

EXAMINING THE ANTECEDENTS OF CONSUMER BEHAVIOUR IN E-COMMERCE

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Abstract

E-commerce is the practice of buying and selling goods or services through the internet, and it can take place among various parties. This paper examines the role of e-commerce in the current world and how it affects consumer behaviour and changes in purchasing patterns. Paper depicts the change in buying habits of the consumer and how the e-commerce has been dominantly replacing the traditional market. As e-commerce has developed, it has brought about a number of benefits for consumers, but it has also brought about a number of risks, this paper outlines these risks and discusses potential strategies for reducing them. A structured questionnaire was designed to understand how the consumer behavior is to understand how customer behavior is affected by elements like trust, security, consumer satisfaction, and risks of e-commerce. Primary data was collected from 295 people varying from different age groups, annual income, profession, gender and geographical area and convenience sampling technique was used to collect the data under the span of 45 days. The data indicate that there is a positive impact of e-commerce on consumer behaviour. E-commerce websites which offer more customer satisfaction, trust, and protection against e-commerce threats were able to draw in more customers. It was discovered that this industry has not yet been able to win over elderly customers, while those under 25 are the age group that purchases online the most. People choose to purchase more goods from the websites which has less history of fraud and are less vulnerable to the risks and threats associated with e-commerce. To attract customers, e-commerce employs marketing techniques including coupons, gifts, cashbacks, discounts, a broad selection of items, and home delivery. But any error from e-commerce end will replace satisfied customer switch back to traditional market. Also, the competitors are ready for overtaking one another. Consequently, trust and customer satisfaction are major asset for E-commerce to retain customer.

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INTRODUCTION

E-commerce refers to the online exchange of products and services, which can involve B2B (business-to-business), C2B (consumer-to-business), B2C (business-to-consumer), or B2C (business-to-consumer) transactions (Khan.W, January 6, 2019). An online market needs to be just as robust, intricate, and comprehensive as a traditional one. Additionally, it must benefit its customers in some way. It offers a simplest shopping experience where every existing customer have differential database that provides relevant information about products, pricing, sales performance, and customers (Rosemary Stockdale, 2004). By reducing market barriers, e-commerce helps in increasing market size and scope. (Thiebaut, 2019).

E-commerce benefit covers dematerialization, decarbonization and demobilization by reducing transportation. E-market may lead to more sales, and can link local suppliers and consumers or both from far away depending on this GHG (Green House Gases) emissions can increase or decrease (Tiwari et al., 2011). Benefits of the e-marketplace are auctions, better negotiation and exchange facilities, increased opportunity for partnership, better adaptability in administration and communication, availability (24/7), and timely data updating (Rosemary Stockdale, 2004).

Some more benefits of e-commerce include:

- 1- Application of Information: E-commerce market started using information, it uses information from various sources and shows better suitable results to the customers according to their choices.
- 2- More opportunities in the Business: E-commerce require new product and service(innovations) due to which opportunities for incumbents (current person in the market) and for new entrants arises in the market.
- 3- New Products, Product Capabilities, and Services: E-commerce being dependent and derived from information allows customers to provide better feedbacks and recommendations which may result in innovation of products or services.
- 4- Global Reach: E-commerce being accessible through internet allows every entity who is connected to the internet to reach the e-commerce of their choice (Saanen et al., 1999).

Maintaining customer's data, time saving, price/product comparison, flexible target market segmentation, choosing best product or service in less time from thousands of offers, and comparing price of same products are some other advantages of e-commerce. Traditional method of shopping has been shifted to modern era style, all the steps of wholesaler, retailers, employees, manufacturer are compiled in a digital way for customer's needs of fast delivery due to increase in demand for a variety of products. (Tripathi Satya, 2019).

2- LITERATURE REVIEW

2.1 Consumer Behaviour-

A consumer may be willing to purchase an item and share its sensitive information online only if he is assured that online retailer has the needed cybersecurity against the e-threats (Alan D., 2004). Security threats cause loss of revenue, harm to brand's image, legal repercussions, and reduction in market share of the firms and to counter these threats measures like "implementing strict security norms, more secured network provided by IT professionals, spreading of awareness etc." should be adopted.

The Consumer-adoption model development given by Alan D. Smith shows if the threats or cases of cybercrime registered on an e-commerce platform are greater than the security provided by that e-commerce platform than the sales of a businesses will fall. Also, Expectancy Theory given by "Isaac et al. (2001)." explains the consumer will choose e-commerce over traditional market only if the customers' needs for security and convenience have been met. (Alan D., (2004). It was shown that there was a positive relationship between security practices and awareness, with better security practices among consumers who were more aware of security-related concerns. The study failed to establish any significant association between security awareness levels and any of those factors, including security trust levels and online purchasing behaviour (Chen et al., (2008)).

Customer satisfaction leads to loyalty while loyalty leads to build customers and their desire to buy again. Customers' perceptions changes when they analyse various social media activity. This obviously affect user's trust and e-satisfaction, also their namely, review, reputation and design at different level.

Customer's decision making may vary due to these factors:

- o Lack of trust
- o Surface credibility is the degree to which a perceiver believes something or someone based on a quick inspection (Attar et al., 2021).

To identify consumer behaviour, one can provide active customer service team to protect brand reputation also bad reviews can indicate customers dissatisfaction (Thiebaut, 2019). Trust also impacts consumer behaviour, which refers to a person's tendency to participate in a

dangerous situation on the assumption that another party would act appropriately (Ratnasingham, 1998). There are three dimensions of trust- institutional, interpersonal, and dispositional trust.

1. Institutional: Institutional trust means when consumer trust in the institute. For example, in the case of e-commerce institutional trust depends upon technology itself.

2. Interpersonal: It means when a person trusts any specific party.

3. Dispositional trust: Dispositional trust is based on psychology (Pennanen et al. 2006).

Trust among the consumers can be built by providing technologies like encryption and informing them about the risks. Trust of consumers is affected by threats present on ecommerce and nowadays there are millions of cybercrime cases registered daily on such ecommerce platforms. Cybercrime harms the consumer as well as the company’s reputation. Due to their lack of acquaintanceship, it is difficult for them to develop confidence in each other (Alan D., 2004). Since there is a significant correlation between customer intent and security trust, higher security trust leads to increased e-commerce activities (Chen et al. 2008). Various measures like identification, encryption of data communication, allocation of cookies, etc have been adopted by organizations to increase consumer trust. By introducing the concept of e-privacy and security policies, practices, and processes, online businesses have been able to boost sales and strengthen customer confidence (Alan D., 2004). For trust we need strong B2B partnerships, trustful technology and partners. Relationship trust shown by “Customer-to customer reliability, integrity, dependability, and a willingness to participate”. Communication, satisfaction, reputation, and providing referrals to others are key indicators of trust which build modes of learning, monitoring, collaborating, and distancing. (Ratnasingam, 2005). The trust economy is changing who, what and how we trust.

2.2-Threat of E-commerce-

E-commerce has increased in number of buyers in various countries but at the same time it was also challenging situation due to social distancing, and many other reasons.

Viruses, Trojans	With the use of a tool known as Trojan Horse, the hackers are able to view all of the content before it is encrypted (Khan.W, January 6, 2019).
Denial of Service	DOS Attack make machine inaccessible to its intended users as the attack result in shut down of a machine or a network (Ramanujan Sridhar Nerur, 2002).
Impersonating	Attacker access in user data and can do everything on an e-commerce site that an authorized user can do by impersonating.
Sniffing the Network	When data is transferred via transactions and networks, these networks are at risk of getting tracked by hackers resulting in security failure (Odukuma & Musa, 2022).
Changes in environment	Changes in fashion, fads, and trends can be challenging for e-commerce.
Bots and complex Hacking tools	There are various hacking tools like (ASP) application service providers CGI bins Which are used for hosting e-commerce sites and to manipulate web transactions (Olkowski, 2001).
Phishing	It is used to acquire information of victim by a hacker. It is cybercrime used to target email, messages, password, credit card details, banking details, etc (Bhavsar, 2018).

Other threats are conflicts with service providers, lack of ownership clarity, failure of technology usage, stealing personal data, using denial of service attacks, fooling the customer, tracking the customer’s network, monitoring the customer’s device, Impersonating, integrity, authentication, non-repudiation and DOS etc can be tackled by technologies like anti-sniffing tools, cryptography can tackle access threats, same complex passwords, Kerberos, anti-viruses, secure hash algo-rhythms, firewalls, digital signatures and quality of Service (QOS) (Ramanujan Sridhar Nerur, 2002). Some measures which can overcome these threats are personal firewalls that protect the individual’s network from altering, by sending PINS, and by using an encrypted format of security i.e., SSL to enhance security precautions.

Address verification services, credit card verification codes, and real-time data from credit card companies are some of the measures carried out by the Worldwide e-commerce fraud prevention network (Olkowski, 2001). To prevent from attacks, malware viruses and online frauds we need to educate people on how to use it by personal firewalls including secure socket layer (SSL), server firewalls, enforcing password policies and audits of security logs, data security standards should be implemented (Qarkaxhija, 2012). The objective of the research is to study the threats and determine how to reduce them in e-commerce by using applications like Multi Factor Authentication (MFA), regular OS update, Virtual Private Network (VPN), OS segmentation and separation, as well as some mitigating measures like use of up-to-date and malware security (Odukuma & Musa, 2022). Therefore, companies need to take care of their internal and external environments in order to avoid threats. Externally, they should stay up-to-date with government programs and exercises designed to remove these threats, and internally, they must educate staff on how to identify, fix, behave, and recover the harm in order to minimize the interruptions (McCrohan, 2003).

2.3- Essentials of Security-

Ethics in business, disclosure of transactions, and information protection form the basic fundamentals of business. The major factors of the security which are integrity, nonrepudiation, authentication, privacy, confidentiality, availability and auditing.

Security in E commerce revolves around following factors-

1. **Confidentiality:** Maintaining confidentiality in online transactions entails processing and safeguarding sensitive data, including financial and personal information, in a secure manner. To stop illegal access and guarantee the privacy of user data, steps like encryption and decryption are taken. (Sangeetha M K, P. D. (2016).
2. **Integrity:** Integrity means the information should be complete which means when the information is shared from the sender to the receiver, it should be complete. It also means that the system doesn't avail fluctuation in data by outside (Matbouli, H. et al. (2012)).
3. **Availability:** It means that system is optimal for use and providing services in emergencies in simpler words the described system is fit for emergency situations, guaranteeing the uninterrupted availability and efficient supply of services. (Matbouli, H. et al. (2012)).
4. **No repudiation:** It provides proof of origin, authenticity, and integrity of data that is in the context of e-commerce, the idea of non-repudiation inside the system goes beyond question, providing definitive proof of the provenance, legitimacy, and integrity of data. This feature strengthens trust in the accuracy of the data involved and the validity of transactions by acting as a strong barrier against disavowals. (Sangeetha M K, P. D. (2016).
5. **Authenticity:** Authenticity in e-commerce means being real and honest about what you're selling online. It's making sure that what people see and buy matches what they actually get, so there's trust between buyers and sellers (Matbouli, H. et al. (2012)).
6. **Privacy:** Privacy in e-commerce refers to safeguarding personal information shared online during shopping or transactions. It involves protecting sensitive data like credit card details, addresses, and personal preferences from being accessed or misused by unauthorized parties, ensuring customers' confidentiality and security. (Ratnasingham, P. (1998)).
7. **Access control:** In e-commerce, access control uses authorization, permission, and authentication systems to regulate and limit user access to particular data or features. It improves system security and privacy by guaranteeing that only authorized users may interact with defined data or carry out specific tasks (Sangeetha M K, P. D. (2016).

Some intellectual property protection launched for automated complaint process to prevent counterfeits. QR codes and barcodes can be used fraudulent by recording personal information due to improper implementation. Consumers with different perception towards online shopping prefer traditional shopping need several aspects to change their preferences and meet their needs. Once they opt e-commerce, trust is still a question that remain in pre and post purchase (Thiebaut, 2019).

Based on above literature, study proposes these hypothesis-

H₁- There is a significant relationship between consumer behaviour and risk.

H₂: There is a significant relationship between consumer behaviour and security.

H₃: There is a significant relationship between consumer behaviour and trust.

H₄: There is a significant relationship between consumer behaviour and consumer satisfaction.

RESEARCH METHODOLOGY

Exploratory Research – The research investigates “impact of e-commerce on consumer behaviour” in depth. This study uses exploratory research to examine the influence of ecommerce on customer behaviour. In essence, the goal of this research is to better understand the existing state of facts by studying an undefined problem. We collected data from primary and secondary sources which help us to find different variables of e-commerce. E-commerce may or may not have a positive impact on consumer behaviour hence we used exploratory research for attaining better and clear results and detailed information about the problem.

Data type:

1. **Primary data:** It is a data collection process through survey, interview etc. For this paper a questionnaire was designed, by assuming 5 variables trust, consumer satisfaction, e commerce security, risk / threats / issue faced in e commerce and data is collected by the means of self-structured questionnaire and was distributed among the selected population's sample. Based on questionnaire's responses 295 people were selected as final sample.

2. **Secondary data:** Information that has not been acquired by the researcher directly but has instead been made accessible to others for use by a different party. Secondary data was collected from the international journals, published books, trusted online sources.

Geographical Area Coverage: It describes the location or the geographic area that is related to the area which is covered for data collection. A questionnaire was designed and data was collected from Delhi NCR area.

Sample Size: 295

Sampling Technique: Convenience sampling is a sampling which has no definite direction or a pattern to acquire the responses from the respondents. We used this type of sampling technique because use of e-commerce is very common these days among people irrespective of their age groups, gender or their earnings. Data was collected from college students, businessman, housemaker, employees, old age people etc by using convenience sampling. From different geographical locations varying from urban, rural and semi-urban areas within Delhi-NCR. Convenience technique was used as the people those are easily available were selected to fill the questionnaire; these people were mainly students.

Statistical Tools for Data Analysis: Exploratory factor analysis

DATA ANALYSIS

Demographic factors

Age in years

Age in years	Responses
Below 25	227
25-40	52
40-55	16
Above 70	0

Annual income

Annual income	Responses
Less than 1 lakh	153
1 lakh – 5 lakhs	80
5 lakh – 10 lakhs	27
10 lakh – 15 lakhs	17
Above 15 lakhs	18

Profession

Profession type	Responses
Student	196
Employed	83
Unemployed	16

Geographical Area

Geographical Area Type	Responses
Urban	161
Rural	95
Semi-Urban	39

Objective 1: To explore the factors influencing e-commerce practices in an organization – Factor Analysis

Factor analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.851
Bartlett's Test of Sphericity	Approx. Chi-Square	4006.873
	df	990
	Sig.	.000

In statistical tool data analysis, exploratory factor analysis is performed. In exploratory factor analysis, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy shows the value of 0.851, which is more than 0.6 it means our data is significant for factor analysis and a further 13 factors are generated based on the eigenvalue. Additionally, Bartlett's Test of Sphericity yields an approximate Chi-Square value of 4006.873 with 990 degrees of freedom and a significance level of 0.000.

Objective 2: To assess the relationship of influencing factors with consumer behaviour – Correlation.

Correlation between Consumer Behaviour and Risk

Correlations			
		ConsBehav	Risks
ConsBehav	Pearson Correlation	1	.423**
	Sig. (2-tailed)		.000
	N	295	295
Risks	Pearson Correlation	.423**	1
	Sig. (2-tailed)	.000	
	N	295	295

** . Correlation is significant at the 0.01 level (2-tailed).

H1 is accepted as correlation between consumer behaviour and risk is moderately positive at p value less than 0.01.

There is a moderate positive relationship between risks and consumer behaviour which indicates that as much as consumers' behaviour is shifting towards the usage of e-commerce platform, associated risks related to the usage of e-commerce platform is also increasing.

Correlation between Consumer Behaviour and security

Correlations			
		ConsBehav	Security
ConsBehav	Pearson Correlation	1	.513**
	Sig. (2-tailed)		.000
	N	295	295
Security	Pearson Correlation	.513**	1
	Sig. (2-tailed)	.000	
	N	295	295

** . Correlation is significant at the 0.01 level (2-tailed).

H2 is accepted as there is positive correlation between consumer behaviour and security with p value less than 0.01.

There is a moderate positive relationship (Pearson correlation = 0.513, p = 0.000) between security and consumer behaviour, indicating that some consumers in e-commerce take security seriously to ensure secure transactions.

Correlation between Consumer Behaviour and Trust

Correlations			
		ConsBehav	Trust
ConsBehav	Pearson Correlation	1	.505**
	Sig. (2-tailed)		.000
	N	295	295
Trust	Pearson Correlation	.505**	1
	Sig. (2-tailed)	.000	
	N	295	295

** . Correlation is significant at the 0.01 level (2-tailed).

There is a moderate positive relationship (Pearson correlation = 0.505, p = 0.000) between trust and consumer behaviour which indicates that the rise in securities has increased trust among consumers, hence H3 is also accepted.

Correlation between Consumer Behaviour and Consumer Satisfaction

Correlations			
		ConsBehav	ConsSatis
ConsBehav	Pearson Correlation	1	.510**
	Sig. (2-tailed)		.000
	N	295	295
ConsSatis	Pearson Correlation	.510**	1
	Sig. (2-tailed)	.000	
	N	295	295

** Correlation is significant at the 0.01 level (2-tailed).

There is a moderate positive relationship (Pearson correlation = 0.510, $p = 0.000$) between consumer behaviour and consumer satisfaction which indicates that as customer satisfaction rises, positive consumer behaviour develops, hence H4 is accepted.

CONCLUSION

Based on the findings, this paper highlights the nuanced impact of e-commerce on consumer behavior. While e-commerce has expanded market reach and accessibility, it also introduces associated risks that influence consumer attitudes. Our results indicate that as consumers increasingly engage with e-commerce, perceived risks also grow, reflecting a moderate positive correlation between consumer behavior and perceived risk. Security is essential for encouraging consumer trust, as demonstrated by the positive correlation between consumer behavior and security concerns. Trust in online platforms is strengthened as security measures improve, reinforcing positive consumer perceptions and behavior. The findings suggest that consumer satisfaction also plays a key role; as satisfaction rises, so does positive behavior towards e-commerce platforms. The study underscores that while security concerns may initially deter some customers, robust security practices by e-retailers can mitigate these concerns, building trust and loyalty among users. Moreover, the steady increase in cyber threats emphasizes the need for continuous improvement in countermeasures to protect consumer data. E-commerce is poised to challenge traditional markets by offering competitive pricing, variety, and convenience, which further enhances consumers' positive attitudes. To thrive, e-commerce platforms must maintain high standards of security, transparency, and customer satisfaction, along with adopting new trends to meet evolving consumer expectations. By addressing these factors, e-retailers can foster a safe, satisfying shopping experience that encourages long-term consumer engagement and trust in the digital marketplace.

FINDINGS

- The age and experience of the customer also affect their behavior on e-commerce. Seniors don't use e-commerce platforms as frequently as younger people do because they believe it saves time and offers more choices than traditional markets.
- E-commerce can safeguard consumer interest by solving problems; more than 147 respondents have provided favorable feedback regarding this. The majority of responses also indicate that lowering the number of threats can be useful for improving e-commerce behavior.
- E-commerce reduces market barriers, increase market size.
- A customer would only purchase products from an online retailer if he is satisfied that the online retailer has the necessary cybersecurity protections against fraud on the internet. The analysis demonstrates a moderate positive relationship between consumer behaviour and the importance of security in e-commerce transactions. E-security essentials like confidentiality, integrity, availability, non-reputation, authenticity, etc. and maintaining consumer's trust are required to fight against the threats of e-commerce.
- Factor analysis is conducted to explore factors influencing e-commerce.
- The factor analysis conducted on data related to e-commerce practices in organizations revealed 13 factors that play a significant role in shaping these practices. These factors include aspects such as trust, consumer satisfaction, e-commerce security, and the risks or issues faced in e-commerce.
- Consumer behaviour simply dependent on consumer's trust as customer goes through sharing sensitive information in making purchases. Establishing and maintaining trust is crucial for fostering positive consumer behaviour in the e-commerce space. The data reveals a moderate positive relationship between consumer behaviour and trust. As security measures increase in e-commerce, there is a corresponding rise in trust among consumers.
- A correlation analysis indicates a moderate positive relationship between consumer behaviour and the perceived risks associated with e-commerce. As consumer behaviour shifts towards e-commerce, there is an increase in concerns and risks related to the use of online platforms for transactions.
- Correlation analysis shows a moderate relationship between consumer behaviour and consumer satisfaction. As consumer satisfaction increases, there is a positive impact on overall consumer behaviour. This highlights the importance of providing a satisfactory experience to consumers in the e-commerce sector.

RECOMMENDATION

- The CIA's "confidentiality, integrity, and availability" contribute to a high level of security. Given the significance of security concerns in influencing consumer behaviour, e-commerce platforms should invest in robust security measures. Implementation of technologies like multi-factor authentication, regular operating system updates, and virtual private networks can contribute to a more secure online environment. Educating users on secure practices is also crucial to mitigate risks.
- Transparent communication about risks, strong B2B partnerships, and reliable technology partners can contribute to building and sustaining trust. Utilize customer data to understand preferences, improve product recommendations, and streamline the shopping process. Make the platform's layout more senior-friendly by prioritizing simplicity and offering easier-to-follow directions and access.

Draw attention to the platform's speed and variety for younger users and provide instruction on how to make the best use of your time.

- Educate users on best practices to reduce the risk of online fraud. Set priorities and security measures at the same time, minimizing threats by using authentication and encryption techniques. Acknowledge and address the various threats and risks associated with e-commerce, including viruses, denial-of-service attacks, impersonation, and phishing. Implement measures such as regular updates of operating systems, anti-sniffing tools, and strong encryption to protect user data.
- Contributing environmental sustainability, dematerialisation, demobilisation and decarbonisation.
- Practical implementations should be taken in this ever- evolving domain.

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