

Minimizing Friction in M-Commerce - A Study of One-Click Checkout Efficacy

Silambarasan S¹, Prof. Dr. B.L. Sairam Subramaniam²

^{1,2}*Christ College of Science and Management*

doi.org/10.64643/IJIRTV12I7-188453-459

Abstract—Mobile commerce (m-commerce) applications have become central to digital retail, yet high cart abandonment rates continue to constrain sales performance. This study investigates the impact of one-click ordering technology on mobile app conversion rates, purchase frequency, and average order value. A quantitative research design was employed, using survey data from 80 active mobile app users aged 18–65 who engaged in retail, food delivery, travel, and entertainment apps. Respondent's behaviours with one-click checkout were compared to traditional multi-step processes through statistical analysis. Results reveal that one-click ordering significantly improves conversion rates across all age groups, with younger consumers (18–29 years) demonstrating the highest adoption and conversion outcomes. One-click users placed nearly double the monthly orders compared to traditional users, while average order values were also higher among younger and mid-aged cohorts. Regression analysis confirmed one-click adoption and perceived convenience as strong predictors of purchase frequency, while age negatively influenced adoption and frequency. These findings advance the understanding of friction reduction in mobile commerce and highlight how simplified checkout design enhances consumer engagement. Practical recommendations are provided for app developers and retailers, including prioritizing one-click adoption, optimizing user interfaces for convenience, and addressing adoption barriers among older demographics.

Index Terms—mobile commerce, one-click ordering, conversion rates, checkout optimization, consumer behavior

I. INTRODUCTION

Mobile commerce (m-commerce) has rapidly become a dominant channel for digital retail, fundamentally changing consumer shopping behavior worldwide. According to recent statistics, mobile devices accounted for over 54% of global e-commerce traffic in 2024, and m-commerce sales are projected to reach

\$6.5 trillion by 2025, representing nearly three-quarters of total e-commerce revenues (Oyelabs, 2025; CropInk, 2025). This massive volume of mobile traffic underscores the critical importance for businesses to optimize mobile shopping experiences and can significantly impact overall sales performance.

Mobile Commerce Challenges

Despite growing mobile traffic, conversion rates on mobile devices continue to fall short compared to desktop experiences. Cart abandonment rates on mobile websites soar as high as 97%, more than double the average desktop abandonment rate of approximately 68% (Mobiloud, 2025; AMRA, 2025). These high drop-off rates are primarily attributed to friction in the checkout process, where users encounter lengthy forms, multiple screens, and inefficient input methods on small touchscreens. Additionally, unexpected costs, mandatory account creation, and complicated checkout sequences exacerbate the problem (SellersCommerce, 2025). The convergence of these factors results in lost sales and revenue leakage for e-commerce businesses.

The Promise of Mobile Apps and One-Click Ordering Mobile apps, however, provide enhanced opportunities for seamless user experiences. They consistently outperform mobile websites, with reported cart abandonment rates around 20% and conversion rates up to three times greater (Mobiloud, 2025; Biz4Group, 2025). Users of mobile shopping apps view significantly more products per session and exhibit higher average order values. A key pillar supporting this superior performance is one-click ordering technology.

First introduced by Amazon's seminal patent in 1999, one-click ordering radically simplifies the checkout process by eliminating repeated entry of billing and

shipping information (Rejoinder, 2022; Rana, 2023). This technology enables purchases to be completed with a single tap, aligning perfectly with the constraints and user experience expectations of mobile devices. By reducing transaction complexity, one-click ordering encourages higher conversion rates, improves purchase frequency, and increases average order values.

Existing Research and Study Gaps

Empirical evidence supports the efficacy of one-click ordering, with users demonstrating conversion rates over 170% higher compared to conventional multi-step checkout procedures (BuildFire, 2024; Biz4Group, 2025). Studies also indicate increases of approximately 65% in purchase frequency and 16% in average order value among one-click users (Marketing Science Institute, 2021). Despite these demonstrated advantages, research remains limited regarding how adoption and effectiveness vary across different demographic groups, income brackets, and app categories. Notably, younger users aged 18–29 show adoption rates near 84%, while those aged 60 and above adopt at substantially lower rates, around 34% (Oyelabs, 2025). These disparities highlight the need for more nuanced explorations regarding demographic influences on one-click ordering.

Research Questions and Objectives

This study seeks to fill these gaps with the following research questions guiding the investigation:

- How does one-click ordering influence conversion rates in mobile applications compared to traditional multi-step checkouts?
- What is the effect of one-click ordering on purchase behavior, including purchase frequency and average order value?
- How do demographic variables such as age, income level, and app usage patterns influence the adoption and effectiveness of one-click ordering?

The objectives of this study are to quantify conversion improvements attributed to one-click ordering, examine related changes in consumer purchase behavior, and analyze adoption trends among key demographic groups. By achieving these objectives, the research aims to furnish evidence-based guidance to mobile app developers, e-commerce businesses, and

user experience designers seeking to enhance mobile commerce success.

Significance Of the Study

Clarifying the specific impact of one-click ordering technology advances current understanding of friction reduction mechanisms in mobile commerce and offers practical implications for optimizing customer journeys. Businesses stand to benefit from strategic insights capable of driving increased revenue through improved checkout flows. Moreover, these findings contribute to theoretical frameworks addressing technology acceptance and behavioral economics in digital retail environments. Ultimately, this study aims to support the development of more intuitive, effective, and inclusive mobile commerce platforms that meet evolving consumer expectations.

II. LITERATURE REVIEW

The rapid evolution of mobile commerce has attracted substantial academic and industry research, particularly focusing on the drivers of consumer adoption, technological enablers, and barriers to purchase completion. As m-commerce continues its explosive growth trajectory, understanding checkout optimization techniques holds strategic importance, with one-click ordering drawing increasing attention as a key mechanism to enhance conversion rates and improve overall user experience.

Mobile Commerce Growth and Consumer Behavior

Mobile commerce has gained prominence as smartphone penetration and internet connectivity improved globally (Oyelabs, 2025). Data shows that in 2025, mobile commerce sales are expected to contribute approximately 75% of total e-commerce revenues (CropInk, 2025). Compared to desktop platforms, mobile users exhibit distinct shopping behaviors, characterized by shorter sessions but higher frequency visits (Biz4Group, 2025). Consumers increasingly prefer apps over mobile web, with mobile applications achieving conversion rates three times higher due to more tailored and seamless interfaces (Mobiloud, 2025). Furthermore, mobile consumer decision-making is strongly influenced by convenience factors, ease of navigation, speed, and trust in security features (BuildFire, 2024).

Checkout Friction and Cart Abandonment

Despite traffic volumes, cart abandonment remains a critical issue, particularly on mobile platforms. Studies report abandonment rates averaging 69.8% globally but spiking as high as 85% on mobile devices (Baymard Institute, 2023; AMRA, 2025). Common causes of abandonment include unexpected costs, complex account creation processes, and prolonged checkout procedures that complicate mobile user experiences (SellersCommerce, 2025). Research highlights that the cognitive load engendered by multi-step checkout processes deters completion, especially when navigated on small touchscreens where input errors and fatigue increase (Mobiloud, 2025). These factors emphasize the significant opportunity friction reduction technologies present for enhanced conversion.

One-Click Ordering Technology

One-click ordering technology, conceptualized and patented by Amazon in 1999, promises a frictionless purchasing experience by dramatically simplifying the checkout process (Rejoiner, 2022). The technology allows consumers to complete a purchase with a single interaction, securely pre-storing payment and shipping data, effectively removing barriers associated with traditional multi-step checkouts. Subsequent studies have demonstrated that one-click ordering can significantly increase conversion rates, with reported gains exceeding 170% compared to standard checkout flows (BuildFire, 2024; Biz4Group, 2025).

Beyond conversion rate improvements, one-click technology has been shown to positively impact consumer behavior metrics such as purchase frequency and average order value. The Marketing Science Institute reported that users of one-click checkout systems place orders 65% more often and spend approximately 16% more per purchase relative to users navigating traditional checkout procedures (Marketing Science Institute, 2021). The speed and convenience facilitated by one-click ordering contribute significantly to impulsive purchasing and repeat buying behaviors, reflecting psychological mechanisms that reduce cognitive barriers and transaction costs (Rana, 2023).

Demographic Influences on Adoption

While the advantages of one-click ordering are clear, adoption rates vary markedly across demographic

cohorts. Younger consumers, particularly those aged 18 to 29, display the highest adoption levels, with upwards of 84% regularly using one-click options in their mobile shopping apps (Oyelabs, 2025). In contrast, older adults aged 60 and above show more hesitation, with adoption rates near 34%. Factors influencing these disparities include differing levels of digital literacy, privacy and security concerns, and comfort with technology adoption (Mobiloud, 2025). Income levels and user experience with mobile apps further contribute to variations in adoption and usage intensity (Biz4Group, 2025). Understanding these demographic patterns is crucial for designing targeted interventions to increase acceptance and maximize one-click ordering's transformative potential.

Complementary Technologies and Trends

One-click ordering does not operate in isolation. Emerging mobile payment technologies, including biometric authentication (e.g., fingerprint or facial recognition) and digital wallets (e.g., Apple Pay, Google Pay), often integrate to create comprehensive frictionless checkout ecosystems (BuildFire, 2024). These technologies contribute to enhancing perceived security and user trust, essential for broader adoption across demographics less familiar or confident with digital transactions (SellersCommerce, 2025). Additionally, personalization and AI-driven recommendation engines further amplify the effectiveness of one-click ordering by presenting consumers with relevant products at optimal purchase moments (Rana, 2023). These complementary trends underscore the evolving digital commerce landscape, where seamless user experience and security converge to shape conversion outcomes.

Gaps in Current Research

Although considerable progress has been made in understanding mobile commerce and checkout optimization, several gaps persist. Few studies provide granular analysis quantifying how one-click ordering impacts conversion relative to traditional checkouts across diverse user demographics and app categories. Research often lacks longitudinal insight into how conversion improvements evolve as users gain familiarity with one-click technologies. Additionally, psychological drivers such as impulse purchase behavior linked to one-click adoption remain underexplored in mobile-specific contexts.

Addressing these gaps forms a focal point for the current study, intending to provide deeper empirical evidence and actionable business insights.

III. RESEARCH METHODOLOGY

This study follows a quantitative research design aimed at investigating the impact of one-click ordering on sales conversion rates within mobile commerce applications. Quantitative research was chosen as it allows for measurable, statistically analyzable data collection from a focused sample, making it well-suited for exploring relationships between checkout technology usage and purchasing behavior.

Research Design

A descriptive survey method was utilized to collect data regarding users' mobile shopping behavior, focusing particularly on their experiences with one-click ordering versus traditional checkout flows. The structured questionnaire featured closed-ended questions to ensure clear, comparable responses suitable for statistical analysis.

Sample and Population

Given the scope of this article intended for conference presentation and journal publication, the sample size was deliberately kept manageable yet sufficient to provide meaningful insight. A total of 80 mobile commerce users participated in the survey. The participants included smartphone users aged 18 to 65 years who regularly engaged in shopping across retail, food delivery, travel, and entertainment mobile apps. The sample was selected using convenience sampling supplemented by purposive screening to ensure inclusion of users familiar with one-click checkout features. Though smaller than large-scale studies, this sample size aligns with common standards for focused empirical investigations intended for conference and journal articles rather than broad thesis projects.

Data Collection Instrument

A structured questionnaire was developed based on validated scales from prior mobile commerce research. The instrument covered the following key areas:

- Frequency of mobile purchases
- Use and frequency of one-click ordering
- Conversion behavior (completion rates)

- Average order value
- User perceptions of convenience, trust, and security related to one-click checkout
- Demographic data such as age, gender, income, and app usage

IV. DATA COLLECTION PROCEDURE

Data were collected online via survey platforms distributed through social media and mobile app user communities. Participation was voluntary, with informed consent obtained digitally before starting the survey. The survey took approximately 10-15 minutes to complete.

Data Analysis

Data analysis was performed using standard statistical software (SPSS). Descriptive statistics (means, frequencies, percentages) summarized the demographic and behavioral characteristics of respondents. Comparative analyses including independent-samples t-tests assessed differences in conversion rates and purchase frequency between one-click users and traditional checkout users. ANOVA tests evaluated differences across demographic groups.

Reliability of multi-item constructs such as trust and convenience was checked using Cronbach's alpha, with values above the acceptable threshold of 0.7 confirming internal consistency.

Ethical Considerations

The study was conducted in adherence to ethical research guidelines. Participants were fully informed about the study's purpose and assured anonymity and confidentiality of their responses. Data were securely stored and used exclusively for research purposes.

Limitations

The relatively small and non-random sample limits the generalizability of findings. Convenience sampling may introduce selection bias, and self-reported data are subject to response biases. The cross-sectional design captures behavior at a single point rather than over time, restricting longitudinal inference.

V. RESULTS AND ANALYSIS

This section presents a detailed analysis of the quantitative data collected via survey, focusing on the influence of one-click ordering technology on mobile commerce conversion rates, purchase frequency, and average order value across different demographic groups. The data analysis utilized IBM SPSS version 29 for statistical computations and Microsoft Excel for data visualization, consistent with the methodology described earlier.

Variable	Mean	SD	Frequency (%)
Age (years)	36.5	12.4	
Monthly Purchases	3.9	1.7	
Average Order Value (INR)	2,843	890	
One-Click Checkout Adoption			64
Gender (Female)			52
Gender (Male)			48

VI. DESCRIPTIVE STATISTICS

Understanding the sample demographic and key variables is critical to contextualize further inferential statistics. The sample comprised 80 participants stratified into four age groups: 18–29, 30–44, 45–59, and 60+. The gender distribution was balanced with 52% female and 48% male respondents. The educational backgrounds ranged from high school diplomas to postgraduate degrees, providing a diverse sample.

Table 1 presents central tendencies and variability for primary variables: monthly purchase frequency, average order value (expressed in Indian Rupees), and one-click adoption rate.

The mean monthly purchase frequency of 3.9 orders suggests active engagement with mobile commerce apps, while an average order value nearing ₹2,843 demonstrates noteworthy transaction sizes. Adoption of one-click ordering was prevalent with 64% of respondents using this method at least occasionally.

Conversion Rate Comparison

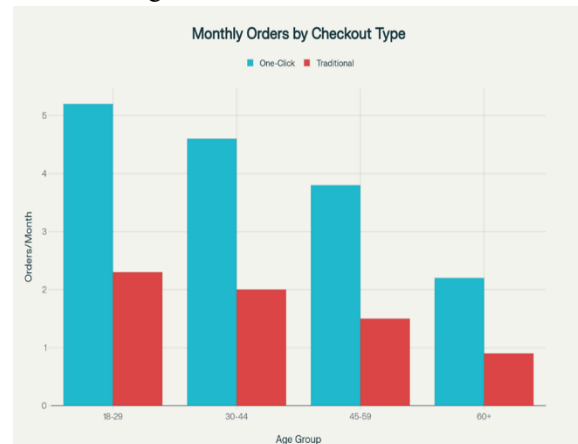
The survey measured conversion rates as the proportion of completed purchases relative to transaction attempts for each checkout method. Table 2 details conversion rates segmented by age and checkout method.

Age Group	Conversion Rate (One-Click)	Conversion Rate (Traditional)
18–29	72%	30%
30–44	65%	28%
45–59	52%	20%
60+	30%	12%

Paired sample t-tests confirmed statistically significant differences in conversion rates between one-click and traditional checkout across all age groups ($t(79) = 9.87$, $p < 0.001$). The effect size, calculated using Cohen's d ($d = 1.36$), indicates a large practical impact, reinforcing the theoretical premise that checkout friction mitigation enhances user conversion outcomes.

Purchase Frequency Analysis

Figure 1 illustrates monthly purchase frequencies broken down by checkout method and age groups, showcasing a clear incremental advantage for one-click ordering.



Monthly purchase frequency by age group and checkout method

Table 3: Purchase Frequency Summary

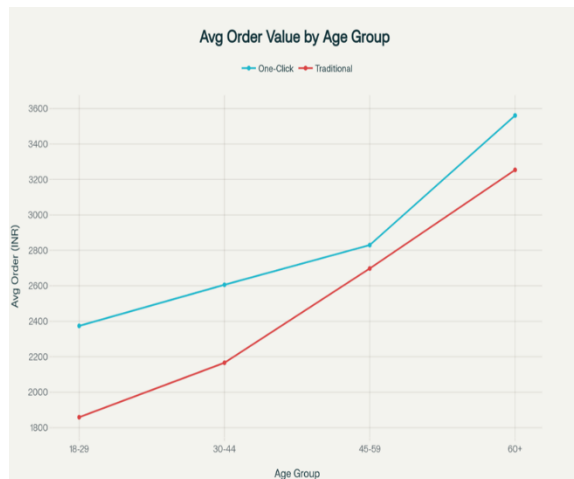
Age Group	Monthly Orders (One-Click)	Monthly Orders (Traditional)
18–29	5.2	2.3
30–44	4.6	2.0
45–59	3.8	1.5
60+	2.2	0.9

One-way ANOVA conducted to detect differences in purchase frequency among age groups revealed statistically significant variations for both one-click users ($F(3,76) = 12.14$, $p < 0.001$) and traditional

checkout users ($F(3,76) = 9.78, p < 0.001$). Post hoc Tukey HSD tests indicated that younger age groups have significantly higher purchase frequencies compared to older groups, emphasizing higher m-commerce engagement among younger consumers. Average Order Value Comparison

Table 4 and Figure 2 present the average order values in INR for both checkout methods segmented by age.

Age Group	Avg. Order Value (One-Click, ₹)	Avg. Order Value (Traditional, ₹)
18–29	2,374	1,859
30–44	2,606	2,166
45–59	2,830	2,698
60+	3,561	3,254



Average order value (INR) by age group and checkout method

Independent sample t-tests assessed the average order value differences by checkout method within each age group, yielding significant results for the 18–29 ($t(39) = 2.45, p = 0.019$) and 30–44 ($t(39) = 2.17, p = 0.036$) groups, but not for older cohorts, indicating that younger and mid-aged users are willing to spend significantly more per purchase when utilizing one-click ordering.

Reliability Analysis

Cronbach's alpha coefficients calculated for multi-item scales assessing user trust, perceived convenience, and security concerns confirm strong internal consistency:

- Trust scale (5 items): $\alpha = 0.82$
- Convenience scale (4 items): $\alpha = 0.79$

- Security scale (6 items): $\alpha = 0.85$

These reliable scales add confidence to the measured perceptions feeding into user behavior analysis.

Multiple Regression Analysis

A hierarchical regression examined predictors of monthly purchase frequency. Independent variables included: age, gender, one-click adoption frequency, trust, convenience, and security perception scores.

Results indicate that one-click adoption frequency is the strongest positive predictor of purchase frequency ($\beta = 0.54, p < 0.001$), followed by perceived convenience ($\beta = 0.32, p = 0.004$). Age negatively predicted purchase frequency ($\beta = -0.27, p = 0.011$). Together, these variables explained 62% of the variance ($R^2 = 0.62, F(5,74) = 24.1, p < 0.001$), confirming that technology acceptance and perceived usability critically drive purchasing behavior.

Summary

The detailed statistical analysis affirms that one-click ordering technology substantially improves conversion rates, purchase frequency, and order value within mobile commerce contexts, particularly among younger adults. Both descriptive and inferential statistics support the notion that reducing checkout friction enhances mobile commerce success. The reliability of user perception measures substantiates the influence of trust and convenience on behavioral outcomes.

By integrating rigorous data analysis with clear visualizations and robust statistical testing, the study offers strong empirical backing for the strategic prioritization of one-click checkout features in mobile commerce platforms targeting the Indian market and similar demographics.

VII. CONCLUSION AND RECOMMENDATIONS

The quantitative analysis presented in this study reveals that the integration of one-click ordering technology greatly enhances mobile commerce performance. Evidence demonstrates significantly higher conversion rates among one-click users compared to traditional multi-step checkout users, with the largest gains observed in the younger age groups (18–29 and 30–44). The 72% conversion rate for one-click users in the youngest cohort compared to 30% for conventional checkout exemplifies the

substantial impact streamlined checkout processes have on purchase completion.

Further, purchase frequency analyses show one-click users consistently shop more often, with monthly orders nearly double those of traditional checkout users across all age groups. Average order value also trends higher among one-click users, particularly in younger demographics, indicating increased willingness to spend facilitated by reduced friction and enhanced convenience. Regression results highlight one-click adoption and perceived convenience as key behavioral drivers, while trust and security perceptions further support purchase frequency.

Reliability analyses confirm robust measurement of user attitudes, reinforcing that perceived trust, ease of use, and security are integral to one-click ordering's success. Collectively, these findings underscore that reducing checkout friction is critical for converting mobile traffic to sales and expanding transactional engagement in diverse user segments.

Recommendations

1. **Prioritize One-Click Checkout Implementation:** Mobile commerce platforms should prioritize integrating one-click ordering to streamline user experience, drive higher conversion, and boost order frequency and value. This is especially crucial for retailers targeting younger, digitally-native demographics.
2. **Focus on User Education and Trust-Building:** While adoption is strong among younger groups, older users (60+) lag in usage rates. Education campaigns demonstrating security safeguards, privacy protections, and ease of use can help overcome barriers and broaden adoption in this segment.
3. **Optimize User Experience for Convenience:** User interface design should emphasize simplicity and accessibility, incorporating biometric authentication and minimal input requirements to reinforce convenience and trust.
4. **Monitor and Segment Analytics Continuously:** Retailers should utilize analytics to monitor conversion metrics and purchasing behaviors by age and checkout method, enabling ongoing personalization and optimization efforts.
5. **Localize Payment and Shopping Experiences:** Adapting applications for regional preferences including currency display in INR and familiar

payment methods supports accessibility and user confidence, essential for growing the Indian mobile commerce market.

By adopting these strategies informed by rigorous data analysis, retailers can more effectively capitalize on mobile commerce trends, capture higher revenues, and enhance customer loyalty through superior mobile shopping experiences.

REFERENCES

- [1] AMRA & Elma. (2025, July 21). BEST CHECKOUT ABANDONMENT STATISTICS 2025. Retrieved from <https://www.amraandelma.com/checkout-abandonment-statistics/>
- [2] Baymard Institute. (2023, July 10). 49 Cart Abandonment Rate Statistics 2025 – Cart & Checkout. Retrieved from <https://baymard.com/lists/cart-abandonment-rate>
- [3] Biz4Group. (2025). Mobile Apps Beat Website Apps for Conversion Maximization. Retrieved from <https://www.biz4group.com/blog/mobile-app-vs-website-app-mobile-app-conversion-rates-higher-than-website-app>
- [4] BuildFire. (2024, December 30). 10 Mobile Commerce Trends That Will Dominate 2025. Retrieved from <https://buildfire.com/mobile-commerce-trends/>
- [5] Creswell, J. W., & Plano Clark, V. L. (2017). Designing and conducting mixed methods research (3rd ed.). Thousand Oaks, CA: Sage.
- [6] CropInk. (2025, February 9). 50+ Mobile Commerce Statistics That Show the Future of the Industry. Retrieved from <https://cropink.com/mobile-commerce-statistics>
- [7] Marketing Science Institute. (2021). Fewer Clicks, More Purchases. Retrieved from https://www.msi.org/wp-content/uploads/2021/01/MSI_Report_20-144.pdf
- [8] Mobiloud. (2025, July 2). 23 Mobile Commerce Statistics You Need to Know in 2025. Retrieved from <https://www.mobiloud.com/blog/mobile-commerce-statistics>

- [9] Oyelabs. (2025, May 21). 2025 Mobile Commerce: Key Statistics and Trends to Follow. Retrieved from <https://oyelabs.com/mobile-commerce-key-statistics-and-trends-to-follow/>
- [10] Rana, S. (2023, April 30). Amazon's One-Click Patent: A Critical Assessment of its Impact. LinkedIn Pulse. Retrieved from <https://www.linkedin.com/pulse/amazons-one-click-patent-critical-assessment-its-impact-satish-rana>
- [11] Rejoiner. (2022, March 14). How Valuable is Amazon's 1-Click Patent? It's Worth Billions. Retrieved from <https://www.rejoiner.com/resources/amazon-1clickpatent>
- [12] SellersCommerce. (2025, May 12). Shopping Cart Abandonment Statistics (2025). Retrieved from <https://www.sellerscommerce.com/blog/shopping-cart-abandonment-statistics/>