physical store in the coming five years. India is expected to become the world’s fastest growing ecommerce market, driven by high investment in the sector and rapid increase in the number of internet users. Various agencies have high expectations about the growth of Indian e-commerce markets. The sales of Indian e-commerce are estimated to reach USD 120 billion by 2020 from USD 30 billion in FY2016. Also, it is expected that India’s e-commerce market would reach USD 220 billion in terms of Gross Merchandise Value (GMV) and 530 million shoppers by 2025, led by faster speeds on reliable telecom networks, faster adoption of online services and better variety as well as convenience. India is one of the fastest growing retail markets in the world, with 1.2 billion people. Organized retailing, in India refers to trading activities undertaken by licensed retailers, that is, those who are registered for sales tax, etc. these include the publicity traded supermarkets, corporate- backed hypermarkets and retail chains, and privately owned large retail businesses. Unorganized retailing, on the other hand, refers to the traditional formats of low-cost retailing, for example, the local corner shops, owner manned general stores, convenience stores, hand car, petty shops and pavement vendors, etc. Indian retail and logistics industry, organized and unorganized in combination, employs about 40 million Indians the typical Indian shops are very small. Over 14 million outlets operate in the country and only 4 % of them being larger than 500sq ft (46 m2) in size. Vast majority of unorganized retail shops in India employ family members, do not have the scale to produce or transport products at high volume wholesale level, have limited to no quality control or Fake versus-authentic product screening technology and have no training on safe and hygienic storage, packaging or logistics. The unorganized retail shops source their products from a chain of middlemen who mark up the product as it moves from farmer or producer to the customer. The unorganized retail shops typically do not offer after- sales support or services and mostly all the transactions at unorganized retail shops are done with cash.

**3.1.3 Retail in India: Historical Perspective**

Retailing is the largest private industry in India and second largest employer after agriculture. The sector contributes to around 10 per cent of GDP and 6-7 per cent of employment. With over 15 million retail outlets, India has the highest retail outlet density in the world. This sector witnessed significant development in the past 10 years – from small unorganized family-owned retail formats to organized retailing. Liberalization of the economy, rise in per capita income and growing consumerism have encourage larger business houses and manufactures to set up retail formats; real estate companies and venture capitalist are investing in retail infrastructure. Many foreign retailers have also entered the market through different routes such as wholesale cash-and-carry, local manufacturing, franchising, test marketing, etc. With the growth in organized retailing, unorganized retailers are fast changing their business models and implementing new technologies and modern accounting practices to face competition. The retailing sector in India has undergone significant transformation in the past 10 years. Traditionally, Indian retail sector has been characterized by the presence of many small-unorganized retailers. However, in the past decade there has been development of organized retailing, which has encouraged large private sector player to invest in this sector. Many foreign players have also entered India through different routes such as test marketing, franchising, wholesale cash-and-carry operation. With high GDP growth, increased consumerism and liberalization of the manufacturing sector, India is being portrayed as an attractive destination for foreign direct investment (FDI) in retailing. At present this is one of the few sectors, which is closed to FDI. Within the country, there has been significant protest from trading associations and other stakeholders against allowing FDI in retailing. In India, the retail sector is the 2nd largest employer after agriculture. In fact, due to wide network of retailing in India it is known as nation of shopkeepers. There are about 12 million retail outlets spread across India and the

country has the highest density of shops in the world i.e. one shop for every 20 to 25 families or 11 retail shop for every 1000 persons. While it is only four shops per 1000 in USA. Retailing in India provides employment to about 7% of total work force in the country and contributes about 14% to GDP of India. However, the retailing sector in India is highly fragmented and consists predominantly of small, independent and owner managed shop. The Global Retail Development Index developed by A.T Kearney has ranked India first among the top 30 emerging markets in the world. A look at the landscape of most of the cities in India shows the rapid phase of change. This changes in reflection of the changes in the Indian consumers his lifestyle and his habits. Goldman Sachs has estimated that the Indian economic growth could exceed that of China by year 2015. It is believed that the country has the potential to deliver the fast growth over the next 50 years. It took 10 years for the first 2500 organized retail stores to emerge in India; the next 2500 could easily get added in the next 5 years. Formats new to the India marketplace have emerged rapidly over the past ten years. There is little doubt that retail in India is revelling up for an exciting phase ahead.

**3.1.4 Emergence of Organized Apparel in India**

The emergence of organized apparel in India marks a significant shift in the fashion and textile landscape, reflecting changing consumer preferences and economic growth. Traditionally dominated by unorganized, small-scale producers, the Indian apparel sector has seen a rise in branded and organized players, driven by factors such as urbanization, increased disposable incomes, and a growing middle class. This transformation has led to the establishment of well-known domestic and international brands, catering to diverse consumer segments and evolving fashion trends. The organized apparel segment is characterized by structured supply chains,

standardized quality, and professional marketing strategies. Brands are increasingly leveraging technology to enhance customer experience, from online shopping platforms to data-driven marketing. E-commerce has played a crucial role in this evolution, allowing consumers easy access to a wide range of products and enabling brands to reach a broader audience. Additionally, the focus on sustainability and ethical practices is becoming more pronounced, as consumers are increasingly conscious of their purchasing choices. Furthermore, government initiatives such as "Make in India" and various policies aimed at boosting manufacturing have encouraged investment in the apparel sector. The growth of organized apparel has also spurred job creation and skill development, fostering entrepreneurship and innovation in design and production. As the market continues to evolve, the organized apparel sector is poised to play a pivotal role in shaping the future of fashion in India, aligning with global trends while addressing local preferences and cultural nuances.

**3.1.5 Market size**

As per Kearney Research, India’s retail industry is projected to grow at 9% over 2019-2030, from US$ 779 billion in 2019 to US$ 1,407 billion by 2026 and more than US$ 1.8 trillion by 2030. Revenue of India’s offline retailers, also known as brick and mortar (B&M) retailers, is expected to increase by Rs. 10,000-12,000 crore (US$ 1.39-2.77 billion) in FY20. India’s direct selling industry is expected to be valued at US$ 2.14 billion by the end of 2021. E-Retail has been a boon during the pandemic and according to a report by Bain & Company in association with Flipkart ‘How India Shops Online 2021’ the e-retail market is expected to grow to US$ 120-140 billion by FY26, increasing at approximately 25-30% p.a. over the next 5 years. Despite unprecedented challenges, the India consumption story is still robust. Driven by affluence, accessibility, awareness and attitude, household consumption stood at Rs. 130–140 trillion (US$ 1.63-1.75 trillion) in 2021.India has the third-highest number of e-retail shoppers (only behind China, the US). The new-age logistics players are expected to deliver 2.5 billion Direct-to-Consumer (D2C) shipments by 2030. Online used car transaction penetration is expected to grow by 9x in the next 10 years. According to recent industry reports, the e-commerce industry witnessed a phenomenal 36.8% YoY growth in terms of order volumes. As consumers prefer to shop online throughout the year, this fast-changing consumer preference towards online shopping reveals the mature status acquired by e-commerce brands in India.

As of 2021, there were 1.2 million daily e-commerce transactions. The total value of digital transactions stood at US$300 billion in 2021 and is projected to reach US$ 1 trillion by 2026. Online shoppers in India are expected to reach ~500 million in 2030 from +150 million in 2020.

India’s digital company is expected to touch US$ 800 billion by 2030, and the e-commerce market is expected to touch US$ 350 billion in GMV by 2030.

**Investments/ Developments**

The retail sector in India has seen a lot of investment and developments in the recent past.

* Reliance industries is likely to sell another 8-10% stake in reliance retail ventures Ltd(RRVL) to fund expansions, retire debt and prepare for the initial public offering of the conglomerate’s retail business.
* Reliance consumer products, the FMCG arm of reliance retail announced the launch of it made-for-India consumer packaged goods brand independence in Gujarat.
* IKEA, the Swedish furniture maker has drawn up plans to invest Rs.850 crores in its Indian operation.
* Swedish retailer H&M is set to launch its home décor and accessories products such as dinnerware and bed linen in India next month. H&M HOME will be available on the company’s website and through Myntra in March.
* Lulu group, a UAE-based retail company, will invest Rs. 2,000 crores to develop a shopping mall near Ahmedabad in Gujarat as part of its plans to expand business in India.
* India’s retail trading sector attracted US$ 4.48 billion FDIs between April 2000-june 2023.
* According to data released by the ministry of statistics & programme implementation (MOSPI), India’s consumer price index (CPI) based retail inflation stood at 6.44% YoY in February 2023.
* In November 2022, Aditya Birla Fashion and Retail Ltd. entered a strategic partnership with the Galleries Lafayette to open luxury department stores and a dedicated e-commerce platform in India.
* In August 2022, Louis Philippe, India’s leading premium menswear brand from Aditya Birla Fashion and Retail Ltd., announced the launch of its outlet in Vadodara, Gujarat.
* In August 2022, Wipro Consumer announced the launch of traditional snacks and spices as it forays into packaged foods.
* In July 2022, Reliance Brands Limited (rbl) partnered with Maison Valentino to bring to India the most established Italian Maison de Couture.
* In June 2022, Reliance Brands Limited inks a JV with plastic legno spa to strengthen toy manufacturing ecosystem in India
* In June 2022, Aditya Birla Group formally launches TMRW – a Digital First ‘House of Brands’ venture in the Fashion & Lifestyle space
* In May 2022, Reliance brands limited (rbl) partnered with Tod’s S.p.A, the iconic Italian luxury brand to become the official retailer of the brand across all categories including footwear, handbags and accessories in the Indian market.
* In April 2022, Wipro Consumer Care inaugurated its factory in Telangana. It has invested in a state-of-the-art soap finishing line that runs on highest speed of 700 Nos of soap /minute.
* In FY22 (till 20th March 2022) total number of digital payment transactions volume stood at Rs. 8,193 crore (US$ 1.05 billion).
* In July 2023, UPI transactions were valued at Rs. 15.33 lakh crore (US$ 185.60 billion).
* In March 2022, Reliance Brands has bought the India franchisee rights and the current Sunglass Hut retail network from DLF Brands.
* Retail tech companies supporting the retail sector with services such as digital ledgers, inventory management, payments solutions, and tools for logistics and fulfilment are taking off in India. In the first nine months of 2021, investors pumped in US$ 843 million into 200 small and mid-sized retail technology companies, which is an additional 260% of capital compared to the entire 2020.
* In November 2021, Department for Promotion of Industry and Internal Trade announced that it is working on a regulatory compliance portal to minimize burdensome compliance processes between industries and the government.
* In October 2021, retailers in India increased by 14% compared with last year
* With the rising need for consumer goods in different sectors including consumer electronics and home appliances, many companies have invested in the Indian retail space in the past few months.
* In October 2021, Reliance announced plan to launch 7-Eleven Inc.’s convenience stores in India.
* In October 2021, Reliance Retail introduced Foreship, a new experiential gourmet food store in India, to expand its grocery segment in the ultra-premium category.
* In October 2021, Plum, the direct-to-consumer beauty & personal care brand, announced plan to launch >50 offline stores across India (by 2023) to expand its customer base.
* Tanishq, Shoppers Stop and Bestseller India (sells fashion brands Vero Moda,

ONLY and jack& jones) plan to add 10-35 stores in FY22.

**3.1.6 Government initiatives**

The Government of India has taken various initiatives to improve the retail industry in

India. Some of them are listed below:

* In April 2022, the government approved PLI scheme for textiles products for enhancing India’s manufacturing capabilities and enhancing exports with an approved financial outlay of Rs. 10,683 crore (US$ 1.37 billion) over a five-year period.
* In October 2021, the RBI announced plans for a new framework for retail digital payments in offline mode to accelerate digital payment adoption in the country.
* In July 2021, the Andhra Pradesh government announced retail parks policy 2021-26, anticipating targeted retail investment of Rs. 5,000 crore (US$ 674.89 million) in the next five years.
* Government may change Foreign Direct Investment (FDI) rules in food processing in a bid to permit E-commerce companies and foreign retailers to sell Made in India consumer products.
* Government of India has allowed 100% FDI in online retail of goods and services through the automatic route, thereby providing clarity on the existing businesses of E-commerce companies operating in India.
* The Minister of MSME announced inclusion of retail and wholesale trades as MSMEs. Retail and wholesale trade will now get the benefit of priority sector lending under the RBI guidelines.

**3.1.7 Road ahead**

The COVID-19 pandemic has caused changes in consumer preferences, habits, and attitudes over the past two years. This has a significant impact on how people buy and consume goods and services. Global retailers are now using cutting-edge business strategies to take advantage of new retail opportunities. Consumers no longer distinguish between offline and online consumption channels. Due to this, major companies are experimenting with different ways to design seamless retail experiences that are integrated across all channels. By utilising both established ecommerce platforms and traditional techniques, retailers are also experimenting with revenue models to improve their customer value offer- e- commerce is expanding steadily in the country. Customers have the ever-increasing choice of products at the lowest rates. E-commerce is probably creating the biggest revolution in retail industry, and this trend is likely to continue in the years to come.

Retailers should leverage digital retail channels (E-commerce), which would enable them to spend less money on real estate while reaching out to more customers in tier II and tier III cities. Online retail market in India is projected to reach US$ 350 billion by 2030 from an estimated US$ 55 billion in 2021, due to rising online shoppers in the country. Online penetration of retail is expected to reach 10.7% by 2024 versus 4.7% in 2019. Nevertheless, long-term outlook for the industry looks positive, supported by rising income, favourable demographics, entry of foreign players, and increasing urbanisation.

**3.1.8 Fashion Retail Scenario in India: Trends and Market Dynamics**

The Indian retail market is expected to show a promising year-on-year growth of 6 % to reach USD 865 billion, by 2023, from the current USD 490 billion. The share of apparel in India’s retail market is 8 %, corresponding to a value of USD 40 billion. In addition to fashion apparel, the growing demand for fashion accessories makes the Indian fashion market both interesting and profitable. The Indian fashion retail market has seen several fascinating changes and challenges in recent years, which are indicators of the country’s evolving fashion retail market. The challenges associated with these changes need to be addressed in the most efficient and sensible manner to harness the associated benefits.

**3.1.9 Retail Scenario in Kerala**

In Kerala, there has been an explosion in retailing in the last few years. Organised retailing is spreading and making its presence felt in different parts of the State. The major national retail players in the State include the Spencer’s, Reliance, Big Bazaar, and Fabmall alongside local chains like Margin Free Markets and Varkey’s. In Kerala, a sector of people is opposing the retail giants because it will spoil the retail sector. But in Malabar region, a group of customers has decided to raise their voice in favour of the big retail chains if it means better bargains for them. In Kozhikode, the Prabhakar Sam Rakshana Samiti (Consumer Protection Committee) in 2007 organised its first rally welcoming the entry of organized retailers about 2000 people

participated and raised their voice in favour of a proposed retail outlet there. But however, the consumer’s demand goes diametrically against the stand of the Kerala Vyapari Vyavasayi Ekoparna Samiti (KVVES) that are against the entry of big players into the retail arena. The Reliance Fresh outlets had to face many allegations and wide protests from the local traders for opening their stores in many parts of the State. But though the agitation against organized retail in the State has taken a serious turn in certain parts, the trading community of Kochi, seems to be toeing a different line. To meet the challenges posed by big retailers, the traditional retailers in the city are redefining business strategies, organizing leadership summits and focusing more on service. They are of the opinion that personal attention and service is something that they can offer to the consumers. Sourcing of products according to the tastes of the consumers and making it available to them is the other aspect of retail that the small and medium retailers are focussing on. However, today’s consumers who are hard pressed for time will prefer to go to the market place which offers them best discount, finest ambience and utmost convenience. Retailing in Kerala is a subject too subtle and relevant as Kerala is known of more as a consumer State rather than a producer State. The introduction of Margin Free Markets has turned out to be a grand success resulting in it becoming one of the largest retail chains in the country. The future of retailing looks bright with the proposed entry of many major organized retailers. There are many who argue that small traders will be badly hit. Others argue that the farmers in the State will stand to benefit, while there will be choices plenty for the consumers. However, the present government in the State is in favour of the thousands of small retailers who are united under the banner of KVVES.

**3.1.10 Retail trends**

The retail industry is constantly evolving, and businesses must keep up with the latest trend in consumer needs to stay ahead of the competition. A pricing tool helps understand these trends, keeping ahead of the curve and satisfying customers’ expectations.

* **Consumer Spending**

In an increasingly competitive landscape, retail industry players must compete in several ways to gain a share of the market size. These days, consumers want first-rate customer service and an integrated shopping experience. The rise in omnichannel retailing is a confirmation of this.

Consumers want to combine the benefits of traditional shopping habits with the convenience of using modern technology. Consumers may now be shopping online using their tablets or smartphone. They could also be on the high street in a bricks and-mortar store.

Consumer appetite for retail sales has remained robust. As such, retailers must now provide a hassle-free, seamless experience for the consumer to remain competitive regardless of whether you are a market stall, part of the UK retail industry or a group of internet retailers. As consumers continue to spend money in the retail sector, it is important to know that your brands are competitive and that the quality is robust. Retail organisations must thus ensure that the quality of products is maintained throughout the supply chain.

* **Market Intelligence**

Assosia offers a wide range of services to provide you with the comprehensive retail analysis and insights you should have to ensure that your company remains a top player. We will keep you abreast of any important, current industry changes and insights so that you can continue to stay competitive.

* **Loyalty programmes**

Customer loyalty programmes are increasingly popular since they can help boost sales in countless ways. They can help to increase customer retention rates and keep customers coming back to your business. Additionally, they can encourage customers to spend more per transaction, and they can also help you to attract new customers through word-of mouth and referrals.

Customer loyalty programmes can give you valuable insights into your customers’ buying habits and preferences, which can help you to tailor your marketing and merchandise strategies for maximum impact.

* **Online shopping**

Although online shopping boomed during the COVID-19 lockdown, it has remained an incredibly important factor in retail trends. Shopping from the comfort of their own home gives consumers more choice and convenience. They can shop around for the best prices and can find the products they want without having to leave their chair. It can also benefit retail workers, as they have more flexibility. This can even boost their productivity and boost your profit margins.

It makes it easy for retailers to track consumer behaviour and preferences. This information can be used to tailor future marketing and sales strategies to meet customer needs better and increase conversions. Unlike other marketing methods, which are rooted in local markets, such as door-tandoor sales and market stalls, e-commerce gives retailers a global reach. It allows you to sell to consumers in another country who may not have access to their brick-and mortar stores. Even if your head office is in the UK, you could have customers in the US.

* **Sustainability**

As many consumers are becoming more aware of the environmental and social impact of their purchases, they are demanding more transparency from brands and encouraging retailers to be more sustainable.

Sustainability is also becoming more affordable for retailers. The cost of sustainable materials and technologies is dropping, making it more affordable for brands to incorporate them into their products. Similarly, sustainable practices are becoming more mainstream, as more businesses are adopting them to reduce their impact on the environment.

* **Online Retail**

The rise of digital media has made it easier for consumers to access information about the sustainability of brands and products and to share their own experiences with others. Store types are adapting as the retail sector changes & shaping their online presence to build on their competitive advantage. Even the grocery market has built itself an online presence. The retail sector is no different, with websites just as crucial as storefronts.

**3.1.11 Market Size and Growth Trends**

India’s fashion retail market is one of the largest in the world, with a current valuation of approximately USD 80 billion. This sector is projected to grow at a compound annual growth rate (CAGR) of 10-12%, reaching an estimated USD 115 billion by 2025. Several factors contribute to this robust growth, including rising disposable incomes, urbanization, and a young demographic that is increasingly fashion-conscious. The proliferation of digital platforms and the advent of e-commerce have also played a pivotal role in expanding the reach of fashion retail, particularly among the younger generation and in tier-2 and tier-3 cities. The growth of organized retail, with the expansion of shopping malls and branded retail chains, has further fuelled the sector's expansion, providing consumers with greater access to a wide range of

fashion products.

**3.1.12 Key Segments within the Fashion Retail Sector**

The Indian fashion retail sector is diverse, encompassing several key segments, each catering to different consumer needs and preferences. Apparel remains the largest segment, accounting for over 60% of the total market. Within this segment, men's, women's, and children's clothing all have significant shares, with women's apparel growing at the fastest rate due to increasing participation of women in the workforce and a shift towards western wear. Footwear is another major segment, which has seen substantial growth driven by rising fashion consciousness and the influence of global trends. The segment includes casual, formal, and sports footwear, with international brands making significant inroads into the Indian market.

Accessories, including jewellery, handbags, belts, and watches, form another important segment within the fashion retail sector. Jewellery, in particular, holds a special place in

Indian culture, often associated with tradition and status, and continues to be a strong market despite economic fluctuations. The ethnic wear segment is also vital, with traditional attire such as sarees, salwar kameez, and lehengas being indispensable, especially during festivals and weddings. This segment has seen innovation with the introduction of contemporary designs that blend traditional aesthetics with modern sensibilities, appealing to a younger audience.

The luxury fashion market in India is rapidly expanding, with a growing number of high-net-worth individuals seeking exclusive and premium products. International luxury brands like Louis Vuitton, Gucci, and Chanel have established a presence in India, tapping into this lucrative market. Simultaneously, the rise of fast fashion brands such as Zara, H&M, and Uniqlo has revolutionized the Indian fashion retail landscape. These brands cater to the demand for trendy, affordable fashion, appealing particularly to the younger demographic that values style and convenience.

**Challenges and Opportunities**

Despite its rapid growth, the Indian fashion retail sector faces several challenges. The market is highly fragmented, with a large number of unorganized players coexisting with organized retail chains. This fragmentation leads to inconsistencies in product quality and customer service, particularly in the unorganized segment. Additionally, the sector is highly competitive, with domestic brands competing with international players for market share. The entry of global fast fashion brands has intensified competition, putting pressure on domestic brands to innovate and differentiate themselves. The rising cost of real estate is another challenge, particularly for brick-and-mortar retailers operating in metropolitan cities. High rents and overhead costs can erode profit margins, making it difficult for retailers to sustain their operations. Moreover, the ongoing shift towards e-commerce poses a threat to traditional retail formats, with consumers increasingly preferring the convenience of online shopping. However, the sector also presents numerous opportunities. The growing affluence of the Indian middle class and the increasing penetration of internet services in rural areas offer significant potential for expansion. The adoption of digital technologies, including artificial intelligence, big data, and augmented reality, can enhance the customer experience and streamline operations. Moreover, the increasing demand for sustainable fashion presents an opportunity for brands to differentiate themselves by adopting eco-friendly practices and promoting ethical sourcing.

**3.1.13 Future Outlook**

The future of the Indian fashion retail sector looks promising, with several trends expected to shape its trajectory. The continued growth of e-commerce and the adoption of omnichannel retailing will be key drivers of the sector's expansion. As consumers become more tech-savvy, retailers will need to leverage technology to enhance the shopping experience, from personalized recommendations to virtual fitting rooms.

Sustainability will also play a crucial role in the future of fashion retail. As consumers become more environmentally conscious, there will be a growing demand for sustainable products and transparent supply chains. Brands that prioritize sustainability and ethical practices will likely gain a competitive edge in the market. Furthermore, the Indian government's push for local manufacturing and the "Make in India" initiative will boost the domestic fashion industry. The focus on developing textile parks, improving infrastructure, and providing incentives for manufacturing will create a conducive environment for the growth of the fashion retail sector.

**3.2 COMPANY PROFILE**

**Aditya Birla Fashion and Retail Limited (ABFRL)**

ABFRL is part of a leading Indian conglomerate, The Aditya Birla Group. With revenue of Rs. 12,418 Cr. and spanning a retail space of 10.8 million sq.ft. (as on March 31, 2023), Aditya Birla Fashion and Retail Limited (ABFRL) is India's first billion-dollar pure-play fashion powerhouse with an elegant bouquet of leading fashion brands and retail formats.

ABFRL emerged after the consolidation of the branded apparel businesses of Aditya Birla Group comprising ABNL's Madura Fashion division and ABNL's subsidiaries -Pantaloons Fashion and Retail (PFRL) and Madura Fashion & Lifestyle (MFL) in May 2015. Post the consolidation, PFRL was renamed Aditya Birla Fashion and Retail Ltd. ABFRL brings together the learnings and businesses of two renowned Indian fashion icons, Madura Fashion & Lifestyle and Pantaloons creating a synergistic core that will act as the nucleus of the future fashion businesses of the Aditya Birla Group.

As a fashion conglomerate, ABFRL has a strong network of 3,977 brand stores across the country. It is present across 33,535 multi-brand outlets and 6,723 points of sales in department stores across India as on March 31, 2023. It has a repertoire of leading brands such as Louis Philippe, Van Heusen, Allen Solly and Peter England established for over 25 years. Pantaloons is one of India's leading fashion retailers.

ABFRL's International Brands portfolio includes - The Collective, Amongst, India's largest multi-brand retailer of international brands and has long term exclusive partnerships with select brands such as Ralph Lauren, Hackett London, Simon Carter, Ted Baker, Fred Perry, Forever 21, American Eagle, Reebok and Galeries Lafayette.Van Heusen Innerwear, Athleisure and Active wear is establishing itself as India's most innovative and fashionable brand. The Company's foray into branded ethnic wear business includes brands such as Jaypore, Tasva & Marigold Lane. ABFRL has strategic partnerships with Designers 'Shantnu & Nikhil', 'Tarun Tahiliani', 'Sabyasachi' and 'House of Masaba'.

In addition, to cater to the needs of digitally native consumers, ABFRL is building a portfolio of Digital-first brands under its technology led ‘House of D2C Brands’ venture TMRW. TMRW is on a path to building a portfolio of Digital First brands in partnership with founders of emerging brands in the E-Commerce market. With a focus on Fashion & Lifestyle categories, TMRW is building a portfolio of the most loved consumer brands that tap into the significant growth potential in India and globally.

**3.2.1 Contact**

Aditya Birla Fashion and Retail Limited

Piramal Agastya Corporate Park,

Building 'A', 4th and 5th Floor,

Unit No. 401, 403, 501, 502,

L.B.S. Road, Kurla, Mumbai 400 070

**3.2.2 Our Vision**

To passionately satisfy Indian consumer needs in fashion, style and value, across wearing occasions in Apparel and Accessories through strong brands and high-quality consumer experience with the ultimate purpose of delivering superior value to all our stakeholders.

**3.2.3 Our Values**

* Seamlessness
* Passion
* Speed
* Commitment
* Integrity

**3.2.4 Our Philosophy**

The Aditya Birla Group is one of the pioneers in the field of corporate governance. As a part of the Group, ABFRL is committed to continuously adopt and adhere to the best governance practices, to achieve the goal of making the Company a value-driven organisation.

We feel proud to belong to a Group whose visionary founders laid the foundation stone for good governance long back and made it an integral principle of the business. Key element of your Company’s success includes adherence to the strong set of the Group values - Integrity, Commitment, Passion, Seamlessness and Speed. To succeed, we believe, requires highest standards of corporate behaviour towards everyone we work with, the communities we touch and the environment on which we have an impact.

In line with the above philosophy, your Company continuously endeavours for excellence and focuses on enhancement of long-term stakeholders’ value through adoption of and adherence with the best governance practices, in true spirit always

**3.2.5 Milestones**

* 'Madura Garments' established (1988)
* 'Louis Philippe' launched in India (1989)
* 'Van Heusen' launched in India (1990)
* ‘Allen Solly' launched in India (1993)
* 'Peter England' launched in India (1997)
* Aditya Birla Group acquires 'Madura Garments' (1999)
* Consolidation of 'Textiles and Apparel business' (2000)
* 'Planet Fashion' launched (2001)
* 'Allen Solly Woman' launched (2001)
* 'Van Heusen Woman' launched (2006)
* 'V Dot' from Van Heusen launched (2006)
* Peter England launches sub brand 'Elite' in the Premium segment (2007)
* Louis Philippe launches sub brand 'LP' in Casual Wear segment (2007)
* Louis Philippe launches sub brand 'Luxury' in the luxury segment (2008)
* 'The Collective' launched (2008)
* 'Louis Philippe Shoes' launched (2010)
* Madura Garments re-christened as 'Madura Fashion & Lifestyle' (2010)
* Van Heusen launches a sub brand called 'VH Sport' (2011)
* Louis Philippe launches 'LP Jeans' (2011)
* Planet Fashion launched 'Planet Fashion Grande' (2011)
* Madura Fashion & Lifestyle enters into a joint venture with 'Hackett London' (2012)
* Peter England forays into non apparel: launches 'Peter England bags' (2012)
* 'Louis Philippe bags' launched (2012)
* Allen Solly introduces 'Crossover style shoes for men' (2012)
* Aditya Birla Group acquires 'Pantaloons' (2013)
* Pantaloons Voted 'India's No. 1 Trusted Apparel Retailer for 2013' in the Brand Equity Survey of The Economic Times (2013)
* Van Heusen launches 'MY FIT' (2014)
* Van Heusen unveils its first flagship experience 'Van Heusen Style Studio' (2015)
* ABFRL's Planet Fashion Unveils a New Brand Identity (2015)
* Consolidation of Branded Apparel Businesses of Madura F&L and Pantaloons: 'Aditya Birla Fashion and Retail Limited' (' ABFRL') (2015)
* ABFRL strikes a deal with global luxury brand 'Ted Baker' (2016)
* ABFRL forays into men's Innerwear & Athleisure category (2016)
* 'Pantaloons Woman' launch (2016)
* 'Pantaloons Kids' launch (2016)
* ABFRL signs MOU With 'Forever 21' for India Business (2016)
* ABFRL signs deal British Designer Wear Brand ‘Simon Carter’ (2016)
* ABFRL entered into a strategic alliance with American Eagle Outfitters, Inc. (2017)
* Aditya Birla Fashion and Retail Ltd Brings Fred Perry to India (2018)
* Style Up, the family store by Aditya Birla Fashion and Retail Ltd. is launched across tier III cities to offer smart fashion at affordable prices! (2018)
* Van Heusen Innerwear and Athleisure business announced its foray into the Women’s Innerwear & Athleisure market. (2018)
* ABFRL entered into a Store License and Distribution Agreement with Ralph Lauren Asia Pacific Limited (“RLAPL”), which offers apparel and accessories for both men and women under the brand name “Polo Ralph Lauren” and “Ralph Lauren” (2018)
* Acquisition of 51% stake in M/s Finesse International Design Private Limited (“Finesse”), a company primarily engaged in the business of bespoke occasion and ceremonial contemporary apparel for men and women under the brand name ‘Shantanu & Nikhil’. (2019)
* Acquisition of Jaypore, an Indian online and offline retailer, which offers curated collections of handcrafted apparel, jewellery, home textiles and accents, based on craft forms from all over India. (2019)
* Peter England sets foot in the grooming segment with the launch of its new deodorant range (2020).
* ABFRL acquired additional 7.69% stake in Finesse to become 58.69% stakeholders (2021)
* Aditya Birla Fashion and Retail Announces Strategic Partnership with Designer “Tarun Tahiliani” to enter Men’s Premium Ethnicwear (2021)
* Acquisition of 51% in Sabyasachi Couture (2021)
* ABFRL enters into a strategic partnership with Galeries Lafayette, renowned globally for its flagship location at Boulevard Haussmann in Paris. (2022)
* ABFRL announced signing of a long-term licensing agreement, which grants ABFRL exclusive rights to distribute and sell Reebok products through wholesale, e-commerce and Reebok branded retail stores in India and other ASEAN countries. (2022)
* Acquisition of 52.4% in ‘House of Masaba Lifestyle Private Limited’ (2022)
* Acquisition of 51% controlling stake in TCNS Clothing (2023)

**3.2.6 Our Businesses**

* **Lifestyle Brands**

ABFRL's Lifestyle Brands is home to some of India's most loved brands - Louis Philippe, Van Heusen, Allen Solly and Simon Carter – catering to India’s Premium Consumers. With their signature styles, high quality products and differentiated instore experience, these brands have garnered immense customer loyalty and recall.

* **Pantaloons**

Pantaloons, a division of Aditya Birla Fashion and Retail Ltd. is a playful and youthful fashion destination with 430 stores, spread across 195 cities and towns. As a playground for fashion, Pantaloons offers a wide variety of styles across categories and occasions. The brand speaks to the ever-evolving millennial customer of today who is confident and expressive. Be it through the physical retail experience or online, the Pantaloons experience is exciting, friendly, and uplifting. With a vibrant, expressive, and fun-loving approach to style, the brand seeks to enable the customer to be their fashionable best.

* **Youth Fashion**

Youth Fashion brings fresh take on fashion for Young India. Forever 21 in India offers clothes and accessories for Millennials and Gen Z girls and boys, and all those who feel millennial age at heart. American Eagle is an inclusive, optimistic and empowering brand that celebrates the individuality of its customers.

* **Other Businesses**

We cater to the contemporary customer who is aware of international trends and traditional styles. Our branded ethnic wear business includes brands such as 'Jay pore', ‘Tasca’ and ‘Marigold Lane’. ABFRL has strategic partnerships with designers 'Shantanu & Nikhil', 'Tarun Tahiliani', 'Sabyasachi' and ‘House of Masaba’, representing Indian decadence and modern grandeur. 'Van Heusen's Innerwear, Athleisure and Active wear' is establishing itself in India. Our international business includes, 'The Collective' - India's largest international multi-brand retailer, select brands such as Ralph Lauren, Hackett London, Ted Baker, Fred Perry, forever 21, American Eagle and Reebok.

**3.2.7 Brands**

















**3.2.8 Sustainability**

Since 2021, GIZ India and ABFRL partnered under the Develops program to embark on a transformative journey towards Circular Economy in India's textile and apparel industry. In line with the principles of this program, this Baseline Assessment Report offers an overview of the textile circularity landscape as of 2022-23, capturing insights from stakeholders across the nation.

This industry-first initiative aims to promote circularity in the Indian textile and apparel industry, with a key objective of identifying the current state of circularity in India. The central idea is to make significant strides in reducing waste, controlling pollution, and fostering responsible production and consumption patterns within the textile and apparel sector, thereby making a positiveimpact on Sustainable Development Goal 12.

**3.2.9 Journey with Re Earth**



ABFRL embarked on its sustainability journey ‘ReEarth – For Our Tomorrow’ in the financial year 2012-2013 with focus on operations, seeking to restore the balance between natural and business ecosystems.

It witnessed significant achievements across the defined Mission 2020 targets and the financial year 2020-2021 marks a successful transition to Sustainability 2.0 from 'Process-led to Product-led', with a focus on product design and development, customer centricity and supply chain.

The five-year roadmap (2021 – 2025), aims to achieve ambitious sustainability targets and business goals while balancing risks and opportunities for all relevant ESG initiatives. This transition shall embed sustainability across the whole spectrum of design development, supply chain and consumer end of use for product life cycle.

* **Restoring Ecosystems**

We seek to restore the balance between natural and business ecosystems, with an aim to create a business that thrives in a world with rising resource constraints, move beyond reducing and towards restoring, and ultimately redesigning the way we operate.

* **Recognizing Trends**

We continuously monitor the pulse of the market to stay ahead of the curve in the fast-changing fashion industry. We are in constant conversation with those who are shaping the market directly through their choices, indirectly through their inventions along with policymakers and expert trend-spotters**.**

* **Corporate Social Responsibility**

Mrs. Rajashree Birla is an exemplar in community initiatives and rural development. She spearheads the Aditya Birla Centre for Community Initiatives and Rural Development, the Group’s apex body responsible for development projects.

Mrs. Birla oversees the Group’s social and welfare driven work across its companies.

Mrs. Birla is the Chairperson of the FICCI – Aditya Birla CSR Centre for Excellence, Habitat for Humanity (India) and is on the Board of the Asia Pacific Committee as well as Habitat’s Global Committee.

* **ABFRL's CSR Mission**

“Weaving benefits for our future”

To make a meaningful impact on the lives of individuals in communities around us by developing model villages through our focus on Education, Health & Sanitation, Water & Watershed, Digitalization and Skill Development. To facilitate a culture of caring in the organization through employee volunteering**.**

* **Focus Areas**

Education: Improving educational outcomes by providing access to quality education through a variety of means, including Academic Support Centres in villages, at Municipal and other schools supported by us, teachers' training, setting up libraries, providing educational aid and scholarships, special coaching classes for rural girls and continuing education for dropouts.

Health & Sanitation: Ensuring healthy communities in underserved villages through eye camps, school health camps, dental camps, specialized health camps such as cancer screening and awareness camps, and pulse polio immunization drive. Providing dignity of life by facilitating access to water, sanitation and hygiene through our partners and government organizations.

Sustainable Livelihood: Empowering people and providing them pathways for sustainable livelihoods through coaching at skill training centres as a part of the Kaushalya initiative, and training youth in career readiness.

Water & watershed: Safeguarding water sources for communities through rainwater harvesting, borewell recharge pits and by recharging water bodies in **water stressed** villages. Providing safe drinking water for villages by installing water purifying plants, called Water ATMs.

Digitalizing: Digitalizing villages to mainstream its residents to modern ways of life, through Village Information Centres and SMART Classrooms. Once functional, these facilities will provide access to E-health, E-education, E-banking and E-employment among other digital services.

**Table No. 4.1**

**AGE WISE CLASSIFICATION**

|  |  |  |
| --- | --- | --- |
|  **PARTICULARS** | **NO OF RESPONDENTS** |  **PERCENTAGE** |
|  20-30  |  28 |  23.33 |
|  30-40 |  55 |  45.83 |
|  40-50 |  27 |  22.51 |
|  Above 50 |  10 |  8.33 |
|  **Total**  |  **120** |  **100** |

Source: Primary Data

**Chart No. 4.1**

**AGE WISE CLASSIFICATION**

 Source: Primary Data

**INTERPRETATION**

The above fig 4.2 shows that 23.3 per cent of the respondents lies between the age group of 20-30 years, 45.83per cent of respondents lies between 31-40 years, 22.51 per cent of respondent lies between 40-50 years and 8.33 per cent are of above 50 categories. Most of the respondents are in the age group of 30-40 years.

 **Table No: 4.2**

**GENDER WISE CLASSIFICATION**

|  |  |  |
| --- | --- | --- |
|  **PARTICULARS** |  **NO. OF RESPONDENTS** |  **PERCENTAGE** |
|  **Male**  |  **42** |  **35** |
|  **Female**  |  **78** |  **65** |
|  **Total**  |  **120** |  **100** |

 **Source: Primary Data**

**Chart No. 4.2**

**GENDER WISE CLASSIFACTION**

 Source: Primary Data

**INTERPRETATION**

Table 4.2 shows that 35 per cent of respondents are male, and 65 per cent of the respondents are female.

**Table No: 4.3**

 **EMPLOYEES CURRENT ROLE IN THE COMPANY**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Production worker | 48 | 40.00 |
| Supervisor | 39 | 32**.**50 |
| Manager | 30 | 25.00 |
| Quality control staff | 3 | 2.50 |
| Total | 100 | 100 |

Source: Primary Data

**Chart No.4.3**

 **EMPLOYEES CURRENT ROLE IN THE COMPANY**

**INTERPRETATION**

This figure shows that 40 per cent of the respondents are production workers.32.50 per cent of the respondents are supervisors, 25 per cent of the respondents are managers, and 2.50 per cent of the respondents are quality control staffs. The largest group consists of production workers, making up 40 per cent of the workforce.

**Table No. 4.4**

**EMPLOYEES WORK EXPERIENCE**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Less than 1 year | 20 | 16.67 |
| 2-3 years | 25 | 20.83 |
| 3-5 years | 48 | 40.00 |
| Above 5 years | 27 | 22.50 |
| Total | 120 | 100 |

Source: primary Data

**Chart No.4.4**

**EMPLOYEES WORK EXPERIENCE**

**INTERPRETATION**

Above the table and graph shows that 40 per cent of the respondents have 3 to 5 years of working experience. 22.50 per cent of respondents have above 5 years of working experience and 20.83 per cent of them have 2 to 3 years work experience. 16.67 per cent of them have less than 1 year work experience. The majority of the employees are worked in 3-5 years in the company.

**Table No. 4.5**

**EMPLOYEES QUALIFICATIONS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| High school | 65 | 54.17 |
| Diploma | 36 | 30.00 |
| Bachelor’s degree | 7 | 5.83 |
| Master’s degree | 12 | 10.00 |
| Total | 120 | 100 |

Source: Primary Data

 **Chart No. 4.5**

**EMPLOYEES QUALIFICATIONS**

****

**INTERPRETATION**

Table No. 4.5 shows that 54.17 per cent of the respondents are qualified at the high school level. 30 per cent of the respondents are diploma qualifications. 5.83 per cent of the respondents are qualified with bachelor’s degrees and 10 per cent of the respondents are qualified with master’s degree. Most of the employees are qualified with the high school level education

 **Table No. 4.6**

**RATE THE OVERALL EFFICIENCY OF THE CURRENT PRODUCTION PROCESS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONSES** | **PERCENTAGE** |
| Very efficiency | 36 | 30.00 |
| Efficiency | 58 | 48.33 |
| Neutral | 15 | 12.50 |
| Inefficiency | 10 | 8.33 |
| Very inefficiency | 1 | 0.83 |
| **TOTAL** | 120 | 100 |

Source: Primary Data

**Chart No. 4.6**

**RATE THE OVERALL EFFICIENCY OF THE CURRENT PRODUCTION PROCESS**

 **INTERPRETATION**

Above graph shows that 48.33 per cent of the respondents’ rated the overall efficient of the production process as efficient. 30 per cent of the respondent’s rated the overall efficiency of the production process as very efficient and 12.50 per cent of respondent’s rated the overall efficiency of the production process as neutral. 8.33 per cent of the respondent’s rated the overall efficiency of the production process as inefficiency and 0.83 per cent rate as very inefficiency of the production process. 48 33 per cent of the respondents finds the production process as efficient.

**Table 4.7**

**ABSENCE OF STOCK LEVEL WHICH AFFECT THE DAY-TO-DAY OPERATION OF THE COMPANY**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONSES** | **PERCENTAGE** |
| Never | 17 | 14.17 |
| Rarely | 5 | 4.17 |
| Sometimes | 23 | 19.17 |
| Often | 30 | 25.00 |
| Always | 45 | 37.50 |
| **TOTAL** | 120 | 100 |

Source: Primary Data

**Chart No. 4.7**

**ABSENCE OF STOCK LEVEL WHICH AFFECT THE DAY-TO DAY OPERATION OF THE COMPANY**

**INTERPRETATION**

Above table and figure shows that the 37.50 per cent of the respondents opined that absence of stock for the day-to-day operations always affect production of the company. 25 per cent of the respondents said it affect often and 19.17 per cent of the respondents said that absence of stock affect sometimes the production of the company. 19.17 per cent of respondent’s said sometimes, 14.17 per cent of the respondents said never and 4.17 per cent said that absence of the stock for the day-to-day operations rarely affect production of the company.

**Table No. 4.8**

**MOST COMMON REASON FOR PRODUCTION SLOWDOWN**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDANCE** | **PERCENTAGE** |
| Machine breakdown | 36 | 30 |
| Shortage of raw materials | 30 | 25 |
| Workforce inefficiency | 24 | 20 |
| Planning issues | 18 | 15 |
| Others | 12 | 10 |
| **TOTAL** | **120** | **100** |

Source: Primary Data

**Chart No. 4.8**

**MOST COMMON REASON FOR PRODUCTION SLOWDOWN PROCESS**

**INTERPRETATION**

The above table and figure shows that 30 per cent of respondents opined that reason for production slowdown is machine breakdown.25 per cent of respondents opined that reason for production slowdown is shortage of raw materials. 20 per cent of respondents opined that reason for production slowdown is workforce inefficiency.15 per cent of respondents opined that reason for production slowdown is planning issues.10 per cent of respondents opined that reason for production slowdown is miscellaneous. From this, we can conclude that majority of the responded that reason for production slowdown is machine breakdown.

 **TABLE NO.4.9**

 **PRODUCTION TARGETS MET ON A REGULAR BASIS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Always Met | 24 | 20 |
| often met | 40 | 33.3 |
| Occasionally met | 30 | 25 |
| Rarely met | 20 | 16.7 |
| Never met | 6 | 5 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.9**

 **PRODUCTION TARGETS MET ON A REGULAR BASIS**

**INTERPRETATION**

The table shows that 33.3 per cent of the respondents opined that production targets often met on a regular basis. 20 per cent of the respondents opined that production targets always met on a regular basis. 25 per cent of respondents opined that production targets occasionally met on a regular basis.16.7 per cent of the respondents opined that production targets rarely met on a regular basis. 5 percent of respondents opined that production targets never met on a regular basis. Majority of the respondents opined that production targets met on a regular basis.

**TABLE NO. 4.10**

**RATE THE COMMUNICATION BETWEEN PRODUCTION TEAMS AND MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDANTS** | **PERCENTAGE** |
| Excellent | 20 | 16.7 |
| Good | 40 | 33.3 |
| Average | 30 | 25 |
| Poor | 20 | 16.7 |
| Very poor | 10 | 8.3 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No 4.10**

**RATE THE COMMUNICATION BETWEEN PRODUCTION TEAMS AND MANAGEMENT**

**INTERPRETATION**

 The figure shows that 33.3 per cent of respondents rated communication between production teams and management as good. 16.7 per cent of the respondent s rate it’s as excellent. 25 per cent of the respondent rated communication between production team and management as average. 16.7 per cent of the respondent rated communication between production team and management as poor. 8.3 per cent of the respondents rated very poor. Majority of respondents rated communication between production team and management as good.

**TABLE NO.4.11**

**FACTORS THAT MOST COMMONLY AFFECTS PRODUCTION DELAYS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDANTS** | **PERCENTAGE** |
| Machine breakdowns  | 35 | 29.2 |
| Worker’s absenteeism | 20 | 16.7 |
| Raw material non availability | 30 | 25 |
| Poor scheduling | 25 | 20.8 |
| Quality control issues | 10 | 8.3 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.11**

**FACTORS THAT MOST COMMONLY AFFECTS PRODUCTION DELAYS**

**INTERPRETATION**

 The table shows that 29.2 per cent of the respondents opined that most commonly affects production delays is due to machine breakdowns. 20.8 per cent of the respondents opined that most commonly affects production delays is due to poor scheduling. 25 per cent of the respondents opined that production delays are due to raw material non-availability.16.7 per cent of the respondents opined that production delay is due to workers absenteeism. 8.3 per cent of the respondents opined that most commonly affects production delays is because of quality control issues. Most of the respondents are opined that commonly affects production delays is due to machine breakdowns.

**TABLE NO. 4.12**

**PREDICTABILITY OF PRODUCTION TIMELINES**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDANTS** | **PERCENTAGE** |
| Very predictable | 15 | 12.5 |
| Mostly predictable | 40 | 33.3 |
| Sometimes predictable | 30 | 25 |
| Rarely predictable | 20 | 16.7 |
| Unpredictable | 15 | 12.5 |
| **TOTAL** | **120** | **100** |

Source: Primary Data

**Chart No. 4.12**

**PREDICTABILITY OF PRODUCTION TIMELINES**

**INTERPRETATION**

In the above table shows that 33.3 per cent of the respondents find production timelines mostly predictable, while 25 per cent respondents opined that production timelines is sometimes predictable.16.7 per cent of the respondent opined that production timelines is rarely predictable and Only 12. 5 percent of the respondent opined that production timelines is unpredictable.

**TABLE NO 4.13**

**CAUSES OF VARIATIONS IN PRODUCTION OUTPUT**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDANTS** | **PERCENTAGE** |
| Equipment issues | 25 | 20.8 |
| Workforce issues | 20 | 16.7 |
| Supplier delays | 30 | 25 |
| Challenging customer demand | 35 | 29.2 |
| Operational inefficiency | 10 | 8.3 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.13**

**CAUSES OF VARIATIONS IN PRODUCTION OUTPUT THE MOST**

**INTERPRETATION**

 This figure shows that 29.2 per cent of the respondents rated that challenging customer demand as the most significant causes of variations in production output. 20.8 per cent of respondents rated equipment issues as the most significant causes of variations in production output. 25 per cent of the respondents rated supplier delays as the most significant causes of variations in production output. 16.7 per cent of the respondents rated workforce issues as the most significant cause of variations in production output. 8.3 per cent of respondents rated operational inefficiency as the most significant causes of variations in production output.

**TABLE NO.4.14**

 **UNFORESEEN FACTORS AFFECTING PRODUCTION TIMELINES**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDANCES** | **PERCENTAGE** |
| Never | 5 | 4.2 |
| Rarely | 20 | 16.7 |
| Occasionally | 40 | 33.3 |
| Often | 30 | 25 |
| Always | 25 | 20.8 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.14**

 **UNFORESEEN FACTORS AFFECTING PRODUCTION TIMELINES**

**INTERPRETATION**

This figure shows that 33.3 per cent of the respondants experience unforeseen factors affect production timelines occassionally. 20.8 per cent of the respondants experience unforeseen factors always affect production timelines . 25 per cent of of the respondants opined that unforeseen factors often affect production timeliness. 16.7 per cent of the respondants mentioned that unforeseen factors rarely affect production timelines . 4.2 per cent of the respondants opined that unforeseen factors never affects production timelines .

**TABLE NO 4.15**

 **EFFECTIVENESS OF PRODUCTION SCHEDULE MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| **PARTICULAR** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very effectively | 20 | 16.7 |
| Effectively | 40 | 33.3 |
| Moderately | 30 | 25 |
| Ineffectively | 20 | 16.7 |
| Not very effectively | 10 | 8.3 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.15**

 **EFFECTIVENESS OF PRODUCTION SCHEDULE MANAGEMENT**

**INTERPRETATION**

In this figure shows that 33.3 percent of the respondents believe that it is managed effectively. 16.7 percent of the respondents believe that production schedules managed very effectively. Another 16.7 per cent respondents opined that production schedules managed ineffectively. 25 per cent think that it is managed only moderately and 8.3 per cent mentioned that it is not very effective.

**TABLLE NO.4.16**

**RATING OF PRODUCT QUALITY BASED ON CURRENT PRODUCTION STRATEGIES**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDANCES** | **PERCENTAGE** |
| Excellent | 30 | 25 |
| Good | 50 | 41.7 |
| Average  | 20 | 16.7 |
| Below Average | 15 | 12.5 |
| Poor | 5 | 4.2 |
| **TOTAL** | **120** | **100** |

**Source: primary data**

**Chart no. 4.16**

**RATING OF PRODUCT QUALITY BASED ON CURRENT PRODUCTION STRATEGIES**

**INTERPRETATION**

The table and figure show that 41.7 per cent of the respondents rated that production strategies for maintain product quality is good. 25 per cent of respondents rated as excellent,16.7 per cent of respondents rated as average and 4.2 per cent of respondents rated as poor. Majority of respondents rated that product quality under current production strategies is good.

**TABLE NO.4.17**

 **IMPACT OF VARIOUS FACTORS ON THE PRODUCTION QUALITY**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDANCES** | **PERCENTAGE** |
| Production techniques | 25 | 20.8 |
| Raw material quality | 40 | 33.3 |
| Workforce skill level | 20 | 16.7 |
| Equipment’s quality | 15 | 12.5 |
| Management’s supervision | 20 | 16.7 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no.4.17**

 **IMPACT OF VARIOUS FACTORS ON THE PRODUCTION QUALITY**

**INTERPRETATION**

The table and figure shows that 33.3 per cent of the respondents believes that greatest impact on the production quality is due to raw material quality. 20.8 per cent of the respondents believe that greatest impact on the production quality is due to production techniques. 16.7 per cent of the respondents believes that greatest impact on the production quality is due to workforce skill level. 16.7 per cent of the respondents believes that greatest impact on the production quality is due to managements supervision. 12.5 per cent of the respondents believes that greatest impact on the production quality is due to equipment quality. Majority of the respondents believe that greatest impact on the production quality is due to raw material quality.

**TABLE NO.4 18**

**FREQUENCY OF QUALITY CHECKS DURING PRODUCTION**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very frequently | 40 | 33.3 |
| Frequently | 30 | 25 |
| Occasionally | 20 | 16.7 |
| Rarely | 15 | 12.5 |
| Never | 15 | 12.5 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no. 4.18**

 **FREQUENCY OF QUALITY CHECKS DURING PRODUCTION**

**INTERPRETATION**

The table and figure shows that 33.3 per cent of the respondents stated that quality checks are conducted very frequently during production. 25 per cent of the respondents stated that quality checks are conducted frequently during production.16.7 per cent of the respondents stated that quality checks are conducted occasionally during production. 12.5 per cent of the respondents stated that quality checks are conducted rarely during production. 12.5 per cent of the respondents stated that quality checks are conducted never during production. Majority of the respondents stated that quality checks are conducted very frequently during production.

**TABLE NO.4.19**

 **EFFECTIVENESS OF QUALITY CONTROL MEASURES**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very effective | 30 | 25 |
| Effective | 40 | 33.3 |
| Neutral | 20 | 16.7 |
| Ineffective | 15 | 12.5 |
| Very ineffective | 15 | 12.5 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no.4.19**

 **EFFECTIVENESS OF QUALITY CONTROL MEASURES**

**INTERPRETATION**

The table and figure shows that 33.3 percent of the respondents opined that effectiveness of quality control measures is effective. 25 percent of the respondents opined that effectiveness of quality control measures is very effective. 16.7 percent of the respondents opined that effectiveness of quality control measures is neutral. 12.5 per cent of the respondents opined that quality control measures is ineffective.12.5 per cent of respondents that effectiveness of quality control measures is very ineffective. Majority of the respondents opined that effectiveness of quality control measures is effective.

**TABLE NO 4.20**

**EFFECTIVENESS OF COST CONTROL DURING PRODUCTION**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very well | 25 | 20.8 |
| Well | 40 | 33.3 |
| Neutral | 20 | 16.7 |
| Poorly | 15 | 12.5 |
| Very poorly | 20 | 16.7 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No.4.20**

**EFFECTIVENESS OF COST CONTROL DURING PRODUCTION**

**INTERPRETATION**

The table and figure shows that 33.3 percent of the respondents opined that effectiveness of cost control during production is well. 20.8 percent of the respondents opined that effectiveness of cost control during production is very well.16.7 percent of the respondents opined that effectiveness of cost control during production is neutral. 16.7 percent of the respondents opined that effectiveness of cost control during production is very poorly.12.5 percent of the respondents opined that effectiveness of cost control during production is poorly. Majority of the respondents opined that effectiveness of cost control during production is well.

**TABLE NO. 4.21**

 **FACTORS CONTRIBUTING MOST TO PRODUCTION COST OVERRUNS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Labour costs | 30 | 25 |
| Raw materials costs | 40 | 33.3 |
| Machine maintenance | 15 | 12.5 |
| Energy consumption | 10 | 8.3 |
| Inefficient process | 25 | 20.8 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no 4.21**

**AREA CONTRIBUTING MOST TO PRODUCTION COST OVERRUNS**

**INTERPRETATION**

The table and figure shows that 33.3 percent of the respondents opined that most of the factors contributing to production cost overruns is raw material costs. 25 percent of the respondents opined that most of the factors contributing to production cost overruns is labour costs. 20.8 percent of the respondents opined that most of the factors contributing to production cost overruns is inefficient process. 12.5 percent of respondents opined that most of the factors contributing to production cost overruns is machine maintenance. 8.3 percent of respondents opined that most of the factors contributing to production cost overruns in energy consumption. Majority of respondents opined that factors contributing to production cost overruns is due to raw material costs.

**TABLE NO. 4.22**

**RATE THE EFFICIENCY OF RESOURCE UTILIZATION IN THE PRODUCTON PROCESS**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very efficient | 20 | 16.7 |
| Efficient | 40 | 33.3 |
| Neutral | 25 | 20.8 |
| Inefficient | 20 | 16.7 |
| Very inefficient | 15 | 12.5 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.22**

**RATE THE EFFICIENCY OF RESOURCE UTILIZATION IN THE PRODUCTON PROCESS**

**INTERPRETATION**

The table and figure shows that 33.3 per cent of the respondents rated that the efficiency of resource utilisation in the production process is efficient. 20.8 per cent of the respondents rated the efficiency of resource utilization in the production process is neutral.16.7 per cent of the respondents rated the efficiency of resource utilization in the production process is very efficient. 16.7 per cent of the respondents rated the efficiency of resource utilization in the production process is inefficient. 12.5 per cent of the respondents rated the efficiency of resource utilization in the production process is very inefficient. Majority of the respondents rated efficiency of resource utilization in the production process is efficient

**TABLE NO. 4.23**

**IMPACT OF BUDGET CONSTRAINTS ON PRODUCTION PERFORMANCE**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Never | 5 | 4.2 |
| Rarely | 15 | 12.5 |
| Occasionally | 30 | 25 |
| Often | 40 | 33.3 |
| Always | 30 | 25 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no. 4.23**

**IMPACT OF BUDGET CONSTRAINTS ON PRODUCTION PERFROMANCE**

**INTERPRETATION**

The table and figure shows that 33.3 per cent of the respondents opined that budget constraints on production performance is often. 25 per cent of respondents opined that budget constraints on production performance are always. 25 per cent of the respondents opined that budget constraints on production performance are occasional. 12.5 per cent of the respondents opined that budget constraints on production performance are rare. 4.2 per cent of the respondents opined that budget constraints never affects production performance The majority of the respondents opined that budget constraints often effects on production performance

**TABLE NO. 4.24**

 **IMPORTANT OF TRAINING AND SKILL DEVELOPMENT IN IMPROVING PRODUCTION PERFORMANCE**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very important | 60 | 50 |
| Important | 40 | 33.3 |
| Neutral | 10 | 8.3 |
| Not very important | 5 | 4.2 |
| Not important at all | 5 | 4.2 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no. 4.24**

 **IMPORTANT OF TRAINING AND SKILL DEVELOPMENT IN IMPROVING PRODUCTION PERFORMANCE**

**INTERPRETATION**

The table and figure shows that 50 per cent of the respondents opined that training and skill development in improving the production performance is very important. 33.3 per cent of the respondents opined that training and skill development in improving the production performance is important. 8.3 per cent of the respondents opined that training and skill development in improving the production performance is neutral.4.2 per cent of the respondents opined that training and skill development in improving the production performance is not very important. 4.2 per cent of the respondents opined that training and skill development in improving the production performance is not important at all. The majority of the respondents opined that training and skill development in improving the production performance is very important.

**TABLE NO. 4.25**

 **ASPECT THAT BENEFITS MOST FROM AUTOMATION**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Production scheduling | 25 | 20.8 |
| Quality control | 30 | 25 |
| Raw material handling | 20 | 16.7 |
| Machine operation | 35 | 29.2 |
| Inventory management | 10 | 8.3 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no. 4.25**

 **ASPECT THAT BENEFITS MOST FROM AUTOMATION**

**INTERPRETATION**

The table and figure shows that 29.2 per cent of the respondents believe machine operation is the aspect that benefits most from automation. 25 per cent of the respondents believe quality control is the aspect that most from automation. 20.8 per cent of the respondents believe production scheduling is the aspect that most from automation. 16.7 per cent of the respondents believe that raw material handling is the aspect that most from automation.8.3 per cent of the respondents believe that inventory management is the aspect that most from automation. Majority of the respondents believe that machine operation is the aspect that benefits most from automation.

**TABLE NO 4.26**

**ADAPTABILITY OF CURRENT PRODUCTION PROCESS TO CHANGES IN DEMAND**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Very well | 15 | 12.5 |
| Well | 30 | 25 |
| Neutral | 25 | 20.8 |
| Poorly | 30 | 25 |
| Very poorly | 20 | 16.7 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart no. 4.26**

**ADAPTABILITY OF CURRENT PRODUCTION PROCESS TO CHANGES IN DEMAND**

**INTERPRETATION**

This table and figure shows that 25 per cent of the respondents rated the adaptability of the current production process to changes in demand as poor. 25 per cent of the respondents rated the adaptability of the current production process to changes in demand as well. 20.8 per cent of the respondents rated the adaptability of the current production process to changes in demand as neutral.16.7 per cent of the respondents rated the adaptability of the current production process to changes in demand as very poor. 12.5 per cent of the respondents rated the adaptability of the current production process to changes in demand as very well. Majority of the respondents rated the adaptability of the current production process to changes in demand as poor.

**TABLE NO. 4.27**

**BIGGEST CHALLENGE IN OPTIMIZING PRODUCTION PERFORMANCE**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO OF RESPONDENTS** | **PERCENTAGE** |
| Workforce limitations | 20 | 16.7 |
| Equipment issues | 25 | 20.8 |
| Supply chain inefficiencies | 30 | 25 |
| High production costs | 20 | 16.7 |
| Inefficient processes | 25 | 20.8 |
| **TOTAL** | **120** | **100** |

Source: primary data

**Chart No. 4.27**

**BIGGEST CHALLENGE IN OPTIMIZING PRODUCTION PERFORMANCE**

**INTERPRETATION**

This figure shows 25 per cent of the respondents opined that the biggest challenge in optimizing production performance is inefficient supply chain. 20.8 per cent of the respondents opined that the biggest challenge in optimizing production performance is workforce limitations. 20.8 per cent of the respondents opined that the biggest challenge in optimizing production performance is inefficient processes. 16.7 percent of respondents opined that the biggest challenge optimizing production performance is Work force limitation.16.7 percent of respondents opined that biggest challenge optimizing production performance is high production cost. Majority of the respondents opined that the biggest challenge in optimizing production performance is inefficient supply chain.

**CHI-SQUARE TEST-I**

Chi-square is the sum of squared difference between Observed(O) and Expected(E) data (or the deviation, d) by the expected data in all possible categories

Testing relationship between work experience of an employers and importance in training and skill development for improving production performance.

H0: There is no significant associated with the work experience and importance in training and skill development for improving production performance

H1: There is a significant associated with the work experience and importance in training and skill development for improving production performance.

Chi-square test $x^{2}=\frac{\sum\_{}^{}\left(0-E\right)2}{E}$

O= Observed value

E= Expected value

Observed value

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **<1** | **2-3** | **3-5** | **>5** | **TOTAL** |
| **Very important** | 10 | 12 | 24 | 14 | **60** |
| **Important** | 6 | 9 | 16 | 9 | **40** |
| **Neutral** | 2 | 2 | 4 | 2 | **10** |
| **Not important** | 1 | 1 | 2 | 1 | **5** |
| **Not important at all** | 1 | 1 | 2 | 1 | **5** |
| **TOTAL** | **20** | **25** | **48** | **27** | **120** |

Expected value

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **<1** | **2-3** | **3-5** | **>5** |
| **Very important** | 10 | 12.5 | 24 | 13.5 |
| **Important** | 6.66 | 8.33 | 16 | 9 |
| **Neutral** | 1.66 | 2.083 | 4 | 2.25 |
| **Not important** | 0.833 | 1.041 | 2 | 1.125 |
| **Not important at all** | 0.833 | 1.041 | 2 | 1.125 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| O | E | O-E | O-E | (O-E) |
| 10 | 10 | 0 | 0 | 0 |
| 6 | 6.66 | -0.66 | 0.435 | 0.065 |
| 2 | 1.6 | 0.34 | 0.115 | 0.069 |
| 1 | 0.833 | 0.167 | 0.027 | 0.032 |
| 1 | 0.833 | 0.167 | 0.027 | 0.032 |
| 12 | 12.5 | -0.5 | 0.25 | 0.02 |
| 9 | 8.33 | 0.67 | 0.448 | 0.053 |
| 2 | 2.083 | -0.083 | 0.006 | 0.002 |
| 1 | 1.041 | -0.041 | 0.001 | 0.0009 |
| 1 | 1.041 | -0.041 | 0.001 | 0.0009 |
| 24 | 24 | 0 | 0 | 0 |
| 16 | 16 | 0 | 0 | 0 |
| 4 | 4 | 0 | 0 | 0 |
| 2 | 2 | 0 | 0 | 0 |
| 2 | 2 | 0 | 0 | 0 |
| 14 | 13.5 | 0.5 | 0.25 | 0.018 |
| 9 | 9 | 0 | 0 | 0 |
| 2 | 2.25 | -0.25 | 0.0625 | 0.027 |
| 1 | 1.125 | -0.125 | 0.015 | 0.013 |
| 1 | 1.125 | -0.125 | 0.015 | 0.013 |

$∑ \frac{(O-E)^{2}}{E}$ **= 1.28**

Significant level = 0.05 (5%)

Degree of freedom = (column-1) (Row-1)

 = (5-1) (4-1)

 = 4\*3

 = 12

Table value = 21.026

**INTERPRETATION**

Table value is greater than the calculated value hence null hypothesis (H0) is accepted.

There is no significant association with work experience of an employers and importance in training and development for improving production performance.

**CHI-SQUARE TEST - 2**

Testing the relationship between gender and most common reason for production slowdown.

H0: There is no significant association with gender and most common reason for production slowdown.

H1: There is a significant association with gender and most common reason for production slowdown.

Chi-square test $x^{2}=\frac{\sum\_{}^{}\left(0-E\right)2}{E}$

O= Observed value

E=Expected value

**Observed value**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Male** | **Female** | **Total** |
| **Machine breakdown** | 14 | 22 | 36 |
| **Shortage of raw materials** | 10 | 20 | 30 |
| **Workforce inefficiency**  | 8 | 16 | 24 |
| **Planning issues** | 6 | 12 | 18 |
| **Others** | 4 | 8 | 12 |
| **Total** | 42 | 72 | 120 |

**Expected value**

|  |  |  |
| --- | --- | --- |
|  | **Male** | **Female** |
| **Machine breakdown** | 12.6 | 23.4 |
| **Shortage of raw materials** | 10.5 | 19.5 |
| **Workforce inefficiency** | 8.4 | 15.6 |
| **Planning issues** | 6.3 | 11.7 |
| **Others** | 4.2 | 7.8 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **O** | **E** | **O-E** | **(O-E) ^2** | **(O-E) ^2/E** |
| 14 | 12.6 | 1.4 | 1.96 | 0.155 |
| 10 | 10.5 | 0.5 | 0.25 | 0.023 |
| 8 | 8.4 | 0.4 | 0.16 | 0.0190 |
| 6 | 6.3 | 0.3 | 0,09 | 0.014 |
| 4 | 4.2 | 2 | 4 | 0.952 |
| 22 | 23.4 | 1.4 | 1.96 | 0.083 |
| 20 | 19.5 | 0.5 | 0.25 | 0.012 |
| 16 | 15.6 | 0.4 | 0.16 | 0.010 |
| 12 | 11.7 | 0.3 | 0.09 | 0.007 |
| 8 | 7.8 | 0.2 | 0.04 | 0.005 |

$∑ \frac{(O-E)^{2}}{E}$ **= 0.461**

Significant level = 0.05 (5%)

Degree of freedom = (coloum-1) (row-1)

 = (5-1) (5-1)

 = 4\*4

 = 16

Table value = 26. 296

**INTERPRETATION**

Table value is greater than the calculated value hence null hypothesis (H0) is accepted.

There is no significant association with the overall efficiency of the current production process and how effectively are production scheduled man

**5.1 FINDINGS**

* 45.83 per cent of the respondents are from the age group of 30-40 years.
* 65 per cent of the respondents are female.
* 40 per cent of the respondents are production workers in the company.
* majority of the respondents are worked in 3-5 years in a company.
* 54.17 per cent of the respondent’s qualified at the high school level education.
* 48.33 per cent of the respondent's rates the overall the production process is efficient
* 30 per cent of the respondents opined that reason for production slowdown is machine breakdown.
* 33.3 per cent of the respondents opined that production targets often met on a regular basis.
* 33.3 per cent of the respondent’s rated communication between production teams and management as good.
* 29.2 per cent of the respondent's opined that most commonly affects production delays is due to machine breakdowns
* 33.3 per cent of the respondent's opined production timelines mostly predictable.
* 29.2 per cent of the respondents are rated challenging customer demand as the most significant causes of variations in production output.
* 33.3 per cent of the respondents experience unforeseen factors affect production timelines occasionally.
* 33.3 per cent of the respondents are believe it is managed very effectively.
* 41.7 per cent of the respondents rated as product quality under current production strategies is good.
* 33.3 per cent of the respondents believes greatest impact on the production quality is raw material quality.
* 33.3 per cent of the respondents stated that quality checks are conducted very frequently during production.
* 33.3 per cent of the respondents opined that effectiveness of quality control measures is effective.
* 33.3 per cent of respondents opined that effectiveness of cost control during production is well.
* 33.3 per cent of respondents opined that most of the area contributing to production cost overruns is raw material costs.
* 35 per cent of respondents rated the efficiency of the use of resources in the production process is efficient.
* 36 per cent of respondents opined that budget constraints on production performance is often.
* 50 per cent of respondents opined that training and skill development in improving the production performance is very important.
* 29.2 per cent of respondents believe machine operation is the aspect that benefits most from automation.
* 25 per cent of the respondents rated the adaptability of the current production process to changes in demand as poorly.
* 25 per cent of the respondents opined that the biggest challenge in optimizing production performance is supply chain inefficiency.

**5.2 RECOMMENDATIONS**

* Implement effective inventory and material management systems ensure optimal stock availability to avoid day-to-day disruptions in production and minimize wastage of raw materials.
* Redesign production workflows and layouts to minimize bottlenecks and improve cycle times.
* Invest in modern machinery and automation to enhance production speed and reduce overtime.
* Strengthen quality control measures with rigorous testing and inspections to ensure product consistency.
* Analyse cost structures to identify opportunities for reducing materials, labour, and overhead costs.
* Incorporate eco-friendly practices and materials to reduce environmental impact.
* Provide regular training to employees to enhance skills, productivity, and adaptability.
* Improve communication between teams and management through regular meetings and clear channels.
* Implement predictive maintenance for machinery to reduce breakdowns and disruption.
* Use advanced production scheduling tools to improve timelines predictability and flexibility.
* Train employee to adapt to changing customer demands and market trends.
* Address supply chain inefficiencies by collaborating with suppliers and optimizing logistics.
* Strengthen Leadership capabilities to foster a proactive organizational culture.
* Increase product awareness through targeted advertising campaigns in newspapers and magazines.
* Provide a safe and supportive work environment to boost employee morale and productivity.

**5.3 CONCLUSION**

Aditya Birla Fashion and Retail Limited (ABFRL) stands as a prominent leader in the fashion retail industry, driven by its wide- ranging product portfolio, strong market presence, and focus on quality.

The production analysis of ABFRL provides critical insights into its manufacturing processes, highlighting both strengths and areas for improvement. The company showcases remarkable capabilities in delivering high quality products and maintaining a robust operational structure, yet faces challenges in inventory management, machine maintenance, and adapting to fluctuating customer demands.

This study has explored various aspects of production, including inventory management, machine maintenance, workflow optimizing, and quality control. While ABFRL exhibits significant strengths in its automation potential and quality assurance, challenges like supply chain inefficiencies. Machine breakdowns, ad adapting to dynamic customer demands have been identified as crucial areas for improvement.

In conclusion, the production analysis highlights opportunities for ABFRL to enhance its manufacturing processes and overall performance by addressing these challenges. Implementing the recommended changes can enable the company to achieve higher efficiency, cost- effectiveness, and competitiveness in the fashion retail industry.

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**WEBSITES**

* <http://www.abfrl.com/>
* <http://scholsr.google.com/>

**QUESTIONNAIRE**

1.Name

2. Age group

 a) 20-30

 b) 30-40

 c) 40-50

 d) above-50

3.Gender

 a) Male

 b) Female

4.What is your current role in company?

* + 1. Production Workers
		2. Supervisor
		3. Manager
		4. Quality Control Staff

5. How many years have you been working in this company?

* + 1. Less than 1 year
		2. 2-3 Years
		3. 2-3 Years
		4. 3-5 Years
		5. Above 5 Years

6. What is the highest level of education you have completed?

* + 1. High School
		2. Diploma
		3. Bachelor's Degree
		4. Master’s Degree

7. How would you rate the overall efficiency of the current production process?

* + 1. Very Efficient
		2. Efficient
		3. Neutral
		4. Inefficient
		5. Very Inefficient

8. Absence of stock for day-to-day operation affect production of the company.

1. Never
2. B) Rarely
3. C) Sometimes
4. D) Often
5. E) Always

9. How well are production targets met on a regular basis?

1. Always met
2. Often met
3. Occasionally met
4. Rarely met
5. Never met

10. How would you rate the communication between production teams and management?

 a) Excellent

 b) good

 c) average

 d) poor

 e) very poor

11. which factor most commonly affects production delays?

* + 1. Machine Downlines
		2. Worker Absenteeism
		3. Raw Material Availability
		4. Poor Scheduling
		5. Quality Control Issues

12. How would you describe the predictability of production timelines?

* + 1. Very Predictable
		2. Mostly Predictable
		3. Sometimes Predictable
		4. Rarely Predictable
		5. Unpredictable

13. what causes variations in production output the most?

* + 1. Equipment issues
		2. Workforce issues
		3. Supplier delays
		4. Changing customer demand
		5. Operational inefficiencies

14. How frequently do unforeseen factors affect production timelines?

* + 1. Never
		2. Rarely
		3. Occasionally
		4. Often
		5. Always

15. how effectively are production schedules managed?

* + 1. Very effectively
		2. Effectively
		3. Moderately
		4. Ineffectively
		5. Not very effectively

16. how would you rate the quality of products produced current production strategies?

1. Excellent
2. Good
3. Average
4. Below average
5. Poor

17. which factor do you believe has the greatest impact on product quality?

* 1. Production techniques
	2. Raw materials quality
	3. Workforce skill level
	4. Equipment’s quality
	5. Management’s supervision

18. how frequently are quality checks conducted during production?

1. Very frequently
2. Frequently
3. Occasionally
4. Rarely
5. Never

19. How would you rate the effectiveness of quality control measures?

1. Very effective
2. Effective
3. Neutral
4. Ineffective
5. Very ineffective

20. how well is cost control maintained during production?

* + 1. Very well
		2. Well
		3. Neutral
		4. Poorly
		5. Very poorly

21. Which area contributes most to production cost overruns?

1. Labour costs
2. Raw materials costs
3. Machine maintenance
4. Energy consumption
5. Inefficient processes

22. how would you rate the efficiency of the use of resources in the production process?

* + - 1. Very efficient
			2. Efficient
			3. Neutral
			4. Inefficient
			5. Very inefficient

23. How would affect production budget constraints in the production process?

* + 1. Never
		2. Rarely
		3. Occasionally
		4. Often
		5. Always

24. How important is training and skill development for improving production performance?

1. Very important
2. Important
3. Neutral
4. Not very important
5. Not important at all

25. Which aspect would benefit most from automation?

* + 1. Production scheduling
		2. Quality control
		3. Raw material handling
		4. Machine operation
		5. Inventory management

26. How well does the current production process adapt to changes in demand?

* + - 1. Very well
			2. Well
			3. Neutral
			4. Poorly
			5. Very poorly

27. What is the biggest challenge in optimizing production performance?

* + - 1. Workforce limitations
			2. Equipment issues
			3. Supply chain inefficiencies
			4. High production costs
			5. Inefficient processes