

Chapter 10

The Sustainable Consumption Footprint of E-Commerce Payment Methods: A Life Cycle Assessment Perspective in Industry 5.0

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ABSTRACT

The exponential growth of e-commerce has brought significant changes to the retail industry, altering consumer behavior in online transactions. This study aims to understand how various payment methods influence consumer purchasing decisions in the e-commerce environment. By exploring consumer preferences for different payment methods, such as credit and debit cards, UPI, mobile wallets, net banking, cash on delivery, and Buy Now, Pay Later (BNPL), this research evaluates their impact on purchase frequency, trust, and security. A survey of diverse e-commerce users provides insights into how the availability and perceived security of these payment methods affect overall consumer satisfaction and purchasing behavior. Findings will be useful for e-commerce platforms in optimizing their payment options to better cater to consumer needs and increase conversion rates.

INTRODUCTION

The e-commerce sector has undergone transformative growth, reshaping consumer purchasing behaviours and expectations. As online shopping becomes a dominant retail channel, understanding the factors influencing consumer decisions is essential for businesses aiming to optimize their offerings and enhance user satisfaction. This study examines a critical factor: the impact of payment methods on consumer

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purchase decisions within e-commerce platforms. The emergence of diverse payment options—including credit and debit cards, digital wallets, bank transfers, and Buy Now Pay Later (BNPL) schemes—has significantly broadened the landscape of online transactions, influencing purchase frequency, consumer trust, and overall satisfaction. The research focuses on three key objectives. First, it analyzes consumer preferences for various payment methods and their impact on the frequency of online purchases. Second, it evaluates how the availability of specific payment options influences consumer behaviour and trust in e-commerce transactions. Third, it examines the perceived security of different payment methods and their role in shaping consumer confidence. These insights are vital for e-commerce businesses to align their payment offerings with consumer expectations and gain a competitive advantage.

Prior studies underscore the critical role of payment methods in influencing consumer behaviour. For instance, the convenience and security of digital payment options have been linked to increased purchase intentions and transaction frequency (Kusnawan et al., 2020). Conversely, cash on delivery (COD) remains essential for consumers prioritizing transaction security and privacy (Aprilianty, 2022). While flexible options like BNPL appeal to many, financial management and security concerns persist (Ardiansah et al., 2020). Furthermore, research highlights that perceptions of payment security significantly influence consumer trust, a factor emphasized by Baubonienė and Gulevičiūtė (2015). Through a comprehensive survey of e-commerce users, this study aims to provide actionable insights into the interplay between payment methods, trust, and consumer behaviour. It seeks to equip businesses with strategies to enhance the online shopping experience and foster customer loyalty by addressing these dynamics.

THEORETICAL BACKGROUND: EVOLUTION OF PAYMENT METHODS IN E-COMMERCE

The rapid advancement of digital technology has revolutionized the way businesses operate and consumers interact with them, particularly in the domain of e-commerce. Over the past few decades, e-commerce has transformed from a nascent concept into a cornerstone of the global economy, redefining traditional notions of trade and commerce. At the heart of this transformation lies the evolution of payment methods, a critical enabler of seamless, secure, and efficient online transactions. This chapter delves into the intricate journey of payment methods in e-commerce, tracing their evolution from traditional mechanisms to modern-day digital innovations.

The Early Stages of E-Commerce Payments: The genesis of e-commerce in the early 1990s was marked by using basic payment systems. Initially, cash-on-delivery (COD) and checks dominated online transactions, reflecting a significant reliance on traditional payment methods. These systems were fraught with inefficiencies, including high operational costs, delayed payment cycles, and limited scalability. COD was particularly popular in regions where consumer trust in online systems was low, as it allowed customers to verify products before payment. However, the logistical challenges and risks of handling cash highlighted the need for more efficient and reliable payment solutions.

Simultaneously, the use of checks required significant manual processing and extended settlement times, further limiting the scalability of e-commerce. The reliance on such traditional systems underscored the gap between emerging online marketplaces and the existing financial infrastructure, setting the stage for innovation.

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