



A Study on Operational Excellence in Sweet Manufacturing Industry During Festival Seasons

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ABSTRACT

Sweets are the most liked snacks and desserts of the Indian subcontinent. Thousands of dedicated shops in India, Pakistan, Bangladesh, Nepal, and Sri Lanka sell nothing but sweets. The composition and recipes of the sweets and other ingredients vary by region. Mithai are sometimes served with a meal, and often included as a form of greeting, celebration, traditional and cultural offering, gift giving, parties, and hospitality in the Indian subcontinent. Many social gatherings, wedding ceremonies and r festivals often include a social celebration of food, and the flavors of sweets are an essential element of such a celebration. Sweets form an permanent spot in the Indian houses during the time of festivals. Even people who are health conscious and avoid sweets will buy sweets at the time of festival seasons. That is how sweets relate to festivals.

Due to the Indians buying sweets during festivals, there will be Boost in Consumer Spending, Employment Opportunities, Stimulates Other Sectors, Promotion of Small-Scale Businesses, Government spendings, Tourism and Hospitality, Increased Social Activities, Stimulus Packages and Bonuses, and Rituals and festival Offerings Keeping the population size of Indians, there would be a huge demand for sweets at the time of festivals. To satisfy that demand the shops will be planning and working very hard. Because it is the time their products will be in huge demand and also, they are doing that to maintain the brand reputation. The research focus on problems they face during festivals like Supply Chain Disruptions, Production Constraints, Labor Shortages, Storage and Preservation, Price Fluctuations, Competition and Logistical Challenges.

Most of the important fields were discussed in this research. It gives an eagle's eye view of how sweet shops function during their hectic seasons.

The study conveys that operational excellence in the sweet manufacturing sector during festival seasons is crucial for navigating the challenges and taking advantage of the opportunities that these times present. Specifically, strategic planning, effective resource allocation, and efficient management practices are critical for success. This helps industry and the economy grow and thrive overall and earn more profits.

1. Introduction and Review of Literature

1.1 Rationale for the Study and Motivation

The rationale for this study emerges from a critical examination of the existing literature on Marketing Aspects, Dairy Wastage Control, Customer Satisfaction, Revenue aspects and Daily Operations revealing notable gaps in the Indian sweet industry. In the diverse languages of the Indian subcontinent, sweets are called by numerous names, one common name being Mithai. They include sugar, and a vast array of ingredients such as different flours, milk, milk solids, fermented foods, root vegetables, raw and roasted seeds, seasonal fruits, fruit pastes and dry fruits. Some sweets such as kheer are cooked, some like burfi are baked, varieties like Pak are roasted, some like jalebi are fried, others like kulfi are frozen, while still others involve a creative combination of preparation techniques. The composition and recipes of the sweets and other ingredients vary by region. Mithai are sometimes served with a meal, and often included as a form of greeting, celebration, traditional and cultural offering, gift giving, parties, and hospitality in the Indian subcontinent. On South Asian festivals such as Holi, Diwali, Eid, Raksha Bandhan, Ganesh Chaturthi, etc. Sweets are homemade or purchased, then shared. Many social gatherings, wedding ceremonies and r festivals often include a social celebration of food, and the flavors of sweets are an essential element of such a celebration. In 2023, the market was estimated to be worth over ₹2 lakh crore (US\$27 billion), according to a report by Technopak Advisors. This is a significant increase from ₹1.5 lakh crore (US\$20 billion) in 2022. During festivals like Diwali in India, the sales of sweets experience a significant surge. Diwali, also known as the Festival of Lights, is one of the most widely celebrated festivals in India and is associated with exchanging sweets and gifts. This tradition of gifting sweets during Diwali contributes to a substantial increase in the demand for sweets across the country. The main motivation factors are as follows:

- **Boost in Consumer Spending:** Diwali is a time when people indulge in buying sweets not only for their own consumption but also for gifting purposes. This increased demand leads to higher consumer spending on sweets, contributing to the overall economic activity.
- **Revenue Generation for Sweet Shops and Manufacturers:** Sweet shops and manufacturers experience a surge in sales during the Diwali season. They prepare for this increased demand by stocking up on various sweets and often introduce special Diwali-themed sweets and gift packs. The increased sales during this period contribute to their revenue generation.
- **Employment Opportunities:** The heightened demand for sweets during Diwali creates temporary employment opportunities in the sweets manufacturing sector. Sweet shops may hire additional staff to manage the increased workload, including preparing, packaging, and selling sweets. So there will be lot of employee requirement.
- **Stimulates Other Sectors:** The increased consumption of sweets during Diwali indirectly benefits other sectors of the economy. For example, there is higher demand for ingredients such as sugar, flour, nuts, and dairy products used in making sweets, which boosts sales in these sectors as well.
- **Promotion of Small-Scale Businesses:** Diwali presents an opportunity for small-scale sweet shops and manufacturers to showcase their products and attract customers. This festival acts as a platform for these businesses to boost their sales and expand their customer base.
- **Government spendings:** Both central and state Govt. buys sweets for their employees during festivals like Diwali. So the volume of purchase will be huge, because it procures in bulk.
- **Tourism and Hospitality:** Diwali is also a time when people travel to visit their families and friends, leading to increased tourism and hospitality activities. Tourists often indulge in buying local sweets as souvenirs or gifts, further contributing to the sales of sweets during the festival.
- **Increased Social Activities:** Festivals in India are not just about individual celebrations but also entail social gatherings, parties, and community events. People often spend on food, beverages, sweets and snacks, clothing, and entertainment for these occasions, contributing to higher consumer spending during the festival period.
- **Stimulus Packages and Bonuses:** Some employers in India provide festival bonuses or incentives to their employees as part of their compensation packages. These bonuses, along with government stimulus packages or subsidies announced during festive seasons, inject additional disposable income into the hands of consumers, leading to higher spending.
- **Rituals and festival Offerings:** Many festivals in India involve specific rituals, customs, and festival offerings that require expenditure on items like sweets, fruits, flowers, puja materials, and donations to temples or charitable causes. This festival spending adds to the overall consumer spending during festivals.

1.2 Statement of the Research Problem

This research mainly focuses on the following topics:

Supply Chain Disruptions: During Indian festivals, sweet shops in India encounter various supply chain disruptions that impede their operations and ability to meet the heightened demand for sweets. These disruptions include shortages of key raw materials such as sugar, flour, ghee, nuts, and spices due to increased demand and supply constraints. Price volatility in raw materials further complicates cost management and pricing strategies, impacting profit margins. Additionally, logistics and transportation delays arise from increased traffic congestion, limited availability of transport services, and road closures during festival periods, resulting in delays in receiving raw materials and delivering finished products to customers. Quality issues with raw materials due to rushed procurement and dependency on small-scale suppliers also affect product quality and customer satisfaction. Moreover, seasonal demand fluctuations and competition for resources exacerbate supply chain challenges, making it challenging for sweet shops to maintain operational efficiency and meet customer expectations during Indian festivals.

Production Constraints: Indian sweet shops encounter various production constraints during Indian festivals due to the surge in demand for sweets. These constraints include limited production capacity, as sweet shops often operate at maximum capacity to meet the increased demand. However, this heightened demand can lead to bottlenecks in the production process, resulting in delays in fulfilling orders and shortages of popular sweets. Moreover, sweet shops may face challenges in sourcing skilled labor during festival seasons, as experienced cooks and helpers may be in high demand across various sectors.

Labor Shortages: During times of high demand, like Indian holidays, labour shortages pose serious issues for Indian sweet stores. There may be a lack of workers in the labour market due to the high demand for skilled cooks, attendants, and other staff members who are necessary for producing sweets. The lack of qualified labour can lead to production bottlenecks, order fulfilment delays, and lapses in quality control procedures. Additionally, during festival seasons, sweet shops could find it difficult to hire temporary workers to handle the spike in demand, which would exacerbate the labour crisis.

Storage and Preservation: A lot of Indian candies have a short shelf life and need special storage to keep their flavour and freshness. However, because of the spike in demand during festival seasons, confectionery stores sometimes struggle to properly manage their inventory and provide storage facilities. The surge in demand may result in a shortage of refrigeration facilities, a congested storage area, and difficulties in preserving the ideal storage conditions for different kinds of confections. Furthermore, poor storage techniques can cause sweets to deteriorate and decay, resulting in waste and financial losses.

for candy stores. Additionally, the requirement to rotate goods and maintain inventory balances in order to avoid product expiration makes storage even more difficult. Moreover, the process of storing and preserving goods during festival seasons is made more difficult by the requirement to maintain inventory levels and cycle stock to avoid product expiration

Competition: Festival seasons bring an abundance of sweet businesses to the market, both traditional brick-and-mortar stores and internet vendors fighting for customers' attention. Sweet businesses are under more pressure to stand out in a crowded market and differentiate themselves as a result of the rising competition. Given the abundance of alternatives available to consumers, sweet stores may find it difficult to draw in and keep customers in the face of intense competition. Furthermore, price wars and promotional efforts can be sparked by competition, which can affect candy stores' profit margins. In addition, in an environment of fierce rivalry, candy stores must stand out from the competitors by providing distinctive flavours and assortments along with constant quality. These difficulties with competition show how creative techniques are needed by candy stores to set themselves apart and maintain their competitiveness during Indian festivities.

Logistical Challenges: When there is a spike in demand, such during Indian holidays, Indian sweet businesses face considerable logistical issues. These difficulties cover a number of supply chain facets, such as distribution, inventory control, and transportation. During festival seasons, sweet stores frequently struggle to handle an increase in foot traffic and make sure deliveries arrive on time to satisfy client demand. Delivery of completed goods to clients and the receipt of raw materials might be delayed by transportation interruptions including traffic jams and a lack of available transport services. Additionally, during festival seasons, sweet stores must balance their stock levels to prevent excess inventory or stockouts, which makes inventory management more difficult. Additionally, during Indian festivals, sweet stores must efficiently coordinate logistics to maintain inventory, handle consumer inflow, and immediately complete orders. These logistical difficulties emphasise how crucial it is to organise, coordinate, and manage resources well in order to maintain seamless operations and satisfied customers during spikes in demand.

1.3 Review of Literature:

A survey of aflatoxin M1 in milk and sweets of Punjab: (Asma Sadia, et al, 2012):

The aim of this study was to determine the levels of aflatoxin M1 in milk and milk products of Punjab, the major milk producing province in Pakistan. Two hundred thirty-two milk samples from local shops, household farms, and large scale farms; and 138 sweets (Mithae) from local shops were collected from the 36 districts of Punjab province. The results indicated that the community is constantly exposed to these toxins. Regulatory mechanisms should be implemented to control the toxins in milk and milk products. As feed is the main source of AFM1 in milk the level of aflatoxins in livestock feeds should also be kept to the minimum.

All India Survey for Analyses of Colors in Sweets and Savories: Exposure Risk in Indian Population: (Sumita Dixit, Subhash K. Khanna, Mukul Das, 2013):

In this research an attempt has been made to understand the exposure assessment of food colors through 2 major groups, sweets and savories, at a national level so as to evolve a scientific yardstick to fix levels of colors in commodities based on technological and safety requirement. A vast majority of colored food commodities (83.6%) were found to employ permitted colors and confirmed a marked decline in the trend of use of nonpermitted colors (NPCs). Of the 4 zones of India, East zone showed the maximum adulteration (80.3%) both by exceeding the prescribed limits of permitted colors (72.3%) and the use of NPCs (28.7%).

Scope of Technological Intervention in the Sector of Traditional Indian Milk Products Industry for Sustainable Rural Development: (Asgar, Shakeel ; Chauhan, Manorama, 2023):

This research focus on the entrepreneurial activities related to the vast sector of traditional Indian milk products and milk sweets effectuate the holistic development module fulfilling the concept of economic viability, technological feasibility, social obligation, cultural necessity and above all ecological balance. Despite robust growth and plenteous milk production, this informal sector of dairy products and sweetmeats is facing unprecedented challenges on multiple fronts.

Study on characterization of Indian dairy wastewater: (R Mehrotra, A Trivedi, SK Mazumdar - Int. J. Eng. Appl. Sci. Technol, 2016):

This research focuses on the dairy Industry in India which has grown from an almost unorganized into a vastly complex organized industry of large magnitude during the last 45 years. India with an animal milk production of 84.5 million tonnes in 2002 and with a 4-5 % annual growth has an expected milk production of 155.2 million Tonnes in 2016-17. India has since long been ranking first in the world in terms of milk production. India has a unique pattern of production, processing, and marketing/consumption of milk, which is not comparable with any large milk producing country. Only a small part of milk produced in India is processed. In organized Indian dairy plants Production of Yogurt, lassi, butter/ ghee, Khoya, Cheese, Ice cream, sweets and other value-added products is very small. The composition of effluents from such units reflects the wastes of product manufacture and could have high O&G, cream, sugar or whey contents. Milk pasteurization is the basic operation/ process that is essential in all Dairy processing plants(except Chilling plants) there is additional pollutant load with every additional dairy product manufacture.

Strategic Competition for a Pie in the Ever-Expanding Family Global Brand: (V Jain from the Desk of the Editor-in-Chief, 2015):

In this research, they covered the concept of Indian entrepreneurship and what it takes to be successful in the Indian SME (small and medium enterprises) sector. This research paper covers, Indian entrepreneurship, Family businesses, Brand management, Marketing mix management, Marketing strategy,

Global product positioning, Managing point of purchase (POP), Fast food marketing in India, Global marketing strategies, Services marketing, Global services marketing and Business Strategy.

Bhujia to billions: Ganga Bhishen's Haldiram's has now become \$3 bn biz empire: (N Talukder, 2020):

This article is regarding the issue relating to the approach of Kelloggs to buy stake in Haldiram's for 3 Billion USD. They were highly attracted by the operations of Haldiram's which made, Haldiram's regained the top spot as the country's largest snack company after more than two decades. In year ended September 2017, surpassing PepsiCo in sales. Haldiram's posted sales of Rs 4,224.8 crore in the year ended September, compared with PepsiCo's Rs 3,990.7 crore from brands such as Lay's, Kurkure and Uncle Chipps.

1.4 Identification of Research Gaps

Much research was done regarding sweets. But they have not focused on the operational changes that happen during the festival seasons. Either they have focused on the:

- Marketing Aspects
- Dairy Wastage Control
- Customer Satisfaction
- Revenue
- Daily Operations.

1.5 Theoretical underpinnings

Since ancient times, Indian culture and festivities have been closely associated with sweets, and this association persists to this day. Sweets have played a variety of roles throughout Indian holidays including Diwali, Ganesh Chaturthi, Raksha Bandhan, and others, both historically and in the present.

- **Historical Significance:** During traditional and cultural rites and festivals, sweets were presented to gods and goddesses in ancient India. These sacrifices served as a representation of piety, thankfulness, and devotion to the divine.
- **Cultural Traditions:** Over the course of centuries, different parts of India created their own distinctive sweet treats, frequently utilising materials and cooking methods that were readily available in the area. These candies, which represent the diversity of Indian culture and the abundance of its food, have become essential to certain celebrations.
- **Social Cohesion:** During festivals, sweets act as a bridge between friends, family, and communities. Sharing and trading sweets promotes a sense of unity and togetherness by symbolising ties of love, affection, and friendship.
- **Rituals and Symbolism:** During festivals, sweets are loaded with symbolic significance. For example, candy symbolises the victory of good over evil and light over darkness during Diwali. Similar to this, modaks represent the sweet gifts given to the elephant-headed god Ganesha during Ganesh Chaturthi.
- **Generosity & Hospitality:** During Indian festivities, it is customary to provide sweets to guests and visitors as a symbol of warmth, kindness, and hospitality. Sharing sweets with others is seen as lucky as it spreads joy and happiness.
- **Economic Significance:** During festival seasons, there is a notable increase in the manufacture and sale of sweets, which benefits the economy and the livelihoods of many people who work in the sweets sector.

Modern advancements and adjustments in sweet-making processes and flavours have occurred, even though the essence of Indian festival sweets is still anchored in history and culture. To make them even more accessible and well-liked, the trade of confections has spread to encompass commercial institutions and internet giving platforms. All things considered, sweets maintain a prominent position in India's cultural fabric, connecting the past and present and acting as ageless representations of joy, spirituality, and communal peace during special occasions.

2. Research Methodology

2.1 Scope of the Study

In a year only few seasons like Diwali, Ganesh Chaturthi and other festivals are the only time the demand for sweets will be in humongous quantities. There would be many challenges for the shop owners relating to Supply Chain Disruptions, Production Constraints, Labor Shortages, Storage and Preservation, Price Fluctuations, Competition, Logistical Challenges, etc. To overcome these challenges the owners will do lots of planning and they have the responsibility to implement it properly so that it won't affect their sales or reputation. At the same time, they should concentrate on Quality Assurance because Customers expect top-notch quality, especially when purchasing sweets for gifting purposes.

Further they should also follow Health and Safety Standards because large crowds and an increase in social engagement are common at festivals. In order to avoid foodborne diseases and guarantee the safety of its patrons, Indian sweet businesses must scrupulously abide by health and safety regulations. This entails keeping the kitchen and storage spaces tidy, encouraging good personal hygiene among employees, and guaranteeing that the products are fresh. Very importantly they should not compromise on customer service.

Because Consumers anticipate friendly treatment and a satisfying shopping experience. Indian confectionery stores must make sure they have enough employees to handle the increased foot traffic and efficiently handle long lines. Customer happiness and loyalty may also be increased by offering seasonal discounts or promotions and individualized service. This research addresses the challenge of customizing supply chain components to meet changing market demand and customer expectations. Also focuses on many aspects relating to purchasing pattern, planning duration, favourable employment policies, establishment of additional production units and its setup location, changes in production layout, change in warehouse layout, logistic practices, etc.

2.2. Research Objectives

- To understand the operational issues in sweet manufacturing industry during the festival times.
- To examine the centralized and decentralized purchasing patterns during festivals.
- To analyze the impacts of logistic practices on festivals.

2.3. Framing of research hypotheses

Objective 1: Regarding planning process:

Here the null hypothesis i.e., H0 - Late planning does not have adverse effects on the production process. The alternative hypothesis i.e., H1 - Late planning does have adverse effects in the planning process.

Objective 2: Regarding production layout:

Here the H0- There is no connection between changing the production layout at the time of festival seasons. H1 - There is a connection between changing the production layout at the time of festival seasons.

Objective 3: Regarding logistics practices:

Here, the H0- There is no significant connection between changing the logistic practices for the efficient handling of festive demand. H1 - There is a significant connection between changing the logistic practices for the efficient handling of festive demand.

2.4. Research Design

Qualitative Phase: The qualitative phase of the research employs asking questions with sweet shops employees and owners and also content analysis of relevant documents. The questionnaire aims to capture rich insights into the intricacies of customization strategies. Purposive sampling ensures diverse representation across industries and organizational sizes. Through the questionnaire, the study seeks to understand experiences, challenges, and perspectives on managing the festival season pressure. Additionally, content analysis of documents, reports, and case studies will be conducted to extract qualitative insights into industry-specific practices and seasonal temporary strategies.

Quantitative Phase: Surveys are used in the quantitative phase to collect data from a representative sample of enterprises and sweet shop professionals. Customizing planning practices when needed across industries will be measured by the administration of a structured questionnaire that includes Likert-scale items. The objective of this survey methodology is to yield quantifiable data for statistical examination.

Integration of Qualitative and Quantitative Data: An essential component of the research design is the integration of qualitative and quantitative data. In addition to quantitative survey data, qualitative insights from interviews and content analysis will provide a comprehensive understanding of industry-specific variances in customisation techniques as well as difficulties and best practices. Triangulation improves the study's overall validity and reliability by requiring the cross-verification of qualitative and quantitative outcomes. The research design guarantees a comprehensive and well-balanced investigation of supply chain customisation by merging the two techniques, offering significant contributions to the domain of logistics and supply chain management (Example: Material management, distribution management, routing, purchase and inventory management, etc).

2.5. Methods for Data Collection & Variables of the study

Qualitative Data Collection Methods In-Depth Interviews:

The qualitative phase involves conducting in-depth interviews with supply chain professionals. Semi- structured interviews will allow for a detailed exploration of experiences, challenges, and perspectives related to production and supply chain customization during festival seasons.

Quantitative Data Collection Methods Surveys:

The quantitative phase employs structured surveys administered to a diverse sample of supply chain professionals. The surveys, utilizing Likert-scale questions, aim to quantify the prevalence and effectiveness of production practices across industries.

Variables of the Study Dependent Variables:

- Customization Effectiveness: Measured quantitatively through survey responses and analyzed to assess the overall effectiveness of supply chain customization practices.
- Sustainability Impact: Examined through survey responses to understand how sustainability considerations are integrated into their production process and their broader impacts on environmental, social, and economic aspects.

Independent Variables:

Industry-Specific Factors: Explored through both qualitative and quantitative methods to identify industry-specific nuances influencing production strategies.

3. Data Analysis and interpretation

3.1 Techniques for data analysis

The chi-square test is a statistical tool for determining if there is a significant relationship between category variables. It is very handy when we have categorical data and want to see whether there is a connection or difference between them. Here are some reasons why to use a chi-square test for specific amounts of data:

- Categorical Data Analysis: The chi-square test is particularly developed to analyse categorical data. If we have categorical variables with more than two levels or categories, the chi-square test can be performed to investigate their connection.
- Independence Testing: Chi-square testing is a useful tool for determining if two category variables are significantly correlated or independent of one another. For example, we may use it to investigate potential associations between gender and voting preferences or between lung cancer risk and smoking behaviours.
- Anticipated vs. Observed Frequencies: The Chi-square test contrasts the actual frequencies of several categories with those that are anticipated in the absence of any correlation between the variables. This aids in determining the statistical significance of any changes that are noticed.
- No Assumption of Normality: The chi-square test does not make the assumption that the data are normally distributed, in contrast to several other statistical tests. Because of this, it may be used to analyse data that may not fit the requirements of parametric testing.
- Not-parametric Nature: The chi-square test does not require knowledge of population characteristics because it is a nonparametric test. This makes it helpful when working with data that deviates from parametric test assumptions or when full population data is unavailable.
- Flexibility: The chi-square test is applicable to a range of study designs, such as case-control, cohort, and cross-sectional studies. Additionally, it may be modified for usage in various sized contingency tables.
- Interpretation Ease: Since the chi-square test yields a p-value, which denotes the importance of the correlation between the variables, results are often straightforward to understand.

All things considered, the chi-square test is a flexible and popular statistical technique for examining categorical data and identifying significant correlations between variables. But it's crucial to confirm that the chi-square test's assumptions are satisfied and to interpret the findings with caution—especially in light of the sample size and the particular context of the data being examined.

3.2 Hypotheses testing and methods

I. Regarding planning process:

Related Questions from the Questionnaire: When would you recommend to start the planning process?

Results from the questionnaire:

TIME	NO.OF RESPONDENTS
1 week before the festival	5
2 weeks before the festival	23

3 weeks before the festival	17
4 weeks before the festival	61

Here the null hypothesis i.e., H_0 - Late planning does not have adverse effects on the production process.

The alternative hypothesis i.e., H_1 - Late planning does have adverse effects in the planning process.

$$r=n-1=4-1=3 \quad \alpha=0.05$$

O	E	O-E	(O-E) ²	(O-E) ² /E
5	26.5	-21.5	462.25	17.44
23	26.5	-3.5	12.25	0.462
17	26.5	-9.5	90.25	3.405
61	26.5	34.5	1190.25	44.99
TOTAL				66.29

Based on the chi-square table , by using the r and α values the chi-square value is 7.815

Since the calculated value is 66.29 and it exceeds the table value and also it does not fall in the critical region H_0 is rejected. H_1 is accepted.

2.. Regarding production layout:

Related Questions from the Questionnaire: Would you recommend changes in the production layout?

Results from the questionnaire

LIKERT SCALE	NO. OF RESPONDENTS
Strongly disagree	8
Disagree	11
Neutral	25
Agree	28
Strongly agree	38

Here the H_0 - There is no connection between changing the production layout at the time of festival seasons. H_1 - There is a connection between changing the production layout at the time of festival seasons.

$$r=n-1=5-1=4, \quad \alpha=0.05$$

O	E	O-E	(O-E) ²	(O-E) ² /E
8	21.2	-13.2	174.24	8.21
11	21.2	-10.2	104.04	4.907
25	21.2	3.8	14.44	0.6811
28	21.2	6.8	44.2	2.084
34	21.2	12.8	163.84	7.728
TOTAL				23.610

Based on the chi-square table , by using the r and α values the chi-square value is 9.488

Since the calculated value is 23.610 and it exceeds the table value and also it does not fall in the critical region H_0 is rejected. H_1 is accepted.

3. Regarding logistics practices:

Related Questions from the Questionnaire: Would you recommend changes in the logistics practices?

Results from the questionnaire:

LIKERT SCALE	NO.OF RESPONDENTS
Strongly disagree	6
Disagree	9
Neutral	23
Agree	32
Strongly agree	36

Here, the H₀- There is no significant connection between changing the logistic practices for the efficient handling of festive demand. H₁- There is a significant connection between changing the logistic practices for the efficient handling of festive demand.

$$r=n-1=5-1=4, \alpha=0.05$$

O	E	O-E	(O-E) ²	(O-E) ² /E
6	21.2	-15.2	231.04	10.89
9	21.2	-12.2	148.84	7.02
23	21.2	1.8	3.24	0.15
32	21.2	10.8	116.64	5.501
36	21.2	14.8	219.04	10.332
TOTAL				33.893

Based on the chi-square table , by using the r and α values the chi-square value is 9.488

Since the calculated value is 33.893 and it exceeds the table value and also it does not fall in the critical region H₀ is rejected. H₁ is accepted.

3.3 Data Interpretation

1. Regarding planning process:

Since the H₀ is rejected, and H₁ is accepted, late planning does have adverse effects in the planning process.

2. Regarding production layout:

Since the H₀ is rejected, and H₁ is accepted, there is a connection between changing the production layout at the time of festival seasons.

3.Regarding logistics practices:

Since the H₀ is rejected, and H₁ is accepted, there is a significant connection between changing the logistic practices for the efficient handling of festive demand.

4. Findings and Recommendations

4.1 Research Outcome and Findings

Research on operations management customization of production process during festival seasons has yielded important insights into several organizational decision-making processes and strategy directions. The responses were used for the analysis, which was used for doing chi-square tests. The results have provided insight into the importance of customisation, the main obstacles to its implementation, and the efficacy of cost-effective customization techniques and many other dynamics of business pinnacle.

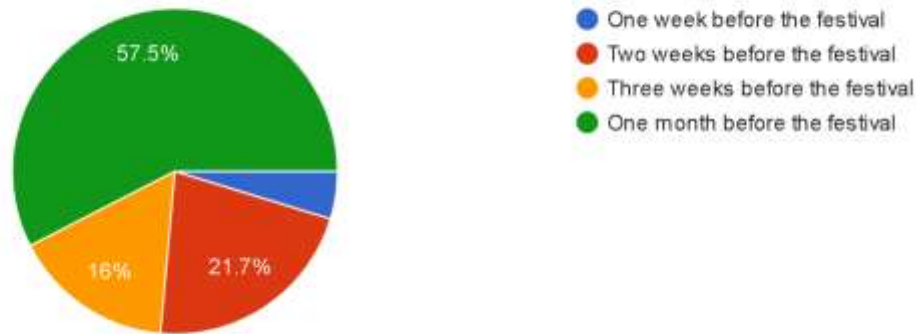
Lots of decisions are required to be taken to satisfy the demand. Even one small wrong decision can ruin the revenue of the company. There are chances that fame and name of the company will be at problem if decisions are not made correctly.

1. In the first set of chi-square test i.e., regarding the planning process, it clearly shows that one month before is the best time to start the planning process. Proper planning is like getting the half work done. They need to plan on several dynamics of operations. First and foremost, good inventory control is necessary to guarantee that confectionery stores have enough raw materials and ingredients on hand to fulfil demand during festivals. This entails projecting the anticipated sales volume in light of past performance, industry developments, and consumer preferences. Shops may prevent shortages and

save waste by anticipating demand for various varieties of sweets and obtaining the appropriate ingredients ahead of time. Furthermore, keeping the right amount of inventory on hand enables stores to take advantage of bulk discounts, bargain for advantageous terms from suppliers, and expedite the procurement process—all of which contribute to increased profitability and cost-effectiveness.

When would you recommend to start the planning process?

106 responses



Production scheduling is essential for maximising efficiency and maximising resource utilisation during holiday seasons. Candy stores need to create detailed production plans that account for variables including worker capacity, equipment availability, batch sizes, and processing durations. Shops may decrease bottlenecks, increase throughput rates, and minimise idle time by carefully assigning production jobs and scheduling processes. By using lean manufacturing concepts like kanban systems and just-in-time production, shops may reduce lead times and increase efficiency while being able to react quickly to shifting consumer needs and market conditions.

In addition to efficient production scheduling, resource allocation is another key aspect that sweets shops must carefully manage during festivals. This includes allocating manpower, equipment, and floor space in a manner that optimizes productivity while ensuring adherence to quality standards and safety protocols. By cross-training employees and implementing flexible work arrangements, shops can better cope with fluctuations in workload and mitigate the risk of labor shortages or skill gaps. Moreover, investing in modern equipment, automation technologies, and process innovations can enhance production efficiency, consistency, and scalability, enabling shops to scale up operations during peak demand periods without compromising on quality or profitability.

Ensuring quality control is crucial while producing confections, especially during festivals when patrons have elevated standards for appearance, taste, and freshness. Sweets stores need to have strict quality control procedures in place at all stages of manufacturing, from sourcing ingredients and developing recipes to cooking, packing, and storing goods. This entails carrying out routine examinations, assessments, and audits to guarantee adherence to food safety laws, hygienic guidelines, and industry best practices. Through the continual monitoring of critical performance metrics like production yields, customer complaints, and product defects, retailers can pinpoint areas for improvement, put corrective measures in place, and improve the quality and consistency of their offerings.

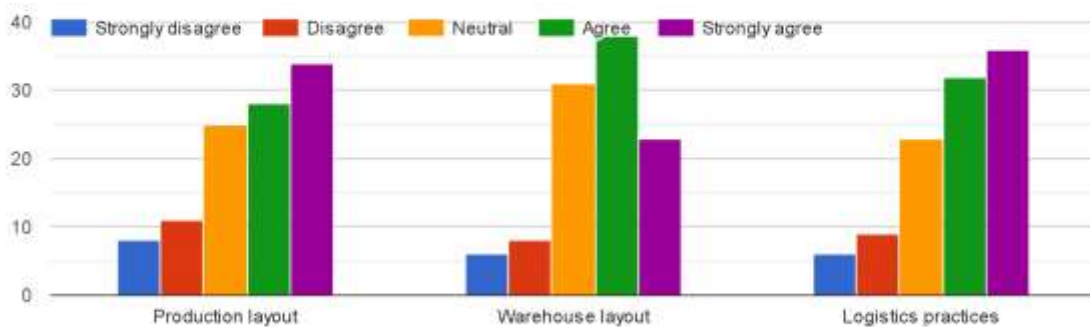
Moreover, throughout the holiday season, marketing techniques are essential for increasing sales, brand exposure, and consumer engagement. Candy stores need to create focused advertising campaigns that speak to the traditions, symbolism, and cultural importance of each holiday. This might entail offering unique discounts, promotions, and gift packages based on the tastes and shopping habits of patrons during festivals. Shops may reach a larger audience, create buzz, and increase demand for their items by utilising social media, e-commerce, and digital marketing methods. Furthermore, marketing campaigns may be made more effective and widely known by working with bloggers, influencers, and local communities. This builds stronger relationships with consumers and increases brand loyalty.

Workforce management is necessary to guarantee that candy stores have a knowledgeable, driven, and cohesive staff that can provide outstanding performance and service during festivals. This entails hiring and preparing seasonal workers, offering continuing assistance and oversight, and cultivating a supportive environment that prioritises collaboration, creativity, and constant progress. Shops may increase staff morale, productivity, and decrease turnover by offering incentives, prizes, and recognition programmes. This will help to ensure that operations remain consistent and uninterrupted during the holiday season.

2. Some people think that changing the production layout at the time of high demand will cause confusions. But most of the respondents think that change is advisory if needed to accommodate the excess demand. The second set i.e., regarding change in production layout clearly shows that the respondents consider that change is highly required. Indian candy stores should think about modifying their production structure during peak festival seasons, such as Diwali and other Indian holidays, in order to meet increased demand and maximise operational effectiveness. Candy stores can ensure that clients receive fresh, high-quality sweets on time by optimising throughput rates, minimizing

bottlenecks, and streamlining processes through smart production layout adjustments. Shops may cut down on material handling and transit times, get rid of extra movement, and enhance overall process flow by rearranging the layout to establish separate production zones for distinct kinds of candies or manufacturing phases. Additionally, adopting a modular or flexible layout design that allows for easy reconfiguration and scalability can enable shops to adapt quickly to changing production requirements and customer preferences during festivals. Moreover, implementing ergonomic workstations, efficient equipment placement, and standardized work procedures can enhance worker productivity, safety, and job satisfaction, thereby contributing to a positive work environment and better customer experiences. Overall, by proactively adjusting their production layout to align with the demands of festival seasons, Indian sweets shops can optimize resource utilization, minimize production lead times, and capitalize on the business opportunities presented by festive celebrations while maintaining the highest standards of quality and customer service.

Would you recommend changes in the following areas?



3. The logistic part is a very crucial role. This is the area where there will be many contingency plans. There might be vehicle problem, road transportation issues and many other issues like this. So they Should always have alternate plans as well. The third set conveys that logistics practices of an organization can be changed during festival seasons. Indian sweets stores should think about modifying their logistics procedures throughout celebration seasons like Diwali and other Indian holidays in order to efficiently handle the heightened demand and guarantee prompt product delivery to clients. To handle the spike in orders and preserve customer satisfaction, logistics techniques must be adjusted. This entails streamlining supply chain procedures, improving transportation options, and developing inventory management plans. Getting closer to suppliers, obtaining more inventory buffers, and utilising technology to track and refill inventories in real time are some strategies to expedite the acquisition of ingredients and raw materials. Improving transportation routes and distribution networks may also shorten lead times for deliveries and speed up order fulfilment, satisfying consumer demands for timely service.

Using last-mile delivery services, cross-docking facilities, and route optimisation software are examples of agile logistics solutions that may be implemented to increase operational flexibility and efficiency. This will allow candy stores to react quickly to shifting demand trends and market conditions throughout festival seasons. Strong quality control procedures and packaging options may also guarantee product integrity, safety, and freshness all the way through the supply chain, improving the general clientele's experience. Indian sweets shops can maintain their reputation for providing delicious sweets of the highest quality while optimising resource utilisation, minimising supply chain disruptions, and capitalising on the lucrative business opportunities presented by festive celebrations by proactively adjusting their logistics practices to accommodate the unique challenges and opportunities of festival seasons.

4.2 Theoretical implications:

Many people among the respondents don't even know the meaning of e-way bill. They are unaware of the quote, "ignorance of law is no excuse". But after explaining they recommended to take e-way bill. With the goal of streamlining procedures, lowering tax evasion, and establishing a single national market, India's indirect tax system underwent substantial changes with the implementation of the Goods and Services Tax (GST). The use of e-way bills, which are electronically created documentation necessary for the transportation of products over a specific value level, is a critical part of GST compliance. As required by the GST Act, e-way bills are important in India for a number of reasons, including the ease with which they enable interstate commerce, improve tax administration and compliance, encourage accountability and transparency, and promote economic growth.

There were a lot of roadblocks and administrative obstacles for interstate transactions before to the introduction of the Goods and Services Tax (GST) since every state had its own set of tax laws and paperwork requirements. Nonetheless, there has been a harmonisation of tax procedures and paperwork with the introduction of GST and e-way bills, leading to the removal of interstate obstacles and the development of a single national market. E-way bills are electronic papers that are standardised and provide essential facts concerning a shipment. These details include the source, receiver, the products being carried, and the vehicle that is being utilised for transportation. E-way bills facilitate the smooth movement of goods across the nation by enabling efficient

monitoring and tracking of goods movement across state boundaries. They ensure compliance with GST regulations by digitally capturing and transmitting this information in real-time to tax authorities and other relevant stakeholders.

Additionally, under the GST regime, e-way bills are essential for improving tax administration and compliance. By bringing previously unregistered enterprises into the formal sector, the government aimed to increase tax compliance, prevent tax evasion, and expand the revenue base through the introduction of the Goods and Services Tax (GST). E-way bills play a crucial role in this effort by giving tax authorities real-time access to information on the flow of goods. This allows them to confirm the integrity of tax filings, identify cases of tax evasion, and take prompt enforcement action against taxpayers who are not complying with the law. Tax authorities may effectively monitor and enforce compliance with GST requirements by automating the development, validation, and verification of e-way invoices. This reduces the opportunity for tax evasion and ensures equitable treatment for all enterprises. Additionally, the digitization of e-way bills permits smooth connection with other GSTN (Goods and Services Tax Network) elements, such as GST invoices and returns, promoting information sharing between tax authorities, taxpayers, and other stakeholders.

E-way bills not only facilitate effective tax administration but also advance accountability and transparency in the flow of products across the supply chain. In order to establish a clear and traceable trail of transactions from the point of origin to the point of consumption, the GST Act requires the creation of e-way bills for all interstate and certain intrastate transfers of commodities over defined criteria. This improves the overall integrity and credibility of the supply chain ecosystem in addition to aiding in the prevention of fraud and tax evasion. Additionally, e-way bills give companies the ability to monitor the whereabouts and status of their shipments in real time, which enhances planning, customer service, and inventory management. Additionally, the GST Act encourages greater responsibility among taxpayers and cultivates a culture of compliance and openness in the corporate sector by giving tax authorities access to precise transaction data collected in e-way invoices.

Furthermore, by supporting the efficient operation of the logistics and transportation sector—which is the backbone of India's economy—e-way bills significantly contribute to the growth and development of the country's economy. In order to transfer products across great distances and link producers and consumers, the logistics industry plays a critical role in enabling trade and commerce. But ineffective logistical practices, such as transit delays, traffic jams at state borders, and onerous documentation requirements, have long been a significant barrier to the industry's expansion. E-way bills minimise regulatory obstacles for companies involved in interstate commerce, expedite the paperwork process, and shorten transit times in order to address these issues. The GST Act helps businesses to become more competitive in both domestic and international markets by giving them access to a standardised electronic platform for the generation, validation, and verification of e-way bills. This platform also helps businesses to increase operational efficiency, cost-effectiveness, and reliability in their logistics operations.

Furthermore, the introduction of e-way bills under the GST system has opened the door for the logistics industry to embrace new digital innovations and technology, increasing supply chain integration, automation, and digitalization. Businesses can utilise cutting-edge technologies like RFID (Radio Frequency Identification), GPS (Global Positioning System), and IoT (Internet of Things) to enhance supply chain visibility and control, optimise route planning and vehicle utilisation, and track and monitor the movement of goods in real-time with the digitization of e-way bills.

The efficiency and efficacy of logistics operations are further increased by the integration of e-way bills with other digital platforms and systems, such as enterprise resource planning (ERP) software and transportation management systems (TMS), which facilitate smooth data exchange and collaboration among stakeholders.

Businesses may thereby realise cost savings, operational agility, and customer happiness, spurring innovation and growth in the logistics industry and advancing the nation's overall economic development.

In summary, the introduction of electronic way bills under the GST Act is a critical turning point in India's development of an integrated, open, and effective indirect tax system. E-way bills are vital to achieving the goals of GST reform because they simplify interstate commerce, improve tax administration and compliance, encourage accountability and transparency, and stimulate economic growth. To fully realise the benefits of e-way bills in propelling India's economic growth and competitiveness in the global marketplace, more efforts to fortify the e-way bill system, optimise procedures, and harness digital technology would be necessary.

4.3 Managerial Implication

In order to maintain operational efficiency, customer satisfaction, and profitability, sweet manufacturing companies must carefully plan and make strategic decisions during festival seasons like Diwali, Vinayakar Chaturthi, and other major Indian festivals. These organisations may successfully handle the challenges of festival seasons by taking into account many important managerial implications:

Production Planning and Capacity Optimisation: Efficiently planning and optimising production capacity is a critical managerial responsibility for firms that manufacture candies during festival seasons. In order to guarantee that there is a sufficient supply of confections to fulfil the rising demand, this entails projecting demand based on previous data, market trends, and consumer preferences.'

To account for variations in demand throughout festival seasons, businesses should create flexible production processes, optimise resource allocation, and modify production schedules as needed. To increase capacity and reduce bottlenecks, they could also think about investing in temporary manufacturing facilities or outsourcing some production jobs.

Coordination of the Supply Chain and Inventory Management: During festival seasons, supply chain operations and inventory management are crucial for businesses that produce candies. In order to satisfy demand and prevent excess inventory or stockouts, this means keeping raw materials, packaging

materials, and completed items at appropriate inventory levels. It is recommended that businesses form strong supply chain alliances with distributors and suppliers, engage in advantageous negotiations, and integrate real-time inventory monitoring systems to guarantee the smooth acquisition, manufacturing, and distribution of confections. In addition, they ought to optimise transportation routes, simplify logistical processes, and make use of technology to improve supply chain visibility and traceability.

Quality Control and Assurance: It is crucial for manufacturers of candies to uphold strict standards of quality and consistency, particularly during festival seasons when consumer expectations are higher. It is imperative for managers to impose stringent quality control methods across the whole manufacturing process, ranging from sourcing materials to packaging and storage. This entails carrying out routine testing, audits, and inspections to make sure that food safety laws, hygienic

guidelines, and business requirements are being followed. To foster a culture of quality consciousness and ongoing development throughout the whole organisation, businesses should also engage in employee empowerment and training.

Marketing and Promotional Strategies: Through focused marketing and promotional efforts, confectionery manufacturers may take advantage of festival seasons to boost brand awareness, draw in new clients, and increase sales. In order to reach a larger audience, managers should create innovative marketing strategies that are in line with the cultural meaning and symbolism of each festival. They should also use both conventional and digital platforms. This might entail setting up events or competitions, introducing unique festive product offers, discounts, and promotions, and interacting with clients on social media. Companies may stand out in the market and increase client loyalty by clearly articulating their brand narrative, core values, and advantages of their products.

Customer Relationship Management: For sweets manufacturing businesses to prosper throughout festival seasons and beyond, cultivating and preserving good connections with consumers is crucial. Supervisors ought to concentrate on offering outstanding client care, customised encounters, and prompt replies to questions or comments. This might entail providing alternatives for personalised packaging, making purchase and delivery simple, and quickly addressing any problems or grievances. Additionally, businesses can use consumer insights and data to anticipate demands, customise services, and cultivate enduring connections with devoted clients through loyalty plans, prizes, and special deals.

Finally, to effectively traverse the uncertainties and obstacles connected with festival seasons, sweet manufacturing enterprises must use smart financial planning and risk management measures. It is recommended that managers create thorough budgets, predictions of cash flow, and backup plans to provide enough liquidity and flexibility in the case of unforeseen circumstances. This involves keeping an eye on important financial metrics, efficiently managing working capital, and protecting yourself from hazards like volatile commodity prices, unstable currency exchange rates, or unexpected changes in regulations. Through proactive financial management and risk mitigation strategies, businesses may protect their financial well-being and maintain sustainable long-term development and profitability.

4.4 Limitations of the study

- All the respondents who are related to sweet business may not have the whole knowledge regarding each and every operation of sweet shops.
- The respondents are not fully educated and lack basic formalities.
- The delegation of work was not done in some outlets.
- Apart from this there was no proper prior research done in this topic.
- Many people were hesitant to share the views due to some competition issues.

4.5 Conclusion:

Most of the important fields were discussed in this research. It gives an eagle's eye view of how sweet shops function during their hectic seasons. They even lack food, sleep and work continuously even for 2 days. These findings give implications for operations management, decision-making procedures and strategic directions in addition to illuminating the views and difficulties encountered by enterprises. The 3 objectives are solved using chi-square tests.

The study concludes that operational excellence in the sweet manufacturing sector during festival seasons is crucial for navigating the challenges and taking advantage of the opportunities that these times present. Specifically, strategic planning, effective resource allocation, and efficient management practices are critical for success. The study's conclusions demonstrate the variety of operational difficulties that confectionery manufacturers have throughout festival seasons. These difficulties include those related to production scheduling, inventory control, quality assurance, marketing, customer relationship management, and financial planning. This study offers significant insights and practical recommendations for sweet manufacturing companies to improve their operational performance and achieve sustainable growth and competitiveness in the dynamic marketplace. It does this by thoroughly analysing managerial implications and best practices.

Businesses may increase sales and profitability by streamlining supply chain operations, optimising manufacturing processes, minimising risks, and capitalising on the holiday spirit by taking a proactive and comprehensive approach to operational excellence. Furthermore, businesses should cultivate a culture of excellence, resilience, and flexibility by embracing innovation, technology, and continuous improvement programmes. This will help them

prosper in the ever changing and dynamic sweet manufacturing market. In the end, this research offers manufacturing enterprises that produce sweets a road map for achieving operational excellence and providing greater value to stakeholders, consumers, and society at large. This helps the industry and the economy grow and thrive overall.

4.6 Scope for future research

Extending the Range: Future research should take a more inclusive tack by embracing developing and small, sweet shops to alleviate the limitation of the constrained range. This can entail looking at operations customization strategies in emerging markets or performing focused inquiries into industries with distinctive supply chain procedures. Working together with stakeholders and industry experts may make it easier to obtain specialized information and data.

Overcoming Resource Limitations: Research endeavours ought to concentrate on obtaining ample resources to carry out thorough and in-depth analyses spanning many sweet shops. To gain access to funds, knowledge, and data, this may entail leveraging collaborations with even raw material and third party outsourcing people.. Using cutting-edge research techniques, including machine learning algorithms for data analysis, may be able to get around resource limitations and improve the scope and quality of study.

Considering Geographic Diversity: Comparative studies across various areas and nations should be conducted to account for the geographic diversity of supply chain activities in future study. This research had mainly focused on states of Tamil Nadu and Karnataka. This can entail examining the ways in customization of operational practices which are influenced by infrastructure capabilities, cultural norms, and legal frameworks. Gaining knowledge about the geographical differences in supply chain strategies may be possible through working with international partners and making use of global datasets.

Integrating software in the business:

Many people don't even have the idea that software might be used in the sweet manufacturing sector. There are 2 major software which might be helpful for them.

A software programme called a Warehouse Management System (WMS) is made to streamline and mechanise the different procedures that go into running a warehouse. It offers all the capabilities a warehouse or distribution centre needs to effectively manage inventory, optimise processes, and boost overall efficiency. Typical functions of a WMS include order fulfilment, real-time stock level visibility, receiving and shipping management, and inventory tracking.

WMS reduces mistakes in the picking, packaging, and shipping processes and allows precise inventory control through the use of barcode scanning, RFID technology, and sophisticated algorithms. WMS also provides features for optimising space usage, enabling businesses to increase storage capacity and enhance warehouse layout design. With the integration of analytics and reporting tools, managers gain insights into performance metrics, enabling data-driven decision-making to further enhance operational efficiency. Overall, a WMS plays a crucial role in enhancing inventory management, order fulfillment accuracy, and overall operational efficiency, making it an indispensable tool for modern warehouse management.

A supply chain's transportation-related operations may be more effectively managed and optimised with the use of a transport management system (TMS), a software programme. Route planning, load optimisation, carrier selection, shipment tracking, and freight payment processing are just a few of the features it includes. TMS uses real-time data integration and sophisticated algorithms to optimise the transportation process from order placing to delivery. TMS gives organisations access into shipment status by centralising transportation-related data, enabling them to proactively detect and address possible delays or problems. TMS also helps companies to optimise load consolidation and route selection, which lowers costs and expedites delivery.

TMS improves efficiency and collaboration throughout the supply chain ecosystem with capabilities like electronic documentation management and automatic carrier communication. Furthermore, to facilitate smooth data interchange and comprehensive supply chain optimisation, TMS frequently interacts with other supply chain management systems, including Warehouse Management Systems (WMS) and Enterprise Resource Planning (ERP) software. In today's complicated logistics environment, TMS is essential for increasing customer happiness, cutting costs, and boosting transportation efficiency.

Hence further research can be done based on the implications of these software in this industry.

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Appendices:

Questionnaire

STUDY ON OPERATIONAL EXCELLENCE IN SWEET MANUFACTURING INDUSTRY DURING FESTIVAL SEASONS

* Indicates required question

1. Name
2. Age (in years) *

Mark only one oval.

- 18-30
- 31-40
- 41-50
- More than 50

3. Gender *

Mark only one oval.

- Male
- Female
- Other: _____

4. Experience * *Mark only one oval.*

Less than 3 years

3 to 5 years

5 to 10 years

More than 10 years

5. Location * *Mark only one oval.*

Tamil Nadu

Karnataka

Other: _____

6. Would you recommend additional production units? * *Mark only one oval.*

Yes No

7. If yes, give reasons?

8. In the below options at which place would you prefer for additional units? * *Mark only one oval.*

Near the shop

Neutral

Outside city limits

9. When would you recommend to start the planning process? * *Mark only one oval.*

One week before the festival

Two weeks before the festival

Three weeks before the festival

One month before the festival

10. What is the desired percentage of additional staff? * *Mark only one oval.*

0-2%

2%-5%

5%-10%

11. On a scale of 1 to 5 how much do you support the statement that college* students are cost efficient when compared to experienced staffs for the role of additional staff *Mark only one oval.*

1 2 3 4 5

Are you following centralized or decentralized purchasing? * *Mark only one oval.*

Centralized

De-centralised

12. Would you recommend changes in the following areas? *Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Production layout	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Warehouse layout	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistic practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Will you prefer to take E-way bill at the time of peak hours? *Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree