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Analysis on Inventory Management System in Swiggy Instamart Private Limited Bangalore North

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Abstract

This study investigates Swiggy Instamart Private Limited's inventory management system. Swiggy Instamart Private Limited is an online grocery delivery service that uses the Swiggy platform. Effective inventory management is essential for satisfying customer needs, reducing operating expenses, and upholding good service standards as e-commerce in the grocery industry grows. To optimize stock levels, forecast demand, and automate replenishment procedures, Swiggy Instamart uses a centralized, tech- driven inventory management system that incorporates cutting-edge technologies like artificial intelligence (AI), machine learning (ML), and data analytics. Real-time data tracking, warehouse management, vendor interactions, and the difficulties of managing inventory and demand fluctuation are all included in the study. Swiggy Instamart aims to decrease waste, guarantee product availability, and enhance delivery efficiency by putting these principles into practice.
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Keywords: Inventory Management, Swiggy Instamart, Supply Chain Management, Private Limited, Inventory Control, Stock Management.

1. Introduction

Effective inventory management is essential to the success of companies in the rapidly evolving grocery delivery and e-commerce industries. One of India's top food delivery firms, Swiggy, has added Instamart, a hyperlocal grocery delivery service that provides prompt, on-demand delivery of necessities, to its list of offerings. Effective inventory management is essential to Instamart's operations because it guarantees that the proper products are accessible when customers need them. The purpose of this study is to examine Swiggy Instamart Private Limited's inventory management system, with particular attention to its stock replenishment plans, demand forecasts, and inventory control techniques. The utilization of AI-driven forecasting, automated warehousing, and real-time stock tracking are just a few examples of how technology may improve inventory management. Through the analysis of these procedures, the study aims to comprehend how Instamart controls its inventory in order to lower operating expenses, lessen stockouts, and enhance customer happiness. The results will advance our understanding of efficient inventory control techniques in the expanding online grocery delivery market.

2. Research Methodology

Data will be gathered for this study on Swiggy Instamart Private Limited's inventory management system through surveys and interviews with important Instamart supply chain and inventory management staff. Industry reports, Swiggy publications, and pertinent scholarly sources will be the sources of secondary data. The gathered information will be examined to find trends and revelations about inventory procedures and difficulties. Instamart's particular inventory management strategies will be the subject of a case study approach. In order to cross- validate the results and guarantee the accuracy of the analysis, data triangulation will be used.

3.OBJECTIVES OF THE STUDY

1. To evaluate the efficiency of the current inventory management system in Swiggy Instamart.
2. To identify the challenges faced by Swiggy Instamart in managing its inventory.
3. To analyze the accuracy of inventory tracking and stock replenishment at Swiggy Instamart.

4.Review of Literature

a. Keller and Kotler, Christopher, Christopher, Chopra and Meindl (2019), costs, and enhancing customer satisfaction. Researchers such as Kotler and Keller (2016) and Chopra and Meindl (2019) stress the importance of integrating technology, including real-time tracking systems and machine learning

b. Bowersox, Closs, and Cooper (2019), Heizer, Render, and Munson, Kumar and Saini (2020), to predict demand, optimize stock levels, and reduce waste. The literature on inventory management emphasizes the critical role it plays in ensuring efficient operations, particularly in the fast-growing e- commerce and online grocery sectors.

c. Mangan and Lalwani (2020), Gupta and Jain (2021), Key strategies such as demand forecasting, just- in-time inventory, and AI-driven inventory management are widely recognized for improving efficiency, minimizing costs, and enhancing customer satisfaction.

d. **Silver, Pyke, and Thomas (2016), Gosling and Naim (2016),** . Researchers such as Kotler and Keller (2016) and Chopra and Meindl (2019) stress the importance of integrating technology, including real-time tracking systems and machine learning, to predict demand, optimize stock levels, and reduce waste.

e. **Coyle, Langley, and Novack:** The literature on inventory management emphasizes the critical role it plays in ensuring efficient operations, particularly in the fast- growing e-commerce and online grocery sectors

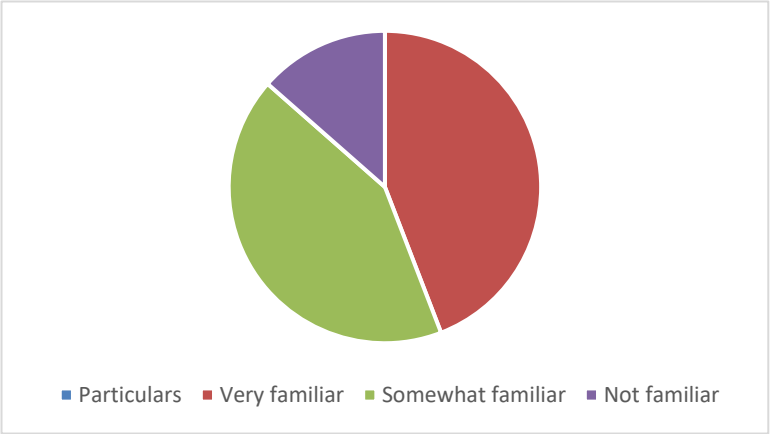
5.Data Analysis and Interpretation

Table 5.1: Inventory management system at Swiggy Instamart

Particulars	Number of respondents	Percentage
Very familiar	49	44.1
Somewhat familiar	47	42.3
Not familiar	15	13.5

Table no. 5.1

Graph 5.1 Inventory management system at Swiggy Instamart



Graph no. 5.1

Analysis:

According to the data, 42.3% of respondents are only moderately familiar with the subject, whereas 44.1% are extremely familiar. Just 13.5% don't know about it. This indicates that a significant majority (86.4%) have some level of familiarity with the subject. Most respondents appear to have a moderate to high understanding, suggesting widespread awareness.

Table 5.2 Swiggy Instamart determine the demand for various products

Particulars	Number of respondents	Percentage
Historical sales data	24	21.8
Market trends	53	48.2
Real-time customer demand	26	23.6
Vendor recommendations	7	6.4

Table 5.2

Analysis:

According to the data, market trends are the most important consideration for 48.2% of respondents when making inventory decisions. 21.8% make use of past sales data, while 23.6% take into account current customer demand. Vendor recommendations have the least influence, as only 6.4% of respondents rely on them. In general, vendor input is the least significant factor, whereas market trends have the biggest impact.

Step 1: Set up the Hypotheses

- **Null Hypothesis (H_0)**: The distribution of respondents across the categories (Historical sales data, Market trends, Real-time customer demand, Vendor recommendations) is uniform or follows an expected distribution.

- **Alternative Hypothesis (H_1)**: The distribution of respondents across the categories is not uniform or does not follow the expected distribution.

Step 2: Observed Data (O)

The observed number of respondents in each category is given as:

- Historical sales data: 24 respondents
- Market trends: 53 respondents
- Real-time customer demand: 26 respondents
- Vendor recommendations: 7 respondents

Step 3: Expected Data (E)

If we assume the distribution should be uniform (i.e., respondents are equally distributed across categories), the expected number of respondents in each category would be the total number of respondents divided by the number of categories.

The total number of respondents is:

24+53+26+7

=11024 + 53 + 26 + 7

= 11024+53+26+7

=110

Thus, the expected number of respondents in each category is:

1104=27.5

= 27.54110

=27.5

Step 4: Chi-Square Formula

The chi-square statistic is calculated using the formula:

χ2=∑(O−E)2E\chi^2

{(O - E)^2}{E}χ2

=∑E(O−E)2

Where:

- OOO is the observed frequency
- EEE is the expected frequency

Step 5: Calculation of Chi-Square Value

Let's compute the chi-square statistic for each category:

1. **Historical sales data**:

(24−27.5)227.5

=(−3.5)227.5

=12.2527.5≈0.445 {(24 - 27.5)^2}{27.5}

= {(-3.5)^2}{27.5} } 0.44527.5(24−27.5)2

=27.5(−3.5)2

=27.512.25≈0.445

2. **Market trends**:

= {12.25}{27.5

(53−27.5)227.5

=(25.5)227.5

=650.2527.5≈23.7\frac{(53 - 27.5)^2}{27.5}

= {(25.5)^2}{27.5}

= {650.25}{27.5 23.727.5(53−27.5)2

=27.5(25.5)2

=27.5650.25≈23.7

3. **Real-time customer demand**:

(26−27.5)227.5

=(−1.5)227.5=2.2527.5≈0.082\frac{(26 - 27.5)^2}{27.5}

= \frac{(-1.5)^2}{27.5}

= \frac{2.25}{27.5} \approx 0.08227.5(26−27.5)2

=27.5(−1.5)2

=27.52.25≈0.082

4. **Vendor recommendations**:

(7−27.5)227.5

=(−20.5)227.5

=420.2527.5≈15.3\frac{(7 - 27.5)^2}{27.5}

= \frac{(-20.5)^2}{27.5}

= \frac{420.25}{27.5} \approx 15.327.5(7−27.5)2

=27.5(−20.5)2

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7. **Real-time customer demand**:

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= \frac{(-1.5)^2}{27.5}

= \frac{2.25}{27.5} \approx 0.08227.5(26−27.5)2

=27.5(−1.5)2

=27.52.25≈0.082

Step 8: Decision

- Since the calculated chi-square value $\chi^2 = 39.527$ is greater than the critical value of 7.815, we **reject the null hypothesis**.

Conclusion:

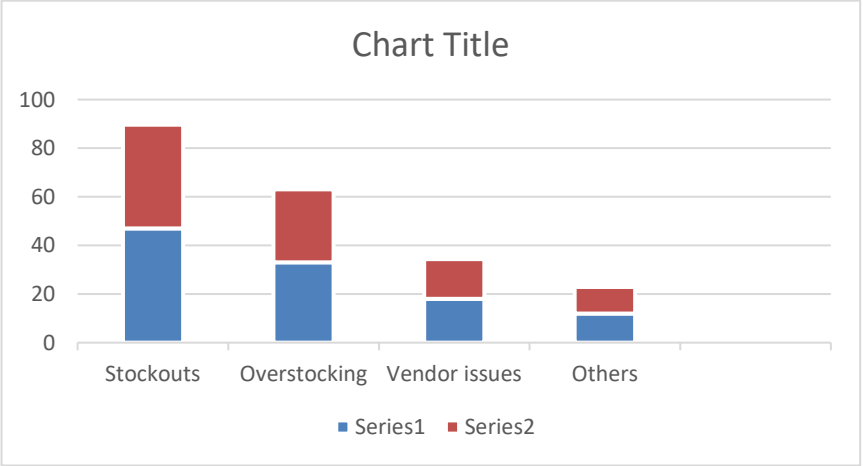
- The data shows a significant difference in the distribution of respondents across the four categories. Therefore, the distribution of respondents does not follow a uniform pattern.

Table 5.3: Biggest challenges you faced in managing inventory at Swiggy Instamart

Sales 1st Qtr 2nd Qtr 3rd Qtr 4th Qtr	**Number of respondents**	**Percentage**
Stockouts	47	42.7
Overstocking	33	30
Vendor issues	18	16.4
Others	12	10.9

Table no 5.3

Biggest challenges you faced in managing inventory at Swiggy Instamart



Graph no 5.3

Interpretation

According to the data, 48.2% of respondents said that market trends were the most important factor in inventory management. Though to a lesser degree, decisions are also influenced by past sales data (21.8%) and current customer demand (23.6%). The least influential are vendor recommendations, which are taken into consideration by just 6.4% of respondents. All things considered; market trends have the greatest influence on inventory strategies.

6. Findings and Suggestions:

6.1 Findings

- Market Trends as a Major Influencer, according to the study, most participants (48.2%) give market trends top priority when deciding how best to manage their inventory, highlighting how crucial it is to adjust to emerging consumer demands and market dynamics.
- Demand from Customer of respondents emphasize the significance of dynamic inventory updates based on immediate customer preferences.
- Utilization of Historical of respondents said they base their inventory decisions on historical sales data, indicating that historical performance influences demand forecasting.

6.2 Suggestions

- Strengthen vendor collaboration, given that vendor recommendations were found to have little impact, Swiggy Instamart may want to think about bolstering vendor collaboration in order to increase the precision of stock forecasts and guarantee more prompt restocking.
- Enhance forecasting accuracy, by combining machine learning algorithms and sophisticated predictive analytics, demand forecasting could be further improved, lowering the possibility of stockouts or overstocking, particularly for perishable goods.
- Leverage automation for replenishment, by reducing manual intervention and optimizing stock levels, automated inventory replenishment systems based on real-time data can increase accuracy and efficiency.

7.Conclusion

The Swiggy Instamart inventory management system study emphasizes how important technology, data analytics, and market trends are to maintaining effective operations. To maintain ideal stock levels and satisfy customer expectations, Swiggy Instamart has used cutting-edge strategies like automation, real-time demand forecasting, and logistics integration. The results show that vendor recommendations have a comparatively small influence on inventory decisions, whereas market trends and current customer demand have the greatest influence. Even with these developments, there is still opportunity for improvement in areas like sustainability practices, demand forecasting accuracy, and vendor collaboration. Swiggy Instamart can further optimize its inventory management system, cut waste, and boost overall efficiency by utilizing more sophisticated predictive analytics, improving inventory visibility, and concentrating on customer-centric strategies. can further optimize its inventory management system, cut waste, and boost overall efficiency by utilizing more sophisticated predictive analytics, improving inventory visibility, and concentrating on customer-centric strategies.

Bibliography

Chopra, S. &. (2019). Supply Chain Management: Strategy, Planning, and Operati. *Pearson Education*, 1-704.

Christopher, M. (2016). Logistics & Supply Chain Management. *Pearson Education*, 1- 740. Heizer, J. R. (2017). Operations Management. *Pearson Education*, 1-896.

Kotler, P. &. (2016). Marketing Management. *Pearson Education*, 1-488.

Silver, E. P. (2016). Inventory and Production Management in Supply Chains. *CRC Press*