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The Impact of Digital Payment Systems on Consumer Behaviour and Business Operations in Online Food Delivery Services in India

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Abstract

This study explores the impact of digital payment systems on consumer behaviour and business operations in India's online food delivery sector. It focuses on three objectives. Identifying drivers of consumer adoption, evaluating the influence on consumer behaviour and satisfaction, and assessing operational effects on businesses.

The widespread adoption of digital payments in India, driven by initiatives like Digital India and increased mobile and internet penetration, has transformed the food delivery industry. Key drivers for consumer adoption include convenience, security, trust, and technological readiness. Systems like UPI, mobile wallets, and QR codes are shaping consumer behaviour by increasing order frequency, boosting spending, and shifting preferences toward cashless transactions.

For businesses, digital payment systems improve payment processing, streamline revenue management, and enhance logistics, resulting in higher customer satisfaction and retention. Despite challenges like fraud prevention and transaction costs, the advantages of digital payments present significant growth opportunities for businesses.

Overall, the study highlights the transformative role of digital payment systems in driving consumer engagement and operational efficiency in India's online food delivery market, offering insights for businesses seeking to capitalize on these technological advancements.

Keywords*:* *Digital Payment Systems, Consumer Behaviour, Online Food Delivery, Consumer Adoption, Business Operations.*

1. Introduction

The swift adoption of digital payment systems has significantly transformed various sectors of the Indian economy, particularly the online food delivery industry. India's payment ecosystem has witnessed a remarkable shift driven by technological advancements, rising Smartphone penetration, and supportive government initiatives such as Digital India and Make in India. The integration of digital payment platforms—such as Unified Payments Interface (UPI), mobile wallets, credit/debit cards, and QR codes—has been instrumental in simplifying financial transactions, fostering a cashless economy, and promoting digital inclusion.

India's online food delivery market, led by platforms like Swiggy, Zomato, and Uber Eats, has become a vital part of urban and semi-urban lifestyles. The growing reliance on digital payment methods on these platforms has revolutionized consumer-business interactions. For consumers, digital payments provide unmatched convenience**,** security**,** and speed**,** influencing their

purchasing behavior by increasing order frequency, transaction volumes, and reducing dependence on cash-on-delivery options. Simultaneously, businesses benefit from fasterpayment processing**,** real-time revenue management, and enhanced logisticalefficiency, leading to improved operations and higher customer retention rates.

This study aims to explore the dynamic interplay between digital payment systems, consumer behaviour, and business operations within the online food delivery ecosystem. Although digital payments present substantial opportunities for growth and efficiency, they also introduce challenges such as transaction costs, cyber security risks, and fraud prevention, which must be addressed for their long-term sustainability.

2 Statement of the Problem

The rapid adoption of digital payment systems in India, driven by initiatives like Digital India, Unified Payments Interface (UPI), and growing smartphone penetration, has transformed the online food delivery sector. Platforms such as Swiggy and Zomato have witnessed significant shifts in consumer behavior and business operations due to the increasing reliance on digital payments. While digital payment systems offer unparalleled convenience, security, and operational efficiency, several challenges remain unexplored. Key issues include understanding the specific factors driving consumer adoption—such as convenience, trust, and incentives—and analyzing their impact on purchase frequency, spending behavior, and payment preferences. For businesses, while digital payments streamline revenue management and reduce transaction delays, challenges like transaction fees, cybersecurity risks, and fraud management persist. Moreover, there is a lack of clarity regarding the penetration of digital payments in semi-urban and rural areas, where digital literacy and infrastructure gaps hinder widespread adoption. Additionally, addressing policy and technological challenges, such as fraud prevention and regulatory compliance, remains critical for sustainable growth. This study aims to examine these concerns by analyzing the drivers of digital payment adoption, their influence on consumer behavior, and their operational impact on businesses in the online food delivery ecosystem.

3 Objectives of study:

1. To Investigate Consumer Adoption Drivers of Digital Payment Systems in Online Food Delivery Services**.**
2. To Assess the Influence of Digital Payment Systems on Consumer Behaviour and Satisfaction**.**
3. To Analyze the Operational Impacts of Digital Payment Systems on Online Food Delivery Businesses.

4 Scope of the Study

This study examines the influence of digital payment systems on consumer behaviour and business operations in India’s online food delivery sector. It focuses on identifying key factors driving consumer adoption of digital payment methods, such as UPI, mobile wallets, and QR codes, and their impact on purchasing patterns, transaction frequency, and payment preferences. The study also investigates the operational advantages for businesses, including faster payment processing, efficient revenue management, and improved logistical performance. Covering major platforms like Swiggy and Zomato, the research highlights variations in adoption

across urban, semi-urban, and rural regions, addressing challenges related to digital literacy and infrastructure gaps. Furthermore, it explores critical issues such as cyber security threats, transaction costs, and fraud prevention while assessing the role of government initiatives and technological advancements in promoting digital payment usage. The outcomes aim to offer valuable insights for policymakers, businesses, and technology providers to harness digital payment systems for enhanced operational effectiveness and consumer satisfaction in India's evolving food delivery market.

5 Theoretical Background and Literature Review:

Overview of Digital Payment Systems in India

India has emerged as a global leader in digital payments, undergoing a transformative shift over the past decade. The volume of digital transactions surged from 162 crore in FY 2012-13 to over 16,443 crore in FY 2023-24, representing a growth of 129 times. In terms of transaction value, the digital payment volume increased from ₹1,370 lakh crore in FY 2017-18 to ₹2,428 lakh crore in FY 2023-24. Digital payments now account for over 40% of all transactions in India, with forecasts indicating that by FY 2025-26, the market will reach $10trillion, and two-thirds of all payment transactions will be conducted digitally.

Globally, India leads the digital payment revolution, contributing nearly 46% of global digital transactions, surpassing economies like Brazil, China, Thailand, and South Korea. The Unified Payments Interface (UPI**)** has been instrumental in this growth, processing over 10 billion transactions monthly, making it one of the largest real-time payment systems in the world.

Rapid Internet Adoption

The rapid expansion of internet usage, driven by affordable data plans and government initiatives under *Digital India*, has significantly boosted digital payments. Key milestones include:

- Internet Users: Over 836 million active internet users, projected to exceed **900 million** by 2025.
- Rural Broadband Growth: A 200% increase in rural internet subscriptions between 2015 and 2021.
- Bharat Net Project: Aims to connect 400 million rural users, bridging the urban-rural digital divide.
- 5G Rollout: The 2022 auction of 5G spectrum is expected to revolutionize connectivity, enabling advanced fintech solutions and next-generation payment innovations.

This digital infrastructure has fostered an inclusive ecosystem, making digital payments accessible across diverse socio-economic segments.

- **Financial Inclusion: The Role of PMJDY:**

The Pradhan Mantri Jan Dhan Yojana (PMJDY), launched in 2014, has been pivotal for financial inclusion:

- Accounts Opened: Over 51 crore accounts as of November 2023, with total deposits of ₹2,08,855 crore.
- Direct Benefit Transfers (DBT): Enabled targeted subsidies, benefiting 85% of rural households and 69% of urban households, particularly during the COVID-19 pandemic.
- JAM Trinity: The integration of Jan Dhan accounts, Aadhaar, and Mobile

numbers has streamlined financial transactions, minimized leakages, and improved transparency in government schemes.

This framework has brought marginalized populations into the formal economy, strengthening the adoption of digital payments.

- **Mobile Phones: Catalysts for Digital Transactions** India's thriving mobile ecosystem has played a pivotal role in driving digital payments
- Mobile Users: With over 1.2 billion active mobile users and 600 million smartphone users, mobile devices are at the core of digital payment solutions.
- Future Growth: The number of mobile users is projected to reach 1.55 billionby 2040.
- Mobile Payment Accessibility: Solutions like UPI, QR codes, mobile wallets, and banking apps have simplified financial transactions, driving mass adoption.

The JAM Trinity has further facilitated the transfer of ₹34 lakh crore (US$400 billion) directly into beneficiaries' accounts, underscoring the role of mobile platforms in promoting financial inclusion.

- **Key Drivers of Digital Payment Growth:**

1. Unified Payments Interface (UPI):
   - Processes over 10 billion transactions monthly.
   - Supported by leading platforms like Google Pay, PhonePe, and Paytm, UPI has revolutionized real-time payments.

2. Government Policies:
   - Initiatives such as *Digital India, demonetization*, and *GST implementation* have accelerated the shift toward digital payments.
   - Financial literacy campaigns have increased awareness of digital payment benefits.

3. Technological Advancements**:**
   - Innovations like 5G, IoT, and Central Bank Digital Currency (CBDC) are poised to drive the next phase of digital payment adoption.

4. Socio-Economic Impact:
   - Digital payments have reduced dependency on cash, promoted transparency, and strengthened the formal economy.
   - Improved ease of doing business has benefitted enterprises of all sizes, fostering economic growth.

- **Types of Digital Payment Systems in India and Current Market Insights:**

1. Unified Payments Interface (UPI**):**
   UPI serves as the backbone of India's digital payment ecosystem, facilitating seamless real-time peer-to-peer (P2P) and peer-to-merchant (P2M) transactions. By August 2024, UPI transactions soared to 13,116 crore, with a transaction value exceeding ₹200 lakh crore, showcasing its unprecedented adoption nationwide. UPI accounts for 49% of global real-time payment transactions and is expanding internationally, operating in seven countries,including the UAE and Singapore.

2. Mobile Wallets:
   Mobile wallets, offered by platforms like Paytm, PhonePe, and Google Pay, enable users to store money digitally and make quick, hassle-free payments without requiring card details. These

wallets are widely adopted for small-scale transactions, particularly in sectors such as e-commerce and **food** delivery.

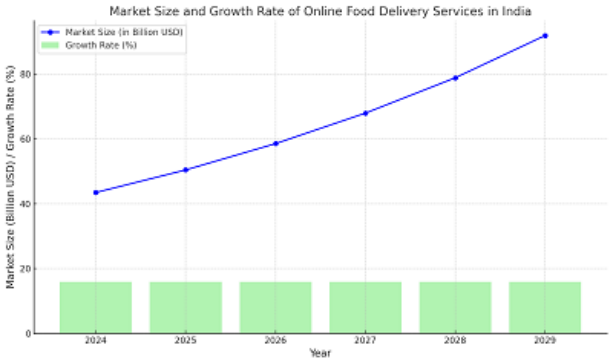
3. Credit and Debit Cards:
   Despite the dominance of UPI for smaller transactions, **credit and debit cards** remain crucial for high-value payments, offering enhanced flexibility and security. Cards continue to be a preferred choice for users making **large-scale purchases** and transactions.

4. QR Codes:
   QR code-based payments have gained significant traction due to their simplicity, security, and ease of use. Extensively adopted in retail, food delivery, and transportation sectors, QR codes have streamlined low-value, quick transactions, promoting cashless payments even among small merchants.

5. Aadhaar Enabled Payment System (AePS):
   AePS facilitates transactions using an individual's Aadhaar number and biometric verification, playing a pivotal role in rural financial inclusion. By enabling unbanked and underserved populations to access digital payments seamlessly, AePS has been instrumental in integrating rural communities into India's formal financial system.

- **Overview of Online Food Delivery Services in India**

Indian food delivery Market Growth
India's online food delivery market has experienced significant growth, driven by increased internet penetration, changing consumer lifestyles, and the convenience offered by digital platforms. As of 2024, the market is projected to reach a revenue of approximately $43.78 billion, with an expected annual growth rate (CAGR) of 15.98% from 2024 to 2029, leading to a projected market volume of $91.88 billion by 2029.



Here is the table and graph showing the market size and growth rate of online food delivery services in India:

Table: Market Size and Growth Rate

Year	Market Size (Billion USD)	Growth Rate (%)
2024	43.47	15.98
2025	50.43	15.98
2026	58.54	15.98
2027	67.95	15.98
2028	78.84	15.98
2029	91.88	15.98

Graph: Market Size and Growth Rate

- The blue linerepresents the market size in billions of USD.
- The green bars represent the annual growth rate percentage, consistently at **15.98%**.

This highlights the robust growth trajectory of the Indian online food delivery sector. Would you like further analysis or additional insights?

As of 2024, India's online food delivery market is projected to reach approximately $43.47 billion.
The market is primarily dominated by two major players: Zomato and Swiggy, which together hold about 90% of the market share.

Zomato

- Revenue: In the fiscal year 2024 (FY24), Zomato reported an adjusted revenue of ₹7,792 crore (approximately $1.05 billion), marking a 27% year-over-year growth from ₹6,147 crore in FY23.
- Profitability**:** The company achieved an adjusted EBITDA profit of ₹912 crore in FY24, a significant improvement from a loss of ₹10 crore in FY23.

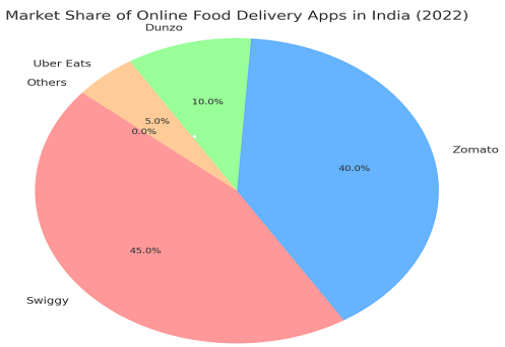
Swiggy

- Revenue: Swiggy's operating revenue increased by 36% year-over-year to ₹11,247 crore (approximately $1.52 billion) in FY24.
- **Losses**: The company's net loss decreased by 44% year-over-year to ₹2,350 crore in FY24
  .

Other Players

Other platforms, such as Dunzo and Faasos, hold a smaller share of the market. Detailed financial data for these companies is limited, but their combined market share is estimated to be around 10%.

Here is a pie chart representing the current market share of major food delivery apps in India



Here is a pie chart representing the current market share of major food delivery apps in India for 2024. Zomato and Swiggy dominate the market, followed by Amazon Food and other smaller players.

6. Literature Review:

Consumer Adoption Drivers of Digital Payment Systems

a. Convenience, Security, and Trust.
Research by **Yadav and Pathak (2020)** explores the factors influencing digital payment adoption in India, highlighting the importance of convenience and security. The ease of conducting payments via mobile phones without needing physical cash or cards significantly influences consumer adoption.

Das and Singh (2022) argue that UPI (Unified Payments Interface) and mobile wallets are particularly attractive to consumers due to their seamless integration into digital platforms, fostering a positive consumer experience.

Influence of Digital Payment Systems on Consumer Behavior and Satisfaction

b. Increased Order Frequency and Spending
Studies by **Huang et al. (2021)** on consumer behavior in e-commerce

suggest that digital payment systems increase order frequency and spending by offering ease and speed. In the online food delivery context,

Kumar and Gupta (2021) found that customers using UPI or mobile wallets often place more frequent orders compared to those using cash on delivery. Additionally.

Chaudhary and Jain (2022) observed that digital payment methods tend to increase average spending per transaction, as consumers do not experience the psychological barrier of handing over physical cash.

Kumar (2021) highlights that online food delivery platforms that offer cashbacks, discounts, or loyalty points for using digital payments experience higher retention rates, as consumers perceive greater value in these rewards. The frictionless nature of digital payments further contributes to positive user experiences, leading to long-term brand loyalty.

Operational Impacts on Businesses

Payment Processing and Revenue Management

Agarwal and Sharma (2020) discuss how digital payment systems streamline payment processing for online food delivery platforms, improving transaction efficiency and reducing errors associated with cash handling.

Logistical Improvements and Operational Efficiency

According to **Ghosh and Mehta (2022)**, digital payments enable better logistical coordination by integrating payments directly into delivery systems. This minimizes discrepancies between orders and payments, resulting in faster delivery times and improved order fulfillment. Furthermore, **Chandran and Raj (2021)** argue that the use of UPI and mobile wallets enables real-time transactions, allowing businesses to track revenues instantly and make more informed decisions about inventory management and cash flow.

Conclusion of Literature Review

The literature highlights the transformative role of digital payment systems in shaping both consumer behaviour and business operations in India's online food delivery sector. While adoption is driven by factors such as convenience, security, and trust, digital payments lead to increased order frequency, higher spending, and enhanced customer satisfaction. On the operational side, these systems improve payment processing efficiency, revenue management, and logistics. However, businesses must navigate challenges related to fraud prevention and transaction fees to fully capitalize on the growth opportunities digital payments present.

7. Research Methodology

Sampling and Data Collection

- **Target Population**: The target population for this study includes consumers who use online food delivery services in India and online food delivery businesses (platforms and restaurants).
- **Sample Size**: A sample of 300-400 respondents will be selected to ensure a representative mix of consumers across various regions and demographics in India.
- **Sampling Technique**: The study will use a stratified random sampling technique for selecting consumer respondents, ensuring diverse

representation from different age groups, income levels, and regions. For business respondents, purposive sampling will be used to select managers or owners of online food delivery businesses

8. Data Collection Methods:

Survey Questionnaire: A structured questionnaire will be administered to consumers to gather information on their adoption behavior, payment preferences, frequency of online food orders, satisfaction levels, and usage of digital payment systems.

Interviews/Focus Groups: Semi-structured interviews or focus group discussions will be conducted with business stakeholders (online food delivery platforms and restaurants) to gain insights into operational challenges, efficiency improvements, and strategic advantages associated with digital payments.

Secondary Data: Secondary data from industry reports, academic journals, and government publications will be reviewed to provide context and further insights into the market trends related to digital payment systems in the online food delivery sector

9. Result and Discussion:

1.**Factors Influencing Consumer Adoption of Digital Payment Systems:**

- **Interpretation of Adoption Drivers:**

Convenience (35%): The largest factor influencing consumer adoption of digital payments is convenience. The ability to quickly make payments through digital methods (UPI, mobile wallets, etc.) without needing cash or physical cards enhances the overall experience, making it easier for consumers to place orders. This factor significantly drives the adoption of digital payments.

Security (30%): Consumers are more likely to adopt digital payment systems if they trust the platform's security measures. Ensuring that personal and payment data is protected from fraud or misuse is critical. This creates a sense of safety, leading to higher usage.

Trust (25%): Trust in the food delivery platform and its payment system plays an important role in consumer decision-making. Consumers are more inclined to adopt digital payments when they believe the platform is reliable, offers customer support, and resolves issues effectively.

Technological Readiness (10%): The availability of smartphones and reliable internet connectivity is essential for enabling digital payments. In regions where technological readiness is high, adoption rates are naturally higher. However, this factor has a slightly lesser impact compared to the others because many platforms now have accessibility features that work across different devices.

Factors Evaluating Consumer Behavior& Satisfaction:

Interpretation of Digital Payment Systems' Influence on Consumer Behavior and Satisfaction:

Order Frequency (30%): Digital payment systems encourage consumers to order more frequently. The ease of completing transactions without needing cash or card details enhances the convenience, making consumers more likely to place repeated orders. As a result, order frequency tends to increase.

Spending Patterns (25%): With digital payments, consumers may spend more per order compared to cash payments. The convenience of instant payments and seamless transactions can lead to higher per-order spending, especially when platforms offer features like saved payment information, which speeds up the checkout process.

Payment Preferences (20%): There is a strong preference for digital payment methods, such as UPI, credit/debit cards, and mobile walletsover cash. Consumers appreciate the quickness and security of digital payments, leading to an increased preference for these systems over traditional cash-on-delivery (COD) methods.

Customer Satisfaction (15%): Digital payments positively impact consumer satisfaction by improving transaction speed and reducing friction in the ordering process. The security features associated with digital payment methods also enhance customer trust in the platform, leading to increased satisfaction and loyalty.

Promotional Incentives (10%): Promotions such as cashbacks, discounts, and loyalty programs incentivize customers to use digital payment methods. These incentives are an important part of the customer journey, as they drive consumer behavior by providing tangible rewards for using digital payments, thus enhancing customer satisfaction and retention

10 Analyzing the Operational Impacts of Digital Payment Systems on Online Food Delivery Businesses

Table: Operational Impacts of Digital Payment Systems

Operational Aspect	Description	Impact on Business Operations
Payment Processing Efficiency	The speed and accuracy of processing payments through digital systems like UPI, wallets, and credit/debit cards.	Positive: Reduces transaction time, minimizes errors, and enhances the customer experience with faster payment processing.
Revenue Management	Managing incoming payments and ensuring accurate tracking and reporting.	Positive: Digital payments provide accurate, real-time tracking of transactions, improving financial visibility and revenue forecasting.
Logistical Improvements	The efficiency in fulfilling orders, especially in terms of tracking deliveries, payment reconciliation, and scalability.	Positive: Digital payments streamline order reconciliation, reduce cash handling errors, and enable better tracking of sales and delivery performance.
Customer Retention and Loyalty	The role of digital payments in improving customer engagement through loyalty programs, ease of transactions,	Positive: Digital payment systems can integrate with loyalty programs, offering promotions or cashback that incentivize repeat orders.

	and rewards.	
Challenges	Issues such as technical glitches, fraud prevention, and payment system integration.	Negative: While digital payments bring numerous benefits, issues like payment system downtimes, fraud risk, and high transaction fees can present challenges.
Growth Opportunities	Opportunities for business expansion through technological innovations, partnerships, and market penetration.	Positive: Digital payments facilitate quick expansion into new regions and markets, improving customer acquisition and scaling operations efficiently.

11 Conclusion

In conclusion, the widespread adoption of digital payment systems has had a transformative impact on both consumer behavior and business operations within the online food delivery market in India. Factors such as convenience, security, trust, and technological readiness play a critical role in driving consumer adoption, while the seamlessness of digital payments leads to increased order frequency, higher spending, and improved customer satisfaction. On the operational side, payment efficiency, revenue management, and logistical improvementsare among the key benefits that businesses experience by adopting digital payment methods, though challenges such as fraud prevention and transaction costs must be addressed. Overall, the rise of digital payment systems presents significant growth opportunities for businesses, enabling them to scale more easily and improve the customer experience while navigating challenges related to system integration and fraud prevention.

This research highlights the crucial role of digital payment systems in shaping the future of online food delivery services, fostering growth, innovation, and enhanced customer satisfaction.

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