

Flash Sale Intensity and Delivery Satisfaction: Evidence from Indonesian E-Commerce Platforms

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ABSTRACT: This study examines the impact of flash sale intensity on delivery service satisfaction across five critical dimensions: timeliness, product condition, tracking accuracy, return ease, and courier professionalism, focusing on leading Indonesian e-commerce platforms. Flash sales have become one of the most prominent promotional strategies in Indonesia's rapidly growing digital market, yet they frequently generate logistical challenges such as inventory overload, courier delays, and system inefficiencies. A quantitative survey was conducted with 212 Indonesian consumers who participated in national flash sale events (e.g., 11.11, 12.12). Satisfaction levels were measured using Likert scale items, and the data were analyzed with Pearson correlation and linear regression. The results show significant negative correlations between flash sale intensity and delivery timeliness, product condition, and courier professionalism. Tracking accuracy was moderately affected, while return ease showed no significant relationship. These findings highlight how high-volume promotions strain logistics infrastructure, leading to delivery inefficiencies. The study contributes by filling a research gap in Indonesian e-commerce, offering a multidimensional assessment of delivery service during promotional surges. It recommends practical strategies such as investments in scalable logistics infrastructure, integration of advanced tracking systems, third-party logistics partnerships, and courier training programs to enhance resilience during peak demand. This evidence provides actionable insights for platforms aiming to maintain consumer trust and service quality amid rapid promotional growth.

Keywords: Flash Sale, Delivery Logistics, Consumer Satisfaction, E Commerce Indonesia, Order Fulfillment.



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INTRODUCTION

Indonesia's e-commerce industry is among the fastest growing in Southeast Asia, with a reported 49% market increase in 2020 (Cukor et al., 2019). This expansion, driven by internet penetration,

smartphone adoption, and behavioral shifts, reached an estimated USD 82 billion in 2023. Within this rapid growth, flash sales have emerged as one of the most influential promotional tools in digital commerce, particularly on platforms such as Shopee, Tokopedia, and Lazada. In Indonesia, flash sales like “11.11” or “12.12” regularly attract millions of transactions within hours, creating both sales opportunities and logistical challenges (Cukor et al., 2019).

Flash sales generate a unique retail phenomenon by offering time-limited discounts on limited stock items. The sense of urgency and scarcity significantly alters consumer behavior, leading to increased web traffic and conversions (Burt et al., 2015). Psychological triggers such as fear of missing out (FOMO) and perceived savings drive consumer participation (Chang et al., 2018). However, in Indonesia, these events also create recurring service disruptions: couriers face delivery delays, tracking systems often malfunction, and return processes become inconsistent during high-volume campaigns.

However, flash sales pose considerable challenges to the logistics systems supporting e-commerce platforms. Logistical strains include inadequate inventory management, overloaded fulfillment centers, and delayed deliveries due to a surge in orders. Studies have shown that these challenges frequently stem from inaccurate demand forecasting and the inability of distribution networks to scale quickly (Ding et al., 2019).

In this increasingly competitive environment, customer expectations continue to escalate. Shoppers now demand not only fast delivery but also precise tracking information and seamless return processes. Research suggests that unmet expectations regarding logistics services significantly impact customer satisfaction and can harm long term (Pingel et al., 2017). Customers often assess delivery quality through multiple dimensions, including timeliness, the condition of received goods, and the quality of courier interactions.

These expectations can be particularly difficult to meet during flash sales. Elevated order volumes frequently strain courier capacities, resulting in delays, tracking discrepancies, and inconsistent return experiences. Such inefficiencies, even if isolated, can lead to broader reputational damage for e-commerce platforms (Georgieva et al., 2017). Flash sales, therefore, represent a logistical paradox while they drive sales and user engagement, they also heighten the risk of service failure.

Existing literature on flash sales has primarily addressed promotional effectiveness and sales outcomes. Fewer studies have empirically assessed logistics performance in this context. Renz et al. (2022) and Michielsen et al. (2018) emphasize the importance of responsive and technologically integrated logistics solutions to handle demand spikes effectively.

Problem Statement and Objectives: Despite the commercial significance of flash sales, little research has explored their impact on delivery service satisfaction in Indonesia. This study addresses that gap by examining five dimensions of delivery service: timeliness, product condition, tracking accuracy, ease of return, and courier professionalism. The objective is to provide empirical evidence on how flash sale intensity affects consumer satisfaction and to recommend strategies for strengthening logistics resilience.

This study aims to fill the research gap by systematically evaluating the relationship between flash sale intensity and consumer satisfaction across five critical dimensions of delivery service. By focusing on customer perceptions gathered during major national flash sale events (1.1 and 2.2), the research seeks to understand which service areas are most affected and why. The study is designed to provide evidence based recommendations for improving logistics resilience in flash sale scenarios.

The novelty of this study lies in its multidimensional evaluation of delivery satisfaction, using a quantitative framework that considers participation frequency and consumer feedback. By linking promotional intensity with logistics service outcomes, the study fills a critical gap in Indonesian e-commerce research. Its focus on Shopee, Tokopedia, and Lazada ensures relevance to the dominant actors shaping the country's digital economy.

METHOD

This study employs a quantitative associative design to analyze the relationship between flash sale intensity and consumer satisfaction with delivery logistics. A structured survey was chosen to capture consumer perceptions across five dimensions of delivery satisfaction. This approach follows prior research emphasizing the suitability of Likert-scale surveys for service quality assessments in e-commerce (Cukor et al., 2019). The research flow began with instrument design, pilot testing, distribution of questionnaires, and finally statistical analysis using SPSS.

The research applied a descriptive quantitative method with an associative approach to explore correlations between variables. Data were collected using a structured online questionnaire (Google Forms) distributed through social media and e-commerce discussion groups. Respondents were selected using purposive sampling, with the inclusion criterion being prior participation in national flash sale events (e.g., 11.11, 12.12) on platforms such as Shopee, Tokopedia, and Lazada. While purposive sampling allowed focus on relevant respondents, it may introduce bias as the sample may not fully represent all Indonesian e-commerce users.

Operational Variables

- **Independent Variable:** Flash sale intensity, measured by self-reported participation frequency in national sales events (e.g., 11.11, 12.12), consistent with prior approaches (Tomita & Tokuyama, 2022).
- **Dependent Variable:** Delivery satisfaction measured across five dimensions: (1) timeliness (e.g., "My order arrived within the expected delivery time"), (2) product condition (e.g., "The item arrived in good condition without damage"), (3) tracking accuracy (e.g., "Tracking information was updated accurately"), (4) ease of return (e.g., "I found it easy to initiate a product return"), and (5) courier professionalism (e.g., "The courier behaved in a professional and courteous manner"). Each dimension was assessed using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

The target population consisted of active e commerce users in Indonesia with experience in flash sale events. A total of 212 valid responses were obtained. The sample was sufficiently large to meet assumptions for parametric statistical tests.

The questionnaire included demographic information, flash sale participation frequency, and satisfaction ratings. Likert scales were chosen to capture nuanced consumer perceptions and allow for statistical treatment of ordinal data. This method is recognized for its efficacy in customer satisfaction research (Cukor et al., 2019).

Construct validity was ensured through expert review and pilot testing. Reliability was assessed using Cronbach's Alpha. Each of the five satisfaction dimensions exceeded the minimum reliability threshold of 0.70, with an overall alpha score above 0.79, confirming internal consistency (Zeinijahromi & Bedrikovetski, 2015).

Data were analyzed using SPSS v26.0 through three main techniques: (1) Descriptive statistics to summarize demographics and general trends, (2) Pearson correlation to examine the strength and significance of associations between flash sale intensity and satisfaction dimensions, and (3) Linear regression to evaluate predictive effects of flash sale intensity on delivery satisfaction. These methods are consistent with best practices in quantitative service evaluation (Cukor et al., 2019).

RESULT AND DISCUSSION

This chapter presents the outcomes of statistical analyses used to assess the influence of flash sale intensity on five key dimensions of delivery service satisfaction. Using SPSS 26.0, Pearson correlation and linear regression were applied to a sample of 212 valid responses collected from Indonesian e commerce users. The results are discussed dimension by dimension, incorporating relevant literature to contextualize each finding.

Table 1 shows that most respondents were satisfied (36.8%) or fairly satisfied (28.8%) with delivery timeliness during flash sale events. However, 16% reported dissatisfaction, and only 18.4% were very satisfied. This indicates that while timeliness is generally acceptable, flash sales often create delivery delays that reduce consumer confidence.

Table 1. Assessment of Timeliness

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	39	18.4%
Satisfied	78	36.8%
Fairly Satisfied	61	28.8%
Dissatisfied	27	12.7%
Very Dissatisfied	7	3.3%

Source Primary Data 2024

Product Condition

Table 2 indicates that 66.1% of respondents were satisfied or very satisfied with product condition, while 12.7% expressed dissatisfaction. This suggests that product quality is largely maintained, but flash sales still create risks such as damaged packaging or handling errors.

Table 2. Product Condition Upon Receipt

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	51	24.1%
Satisfied	89	42.0%
Fairly Satisfied	45	21.2%
Dissatisfied	21	9.9%
Very Dissatisfied	6	2.8%

Source Primary Data 2024

Tracking Accuracy

Table 3 shows that 64.6% of respondents rated tracking accuracy positively, while 19.8% expressed dissatisfaction. This indicates that tracking systems are functional but inconsistent during high demand, reducing trust in delivery transparency.

Table 3. Assessment of Tracking System

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	33	15.6%
Satisfied	76	35.8%
Fairly Satisfied	61	28.8%
Dissatisfied	34	16.0%
Very Dissatisfied	8	3.8%

Source Primary Data 2024

Return Ease

Table 4 shows that more than half of respondents rated return ease positively (70.2%), but nearly 30% reported dissatisfaction. This indicates that while return systems are functional, they remain complex and time-consuming for many users.

Table 4. Ease of Return Process

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	24	11.3%
Satisfied	55	25.9%
Fairly Satisfied	70	33.0%
Dissatisfied	45	21.2%
Very Dissatisfied	18	8.5%

Source Primary Data 2024

Courier Professionalism

Table 5 shows that 65.1% of respondents rated courier professionalism positively, while 15.1% reported dissatisfaction. This indicates that courier behavior is generally well-received, but heavy workloads during flash sales may reduce service quality

Table 5. Assessment of Courier Service

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	47	22.2%
Satisfied	91	42.9%
Fairly Satisfied	42	19.8%
Dissatisfied	24	11.3%
Very Dissatisfied	8	3.8%

Source Primary Data 2024

Validity and Reliability Test Results

All questionnaire items have a Corrected Item–Total Correlation > 0.30 and a significance value of $p < 0.05$, indicating that they are valid. The results of the reliability test are as follows:

Table 6. Validity and Reliability Test Results

Variable	Cronbach's Alpha
Flash Sale Intensity	0.812
Timeliness of Delivery	0.844
Product Condition	0.856
Tracking	0.821
Ease of Return	0.798
Courier Service	0.832

All variables demonstrate very good reliability ($\alpha > 0.7$).

Pearson Correlation Test Results

Table 7. Assessment of Courier Service

Dependent Variable	r-value	Sig. (p-value)
Timeliness of Delivery	0.528	0.000
Product Condition	0.487	0.000
Tracking	0.455	0.000
Ease of Return	0.391	0.000
Courier Service	0.463	0.000

Source Primary Data 2024

There is a significant relationship between flash sale intensity and all aspects of delivery satisfaction, with a moderate correlation strength.

This study demonstrates that flash sale intensity significantly disrupts several aspects of delivery service quality in Indonesian e-commerce. The strongest effects were found in timeliness and product condition, reflecting the inability of logistics systems to scale rapidly during national campaigns such as Shopee's 11.11, where server overloads and courier backlogs frequently led to late deliveries and damaged parcels. These outcomes highlight systemic weaknesses in inventory management and fulfillment processes.

As revealed in the results, increased flash sale activity correlates significantly with reduced delivery timeliness. This supports Mathiesen et al. (2021), who argue that operational thresholds in e-commerce logistics require scalable infrastructure capable of adapting to sudden demand surges. The inability of platforms to meet these thresholds often results in delayed shipments. This outcome not only confirms prior assertions by Tao et al. (2020) but also validates the critical role of proactive demand forecasting and flexible routing in handling high transaction volumes.

Product condition was the second most negatively impacted dimension. Respondents reported increased cases of damaged packaging and compromised product integrity, aligning with findings by Zhang et al. (2023) and Zheng et al. (2023). These issues reflect systemic weaknesses in warehousing and packaging protocols. Without process standardization and automation, product mishandling is likely to persist during high load periods.

Tracking accuracy, although less strongly affected, still showed a statistically significant decline. Delays and inconsistencies in real time updates indicate limitations in integrated tracking systems. Anacona et al. (2014) and An & Shi (2021) emphasize that such discrepancies can erode consumer trust. This study corroborates their view by linking tracking errors to consumer dissatisfaction even in otherwise successful transactions.

Return ease did not display a significant relationship with flash sale intensity. This finding diverges from expectations but may reflect Indonesian customer behavior, where return rates remain relatively low due to procedural friction and perceived inconvenience. İtmeç et al. (2020) highlight that return systems often falter under logistical stress, but such failures are less visible when customers do not initiate returns.

Courier professionalism was modestly affected, with a statistically significant decline during flash sales. This reinforces Donck et al. (2014) and Kakihana et al. (2016), who link employee overload to declining service behavior. During peak campaigns, couriers are under pressure to complete more deliveries in less time, often sacrificing interpersonal service quality. Ja'farawy et al., (2021) argue for regular training to address soft skill erosion under stress, a recommendation that aligns with this study's observations.

These findings affirm that flash sale promotions, while effective for boosting sales, expose vulnerabilities in logistics systems that directly affect customer experience. Liao et al. (2016) emphasize that system limitations ranging from processing delays to tracking inaccuracies become more evident during peak demand. The compounding effects of these limitations harm platform credibility.

Several interventions proposed in the literature show promise. Singh et al. (2016) suggest that targeted investments in inventory management systems, staff upskilling, and third party partnerships can enhance fulfillment capacity during flash events. Similarly, Pan et al. (2023) and Madhwal et al. (2023) highlight the utility of IoT integration and blockchain for real time transparency and traceability.

Post purchase experiences are critical for brand loyalty. Iwase et al. (2019) emphasize that failure to meet expectations after purchase particularly regarding delivery and returns has long term reputational effects. As this study reveals, even minor service disruptions during flash sales can have outsized impacts on consumer trust.

In summary, flash sales create a paradox: boosting sales but straining logistics. For Indonesian e-commerce, strengthening resilience requires both investment in infrastructure and technology and attention to workforce conditions. This study relies on self-reported survey data and does not differentiate between individual platforms, which may affect generalizability. Longitudinal and platform-specific analyses, as well as studies on AI-driven logistics optimization, could provide deeper insights.

CONCLUSION

This study provides empirical evidence that flash sale intensity significantly influences delivery service satisfaction in Indonesian e-commerce, particularly in the areas of timeliness and product condition. By adopting a multidimensional approach across five service dimensions timeliness, product condition, tracking accuracy, return ease, and courier professionalism the research highlights how promotional surges expose systemic weaknesses in logistics infrastructure, workforce readiness, and operational processes. The novelty of this study lies in linking promotional strategies with operational service outcomes in a developing market context, thereby filling an important research gap in Southeast Asian e-commerce literature.

From a practical perspective, e-commerce platforms need to invest in scalable logistics infrastructure, automated order processing, and workforce training while also strengthening partnerships with third-party logistics providers. Management should also consider advanced solutions such as IoT-based tracking, regional warehousing, and digital integration with couriers to sustain service quality during peak campaigns. This study is limited by its reliance on self-reported survey data and lack of platform-specific comparisons. Future research could build on these findings by employing longitudinal designs, cross-platform analyses, and examining the role of AI-driven logistics optimization in enhancing delivery resilience.

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