

Analyzing E-Commerce Trends and Consumer Behavior in the Age of Digital Transformation

Aim

In the contemporary digital economy, it is essential to examine customer behaviour in online buying. This study explores the dynamic domain of consumer behaviour related to internet buying. We provide an extensive analysis of significant theoretical frameworks, empirical research, and practical implementations. The Consumer Decision Process, Theory of Planned Behavior, and Technology Acceptance Model are essential theoretical frameworks for understanding the online purchasing process of consumers. This understanding is contextualized within these paradigms. We analyze the cultural, social, and psychological factors that influence online buying behaviour and emphasize their significance. This research focuses on how the emergence of internet shopping has altered customer preferences. The accessibility, variety, and user-friendliness of digital platforms are emphasized. This study aims to demonstrate how elements such as website design, trust, and pricing strategies influence the decision-making processes and behaviours of online consumers. The impact of advanced innovation on purchasing behaviours, including artificial intelligence and mobile e-commerce.

1. Introduction

The rapid evolution of digital technologies has significantly reshaped consumer behaviour, especially in the e-commerce sector. With the rise of mobile devices, social media, AI-driven personalization, and data analytics, e-commerce platforms are better equipped than ever to understand and influence consumer behaviour. This research proposal seeks to analyze contemporary e-commerce trends and their impact on consumer decision-making, loyalty, and satisfaction.

The examination of consumer behaviour in online shopping is becoming more vital in the contemporary digital marketplace. This research examines the dynamic landscape of consumer behaviour in the context of e-commerce. We provide a comprehensive summary of essential theoretical frameworks, empirical studies, and practical insights. Comprehending client navigation in online buying necessitates familiarity with theoretical frameworks, like the

Consumer Decision Process Model, the Theory of Planned Behaviour, and the Technology Acceptance Model. These models provide the context for this comprehension. We examine the psychological elements, social influences, and cultural variables that contribute to online consumer behaviour, emphasising their significance.

This study examines the evolution of Internet commerce and its impact on consumer preferences. Significant emphasis is placed on the ease, accessibility, and diversity provided by digital platforms. This research aims to elucidate the effect of critical factors on customer behaviour in e-commerce, specifically examining website design, trust, and price. Case studies illustrating how organisations may successfully use insights about consumer behaviour to refine their strategies provide practical examples of the application of theory.

Ethical issues in examining online consumer behaviour, including privacy problems and the ethics of data collection, underscore the need for ethical research procedures in the current digital age. Furthermore, current challenges and prospective future directions for research in e-commerce consumer behaviour analysis are examined, offering a forward-looking perspective. This article is a crucial resource for academics, practitioners, and businesses seeking to use consumer behaviour insights in the dynamic realm of e-commerce. Stakeholders may enhance their strategies, foster user trust, and stimulate development in the digital marketplace by comprehending and implementing the concepts outlined in this article. This paper delineates these concepts. The strategies used throughout the decision-making process related to online buying.

1.1 Domain

This research delves into the realm of digital consumer behaviour in the e-commerce business, specifically looking at how improvements in digital transformation impact purchasing patterns, decision-making, and interactions with brands. Understanding the effect of developments like mobile commerce, AI-driven personalisation, social media, and digital privacy issues is the focus of this topic, which spans a variety of multidisciplinary fields including technology, data analytics, and marketing. Through an analysis of these elements, the study delves into the realm of consumer psychology and technology, offering a holistic perspective on how digital

transformation is altering the e-commerce scene and how customers interact with online businesses.

1.2 Research Area

In the context of digital transformation, the study topic focuses on how consumer behaviour, digital marketing, and e-commerce connect. It looks at how new technology like AI, smartphone apps, social media, and big data analytics are changing the way people shop online, what they like, and how they buy. Research in this field focuses on how issues like data privacy, user experience design, targeted advertising, and digital personalisation affect consumers' faith in and commitment to brands. This study aims to help e-commerce platforms optimise customer interaction and adapt to altering consumer expectations in the digital age by analysing these factors and uncovering trends, difficulties, and tactics.

2. Objectives

- To identify and analyze key trends in e-commerce, including personalization, mobile commerce, social commerce, and AI recommendations.
- To examine the factors driving consumer behaviour in online shopping, such as convenience, price sensitivity, and brand loyalty.
- To assess the role of digital marketing strategies, including targeted ads, influencer marketing, and customer reviews, in shaping consumer purchasing decisions.
- To explore the impact of data privacy concerns and security on consumer trust in e-commerce platforms.
- To provide insights into future trends and predict shifts in consumer behaviour as digital transformation advances.

2.1 Problem Statement

Technological developments, personalised marketing, the proliferation of mobile and social commerce, and the era of digital transformation have all contributed to dramatic changes in consumer behaviour as it relates to online shopping. However, companies still have the problem of keeping up with the ever-changing market and comprehending the many aspects that influence customer choices, brand loyalty, and satisfaction. Customers are losing faith in internet services due to worries about their personal information's safety and privacy. To assist companies adjust

their digital strategy to meet changing customer expectations and gain a competitive edge, this research will examine the most recent e-commerce trends and how they have affected consumer behaviour.

2.2 Research Significance

If they want to remain competitive and meet their customers' changing expectations, e-commerce enterprises must understand consumer behaviour in the digital transformation era. Personalisation, social commerce, and AI-driven suggestions are just a few examples of digital developments that this study will shed light on and how they influence consumers' tastes, spending habits, and devotion to certain brands. Furthermore, the impact of data privacy issues on trust and online participation will be brought to light. In an ever-changing e-commerce market driven by constant technological innovation, this research will analyse these elements and assist firms modify their tactics to maximise consumer pleasure, loyalty, and long-term success.

3. Methodology

The expansion of the internet has fundamentally transformed how consumers engage with companies and choose things for purchase. E-commerce, a fundamental element of digital transformation, has not only redefined the retail environment but has also become an essential component of the global economy. The proliferation of internet platforms has afforded customers purchasing experiences marked by exceptional ease, diversity, and accessibility.

The efficacy of e-commerce is fundamentally dependent on client behaviour. Businesses aiming to succeed in this competitive environment must possess a comprehensive grasp of consumer navigation in the digital marketplace, purchasing decisions, and the establishment of trust with online sellers. The study of consumer behaviour in Internet commerce has emerged as a significant domain in the current age of data-driven decision-making. It furnishes enterprises with critical insights into the intricacies of online purchasing, enabling them to adjust their strategies, enhance user experiences, and ultimately stimulate growth. This conference paper will explore the dynamic landscape of customer behaviour within the realm of e-commerce. It examines the psychological, social, and technical factors influencing online purchase behaviour, exploring the many aspects of consumer decision-making. This study aims to determine the factors contributing to the current surge in online shopping popularity by examining the evolving

e-commerce ecosystem and its impact on consumers. This article will examine the methodologies used to acquire and analyse data on customer behaviour in online environments. We will discuss the ethical aspects pertinent to the research of online consumer behaviour, emphasising the significance of safeguarding user information secrecy and preserving their trust. Our study will provide a comprehensive analysis of consumer behaviour patterns in e-commerce, illuminating aspects such as online buying behaviour, decision-making processes, and customer retention strategies. We will examine the impact of emerging technologies, including mobile e-commerce, artificial intelligence, augmented reality, and virtual reality, on consumer behaviour and the broader e-commerce environment. The goal of the research strategy used for this study was to provide a thorough understanding of the behaviour of consumers engaging in online transactions. It discusses the processes for data analysis, sample selection, data collection techniques, and ethical issues.

3.1 Collection of Data

The primary information sources used in this study are online questionnaires and consumer behaviour tracking on e-commerce websites. Surveys will be used to survey a representative sample of online consumers, and monitoring technologies like Google Analytics and session logs will be used to collect data on user behaviour.

3.2 The survey's structure

The survey questionnaire will be constructed to enable the gathering of data on a range of aspects of online shoppers' behaviour. A wide range of topics will be covered in the survey, such as how frequently respondents shop online, what kinds of products they prefer, what influences their decisions to buy, how much they trust e-commerce platforms, and how they have experienced emerging technologies like augmented reality and mobile apps.

3.3 Tracking User Behaviors

Information on user behaviour will be gathered from a subset of e-commerce websites anonymously. Clickstream data, time spent on pages, bounce rates, and cart abandonment rates will all be included in this data. Before the tracking is done, the website owners will be contacted to get their consent.

3.4 The Significance Of Comprehending Consumer Behaviour In E-Commerce

Understanding client behaviour in online shopping is very important for many reasons:

3.4.1 Formulating Strategic Decisions

An awareness of client behaviour empowers organisations to make data-driven choices. These include choices related to product offers, pricing strategies, marketing campaigns, and modifications to the user experience. Upon comprehending the factors that motivate clients to complete purchases or abandon things in their shopping carts, you will be equipped to modify your marketing plan accordingly.

3.4.2 Customization

When a corporation comprehensively knows its customers, e-commerce platforms may provide exceptionally tailored user experiences. Through the analysis of consumer behaviour, firms may provide tailored suggestions for products, information, and offers relevant to individual consumers. This enhances the probability of conversion and the customer's propensity to become a client.

3.4.3 Client Contentment

To provide an efficient and user-friendly online purchase experience, organisations must possess a thorough understanding of client behaviour. This eventually leads to heightened customer pleasure and enhanced brand loyalty. Customers who depart from a company with a sense of satisfaction are more inclined to return, engage in further purchases, and advocate for the brand.

3.4.4 Enhanced Marketing Initiatives

Consumer behaviour allows companies to enhance the accuracy of their marketing strategies, leading to optimised marketing endeavours. Businesses may allocate their marketing funds to the most effective channels by first identifying where and how consumers engage online. These channels include search engine optimisation (SEO), social media marketing, email marketing, and paid advertising, among others.

3.4.5 Inventory Oversight

A comprehension of consumer behaviour is crucial for efficient inventory management. They aid organisations in predicting consumer demand, mitigating the risk of overstocking or

understocking, and ensuring that the correct products are available at the exact time customers need them. This enables us to reduce expenses and function more effectively.

3.4.6 Comprehending the customer

Behaviour may provide a significant competitive advantage, particularly in the ruthless realm of e-commerce, characterised by intense rivalry. It enables organisations to distinguish themselves from rivals by offering unique features, products, or services specifically designed to meet the distinct needs and preferences of their target audience.

3.4.7 Consumer analysis

An additional strategy that may be used to help stop fraud is behaviour. To shield the customer and the business from monetary loss, an odd pattern of online purchasing behaviour, such as an abrupt change in location or buying habits, might be identified as potentially fraudulent conduct.

3.4.8 Loop of Feedback

If businesses keep a close eye on their consumers' behaviour, they may create a feedback loop with them. They may learn from consumer reviews, ratings, and comments, which enables businesses to keep improving their goods and services and, therefore, build relationships based on trust.

3.4.9 Consumer Research

One excellent source of market research is behaviour. Analysing consumer behaviour is a fantastic way to do market research. It helps businesses identify emerging markets, trends, and changing consumer preferences. To meet the constantly changing demands of customers, this information may be used in the development of both new and modified products.

3.4.10 Consumer Shifts

Consumer behaviour changes in reaction to new technology. Understanding how consumers interact with developing technologies like voice assistants, mobile devices, and virtual reality is crucial for preserving one's place as a significant participant in the e-commerce space.

3.5 Literature Review

A substantial body of research that examines the many facets of online buying, various decision-making processes, and the impact of digital technology on consumer behaviour forms the basis for the analysis of consumer behaviour in the context of e-commerce. The analysis of customer

behaviour in e-commerce is based on this study. An overview of significant theoretical frameworks and empirical studies that are relevant to our comprehension of this subject is provided in this section.

3.5.1 The Philosophical Foundations of Consumer Purchase Behaviour

Customers' purchase decisions in Internet commerce are often guided by existing theoretical models. Before reaching a final purchase decision, customers go through several steps, according to Engel, Blackwell, and Miniard's (1995) Consumer Choice Process Model. These phases consist of identifying the issue, gathering information, assessing potential solutions, making a purchasing decision, and doing an assessment after the purchase. This model provides the framework for understanding how consumers go through the different phases of the online buying process.

3.5.2 Aspects of an Individual's Mental Health

Numerous psychological elements have a big impact on the behaviour of internet shoppers. Ajzen's Theory of Planned Actions states that a person's intentions and, therefore, actions are influenced by their attitudes, subjective norms, and perceived behavioural control. In 1991, this idea was published. This theory is helpful in e-commerce since it clarifies how attitudes towards online shopping, social effects, and perceived ease of use affect choices to buy, claim Lee and Turban.

3.5.3 The Effects of Cultural and Societal Elements

Social and cultural factors also influence how consumers behave while engaging in Internet shopping. The concept of reference groups, which clarifies how consumers are impacted by the ideas and behaviours of others, was initially put out by Merton and Rossi (1949). Cheung et al. (2009) claim that the growth of online product evaluations and social media interactions has increased the impact of reference groups in digital environments.

3.5.4 Theories of Consumer Behaviour Online

A popular tool for understanding how people accept and utilise technology in e-commerce scenarios is the Technology Acceptance Model (TAM) (Davis, 1989). Customers' intentions and

actual usage of technology are influenced by how easy and useful they think the technology is, according to the Technology Acceptance Model (TAM). TAM has been adapted for use in the context of e-commerce to investigate the elements impacting consumers' intentions to make purchases online and their adoption of mobile shopping apps (Liao et al., 2019).

3.5.5 The Evolution of Electronic Commerce and How It Affects Consumer Behaviour

Customers' purchasing patterns have been significantly impacted by the growth of internet shopping. According to research by Li et al. (2014), consumer tastes have changed as a result of the convenience, accessibility, and variety offered by online shopping platforms. Because of this change, more and more customers are choosing the Internet channel over conventional brick-and-mortar stores.

3.5.6 The most significant factors that influence how customers behave online

In the digital sphere, several distinct factors significantly influence consumer behaviour. The ease of use and appearance of a website, for instance, are crucial factors. The results of research by Source et al. (2005) indicate that trust and satisfaction are influenced by the functionality and aesthetics of website design, and that trust and satisfaction in turn impact purchase intentions.

3.6 Case Study

With the use of real-life examples and case studies, we show how consumer behaviour research may be applied to online shopping. This is when the companies' plans for expansion and optimisation come into play.

3.6.1 Amazon: Shopping Made Easy with Data Analysis

The world's leading online retailer, Amazon, is a model of a company that has mastered the science of customer behaviour research. Thanks to the recommendation engine—driven by sophisticated algorithms and extensive data analysis—customers may get highly tailored product suggestions from the business. Thanks to this skill, the firm has received a lot of positive feedback. This method takes into account consumers' particular preferences based on their past browsing and buying habits, product review participation, and other factors (Davenport, Harris, and Shapiro, 2010). One reason for Amazon's success is the great degree of personalisation that

customers may enjoy. According to studies done by Iyengar and DeVoe (2003), individuals were more satisfied and likely to make more purchases after receiving personalised suggestions. Considering reviews, we can better suggest items that would meet the needs of our clients by taking them.

3.6.2 Recommendations for Data-Driven Content on Netflix

The industry-leading provider of internet streaming services, Netflix, is another well-known example. Netflix uses data-driven content recommendations to attract and retain subscribers by meticulously studying user actions and watching patterns. The platform reportedly does more than just suggest films and TV episodes to users depending on their watching habits; it also creates unique content tailored to each user's tastes (Yin, Hong, and Liu, 2015). This leads to reduced churn rates and increased customer retention since consumers are more likely to find content that suits their specific tastes.

3.6.3 An essential component of Alibaba's trust is user-generated content:

Alibaba, the market leader in China for e-commerce platforms, has built user trust by using data on customer behaviour. The portal aggressively promotes user-generated content in the form of product reviews and ratings. Because they provide useful information about the calibre of items and the trustworthiness of sellers, these evaluations are a crucial part of the decision-making process for online shoppers. User-generated content significantly influences purchase choices and boosts trust in e-commerce transactions, according to the results of a study by Zhu and Zhang (2010).

3.6.4 Combination of Wal-Mart's Online And Offline Customer Data

One of the best examples of how combining data on online and offline customer behaviour may lead to success is Wal-Mart, a massive retailer with a significant online presence. By using information from both in-person and online transactions, Wal-Mart can provide a cohesive shopping experience.

By examining consumer behaviour across channels, Wal-Mart can provide seamless omnichannel services (Nambisan, 2017). In-store pickups for online purchases and tailored recommendations based on a customer's prior in-store and online purchase history are a few

examples of these services. Customers are more satisfied and loyal as a result of this all-encompassing approach.

Wal-Mart, a massive retailer with a significant online presence, is a shining example of how combining data on online and offline customer behaviour may lead to success. Wal-Mart uses information from both in-person and online transactions to create a cohesive shopping experience.

Wal-Mart analyses consumer behaviour across channels to provide seamless omnichannel services (Nambisan, 2017). Examples of these services include personalised recommendations based on a customer's prior in-store and online purchase history, as well as in-store pickups for online purchases. Because of this all-encompassing approach, client happiness and loyalty have improved.

4. Expected Outcomes

Consumer behaviour in the e-commerce space may be categorised into several patterns. Engel, Blackwell, and Miniard (1995) claim that most customers go through a multi-step process that starts with browsing, continues with information gathering and alternative option appraisal, and ends with a purchase decision. Customers usually go through this procedure before committing to a purchase, studying the wide range of product options at their disposal and balancing their options. The amount of time spent making purchases online is another significant trend to watch. Customers are increasingly choosing the convenience of online shopping, which has increased the frequency of their purchases, according to study results by Li, Huang, and Sarathy (2014). Because of their accessibility and variety, especially for routine or non-perishable items, consumers often return to e-commerce platforms. This is particularly true for websites that let users buy digital products.

Consumer behaviour patterns are also discernible across product categories. A broad range of products exhibit varying degrees of customer engagement, which in turn affects purchasing decisions. Products that are more complicated, including clothes and consumer electronics, often need more time and effort to investigate and assess. According to a study by Sorce, Perotti, and Widrick (2005), on the other hand, low-involvement items like common home supplies are more likely to be purchased spontaneously.

Consumer preferences within product categories often exhibit patterns of seasonality or cyclicity. For example, customer interest in electronics may increase over the Christmas season, while changing seasons and fashion cycles may have an impact on trends in apparel and fashion items.

4.1 The Decision-Making Processes

There are some trends in the choices made by consumers in the e-commerce space. Cheung, Lee, and Rabjohn (2009) state that the customer may explore a range of online sources throughout the information search and assessment process. Product reviews, social media suggestions, and the standing of e-commerce companies are a few examples of these internet resources.

Consumer decision-making is following a trend, and that trend is the impact of peer recommendations and reference groups. Pricing, discounts, and shipping charges are just a few examples of variables that often exhibit patterns that are consistent with one another and impact purchase choices. Competitive pricing and reductions are often well received by customers; also, special offers and promotions influence consumer behaviour. These trends are often used by businesses to attract new customers and retain their current clientele.

4.2 Customer Retention and Loyalty Development

One important aspect of customer behaviour in e-commerce is the pattern of client loyalty and retention. Customer satisfaction, trust, and loyalty programs often impact repeat purchases from the same customer. When consumers are happy with their purchases, they are more likely to return and spend more money, especially if they see value in the E-Commerce platform (Lee and Turban, 2001). Loyalty programs, which provide perks to consumers in return for their ongoing patronage, have a substantial impact on consumer behaviour patterns. Loyal customers often show their devotion by buying from the same store time and time again in the hopes of earning rewards or getting special deals. One component that contributes to the establishment of lasting client connections is this pattern.

5. Conclusion

Customer behaviour in e-commerce is an essential but often overlooked subject of research that may help organisations understand online shopping. This study covers theoretical underpinnings,

psychological elements, societal issues, and modern technology's influence on consumer behaviour. In the digital age of retail, understanding online buyers' browsing habits, product choices, and decision-making processes is crucial to e-commerce strategy. E-commerce strategy must adapt to these trends and preferences. Amazon, Netflix, Alibaba, and Wal-Mart have employed consumer behaviour analytics to improve their products, personalise user experiences, and build brand trust. Through case studies and real-life circumstances, this was done. These examples demonstrate the practical benefits of consumer behaviour research in the digital economy. However, every industry has obstacles. Data privacy, a wealth of information, and changing consumer preferences provide challenges for businesses and academics. As e-commerce increases, these issues must be addressed. Emerging trends in e-commerce customer behaviour analysis seem promising. Augmented reality, personalisation, blockchain technology to secure data, and environmental concerns will revolutionise online shopping in the next years. These future routes are promising for corporations and academia. In conclusion, internet commerce consumer behaviour research is dynamic and full of opportunities and problems. Understanding the trends, preferences, and factors that drive online purchase decisions helps organisations improve user experiences, build trust, and grow in the digital marketplace. Customer behaviour will guide us through e-commerce's complexities. This will help us understand the digital consumer and online commerce's possibilities.

6. Research Questions

1. What are the dominant trends influencing consumer behaviour in the e-commerce industry?
2. How do digital marketing strategies affect consumer decision-making and brand loyalty?
3. What role does personalization play in enhancing consumer satisfaction in online shopping?
4. How do consumers perceive data privacy and security on e-commerce platforms, and how does it impact their shopping behaviour?
5. What future shifts in consumer behaviour can be expected as a result of ongoing digital transformation?

7. References

- [1] Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- [2] Acquisti, A., & Faden, R. R. (2019). Data, privacy, and the greater good. *Science*, 363(6426), 1395-1396.
- [3] Belz, F. M., & Peattie, S. (2012). Ready to be your customers' valentine? Grocery shopping and the sustainable consumer. In the case of chocolate. In M. J. Kitchen & K. L. T. Peattie (Eds.), *Marketing and sustainability* (pp. 160-175). Routledge.
- [4] Böhme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, technology, and governance. *Journal of Economic Perspectives*, 29(2), 213-238.
- [5] Cheung, C. M., Lee, M. K., & Rabjohn, N. (2009). The impact of electronic word-of-mouth: The adoption of online opinions in online customer communities. *Internet Research*, 19(3), 229-247.
- [6] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- [7] Davenport, T. H., Harris, J., & Shapiro, J. (2010). *Competing on analytics: The new science of winning*. Harvard Business Press.
- [8] Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). *Consumer behaviour* (8th ed.). Dryden Press.
- [9] Iyengar, S. S., & DeVoe, S. E. (2003). Rethinking the value of choice: Considering cultural mediators of intrinsic motivation. In V. Murphy-Berman & J. J. Jost (Eds.), *Handbook of self and identity* (pp. 343-364). Guilford Press
- [10] Iyengar, S. S. (2010). *The art of choosing*. Hachette UK.
- [11] Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59-68.
- [12] Lee, M. K., & Turban, E. (2001). A trust model for consumer Internet shopping. *International Journal of Electronic Commerce*, 6(1), 75-91.
- [13] Li, X., Huang, L., & Sarathy, R. (2014). Understanding the evolution of consumer preferences in the digital age: Evidence from mobile apps. *MIS Quarterly*, 38(2), 393-412.

- [14] Liao, C., Chen, J. L., & Yen, D. C. (2019). Theory of planning behaviour in e-commerce shopping: Integrating technology acceptance model and theory of planned behaviour with perceived risk factors. *Information & Management*, 56(3), 297-315.
- [15] Li, X., Han, X., & Hsieh, J. J. (2020). Data-driven decision-making in an AI-driven world. *California Management Review*, 62(4), 29-44.
- [16] Merton, R. K., & Rossi, A. S. (1949). Contributions to the theory of reference group behaviour. In R. K. Merton & P. F. Lazarsfeld (Eds.), *Continuities in social research* (pp. 40-101). The Free Press.
- [17] Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029-1055.
- [18] Sorce, P., Perotti, V., & Widrick, S. (2005). Attitude and age differences in online buying. *International Journal of Retail & Distribution Management*, 33(2), 161-176.
- [19] Scholz, J., Smith, A. N., & Linton, J. D. (2019). Augmented reality: Designing immersive experiences that maximize consumer engagement. *Business Horizons*, 62(2), 153-164.
- [20] Yin, H., Hong, L., & Liu, Z. (2015). Analysis of user behaviour in mobile e-commerce applications. *IEEE Transactions on Human-Machine Systems*, 45(3), 329-341.
- [21] Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of Marketing*, 74(2), 133-148.