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An Empirical Study Of Consumer Perceptions Shaping Online Purchase Intentions With E-Commerce

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ABSTRACT

The rapid growth of e-commerce has significantly influenced consumer behaviour, making it essential to understand the factors shaping online purchase intentions. This paper explores factors which affecting consumer perception, particularly during a recession, using Exploratory and Confirmatory Factor Analysis. The research examines respondents across six administrative divisions of Haryana to analyse the impact of factors such as website design, price offerings, trust, security & privacy, delivery, innovation. The Principal Component Analysis (PCA) with Varimax rotation identified six key factors, followed by Price Offering, Trust, and Security & Privacy. The results highlight the importance of these variables in shaping consumer trust and decision-making in online shopping. The paper provides important insights for businesses, policymakers, and marketers to enhance consumer experiences, strengthen security measures, and optimize pricing strategies to boost online shopping adoption. Future research can extend the analysis to different demographics and market conditions..

Keywords Online purchase intention, Purchase Decision, E-commerce, Perception, Website Design.

1. INTRODUCTION:

The advent of the internet has revolutionized the business world, transforming the way consumers seek and utilize information. Online platforms have eliminated geographical limitations, allowing consumers to explore and purchase products from any location globally (Brown et al., 2003; Chau et al., 2002).Unlike traditional shopping, where consumers are restricted to physical stores, e-commerce enables virtual access to a broad range of products and services, enhancing convenience and accessibility (Jarvenpaa & Todd, 1997). The rise of the internet has fundamentally transformed consumer behaviour, leading to a greater dependence on digital channels for shopping and decision-making (Reichheld & Schefter, 2000).

Today, the internet serves not only as a networking medium but also as a crucial platform for marketing and transactions (Johnson et al., 2004). With the rapid advancement of information technology and the increasing accessibility of online platforms, the traditional methods of buying and selling goods have evolved, contributing to the exponential growth in the number of online shoppers worldwide (Donthu & Garcia, 1999).

Increasing the sales among customers with the help of online Shopping & it portray benefits of Internet shopping. It provides various benefits to both business and consumers. From the business viewpoint, (Chau et al., 2002). Internet is acting as a moderator between consumers and supplier and for the consumers, also it act as a medium of communication which helps in searching the updated information along with making relevant decisions for shopping (Novak et al., 2000).

The rapid advancement of digital technology has significantly transformed the retail landscape, leading to an exponential rise in online shopping. Consumers today rely on e-commerce platforms for convenience, variety, and competitive pricing, making online shopping an integral part of modern consumer behaviour (Park et al., 2004). However, consumer perception towards online shopping is influenced by multiple factors, including trust, website usability, security concerns, product quality, and digital literacy (Wolfinbarger & Gilly, 2002). Understanding these factors is crucial for businesses to develop strategies that enhance consumer trust and improve the online shopping experience.

One of the primary factors shaping consumer perception is trust. Trust in e-commerce platforms is built through secure payment systems, customer reviews, and brand reputation (Gefen et al., 2023). Additionally, website design and ease of navigation play a pivotal role in determining consumer satisfaction and purchase decisions (Mortimer et al., 2016; Pandey & Chawla, 2018; Tzeng et al., 2020). Security concerns, such as data privacy and cyber threats, also significantly impact consumer confidence in online transactions (Brusch et al., 2019).

Moreover, factors like social influence, cultural background, and marketing strategies contribute to variations in consumer perception across different demographics (Korgaonkar et al., 2004 & Stafford et al., 2004).

With the rapid advancement of digitalization and increasing internet penetration, online shopping has witnessed significant growth in India. E-commerce enables consumers to purchase goods and services directly from sellers through digital platforms, offering convenience and accessibility (Ribadu & Rahman, 2019).

The rise of online shopping is driven by factors such as technological advancements, secure payment gateways, and evolving consumer preferences and information quality toward digital transactions (Rita et al., 2019 & Vasic et al., 2019). The customers indulging in online shopping consider many benefits. The trend of online shopping is increasing especially in the young generation. They prefer their shopping at home and get benefits of discounts, saving of fuel, time and energy (Liu et al., 2008). A typical online store enables the customer to browse the firm's range of products and services, view photos or images of the products, along with the product specifications, features and prices.

Online shopping platforms provide users with search functionalities to locate specific products, brands, or models efficiently. To complete transactions, consumers need internet access and a valid payment method, including credit cards, debit cards, or digital payment services like PayPal, Amazon Pay, and Paytm (Ribadu & Rahman, 2019). The increasing adoption of secure and diverse payment options has further fuelled the growth of e-commerce. The largest of these online retailing we'd site are Amazon, Flipkart, Myntra, eBay (Chatterjee & Ghosal, 2014).

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine, which displays the same product's availability and pricing at different e-retailers (Gupta & Sharma, 2022).With more than 200 online shopping websites available in India providing varied categories of products and services directly to the consumers, the shopping experience is becoming more and more flexible and convenient for customers now. As of 2020, customers can shop online using a range of different computers and devices, including desktop computers, laptops, tablet computers, smartphones, and smart speakers (Srivastava & Bagale, 2019). The rapid evolution of e-commerce has not only transformed the way consumers shop but has also elevated their expectations, leading to the concept of *consumer delight* in online shopping. Consumer delight extends beyond mere satisfaction and is achieved when online retailers exceed customer expectations, creating a sense of pleasure, surprise, and emotional engagement (Wiardi et. al., 2020). Unlike satisfaction, which is based on meeting expectations, delight results from unexpected positive experiences, such as personalized recommendations, seamless user interfaces, exclusive discounts, and exceptional customer service (Hardiawan, 2013).

Several factors contribute to consumer delight in online shopping. First, website usability and convenience play a crucial role. A well-designed, easy-to-navigate website with quick load times enhances the overall shopping experience. Second, personalized marketing strategies, such as AI-driven recommendations and tailored promotions, make consumers feel valued and appreciated. Additionally, efficient customer service, including prompt responses to queries and hassle-free return policies, significantly influences consumer delight (Zeithaml et al., 2021). Trust and security also play a major role in shaping consumer emotions. A secure payment gateway, transparent policies, and strong data protection measures contribute to a sense of reliability, leading to positive emotional responses (Gangeshwer, D. K, 2013).

2 Literature Review

Online buying behaviour is greatly influenced by consumer perception, which also affects brand loyalty, general satisfaction, and purchase decisions. Consumer perceptions of online buying have changed dramatically as a result of the swift growth of digital technology and the popularity of e-commerce platforms. Consumer experiences and purchase intents are influenced by a number of elements, including price strategies, website design, trust, security and privacy issues, delivery efficiency, and innovation. Existing literature explores how these elements contribute to consumer confidence and engagement with online shopping. This review aims to examine key studies that highlight the determinants of consumer perception, addressing both the opportunities and challenges faced by online retailers in meeting consumer expectations.

2.1 Website Design

Website design plays a crucial role in shaping consumer perceptions and behaviour in online shopping. A well-structured, visually appealing, and user-friendly website enhances consumer experience, leading to increased engagement and purchase intentions (Lee & Yurchisin, 2011).Elements such as website aesthetics, navigation ease, page load speed, and mobile responsiveness significantly impact consumer satisfaction (Shergill & Chen, 2005).Research suggests that an intuitive interface and clear product descriptions reduce cognitive load, making shopping more efficient and enjoyable (Kim & Stoel, 2004; Lee & Yurchisin, 2011). Moreover, interactive features like product filters, virtual try-ons, and customer reviews further enhance the online shopping experience. Poor website design, on the other hand, leads to frustration, cart abandonment, and negative brand perception (Jang et al., 2004). Therefore, businesses must continuously improve website usability and functionality to meet evolving consumer expectations.

2.2 Security & Privacy

Security and privacy are critical concerns for online shoppers, as personal and financial data are increasingly vulnerable to cyber threats. Consumers are more likely to engage in online transactions when they perceive an e-commerce platform as secure (Vaithianathan, 2010). Secure payment gateways, SSL encryption, and multi-factor authentication enhance consumer trust and reduce the risk of fraud (Changchit, 2006). Additionally, clear

and transparent privacy policies regarding data collection and usage significantly impact consumer confidence (Liu et al., 2008). A lack of security measures or reports of data breaches can lead to loss of consumer trust and brand credibility (Hong & LiYi, 2012). Studies indicate that businesses implementing strong cybersecurity measures not only attract more customers but also foster long-term loyalty (Liu et al., 2008).

2.3 Price

Price is a fundamental factor influencing online shopping behaviour, as consumers often compare prices across multiple platforms before making purchase decisions. Competitive pricing, discounts, and dynamic pricing strategies significantly impact consumer purchase intent (Rondan-Catalunʃa, 2011). Research suggests that price transparency and the perception of fair pricing enhance customer trust, while hidden costs, such as high shipping fees, discourage purchases (Richards et al., 2016 & Garbarinoa & Strahilevitzb, 2004). Moreover, price sensitivity varies among consumers based on factors like income level, brand preference, and perceived value of the product (Hassan et al., 2022). Studies also highlight the impact of psychological pricing strategies, such as charm pricing and bundle offers, in influencing consumer choices (Gefen et al., 2023). Hence, retailers must adopt strategic pricing models to attract price-sensitive customers while maintaining profitability.

2.4 Delivery

Timely and efficient delivery is a key determinant of customer satisfaction in online shopping. Consumers prefer e-commerce platforms that offer fast, reliable, and cost-effective delivery services (Javadi, Rezaie Dolatabadi, Nourbakhsh, Poursaeedi, & Asadollahi, 2012) Studies show that delayed shipments and poor logistics management contribute to negative shopping experiences, leading to decreased customer retention (Nourbakhsh, Poursaeedi & Asadollahi, 2012). Free shipping options, real-time tracking, and flexible delivery schedules enhance consumer confidence and shopping convenience (Chakraborty et al., 2022). Additionally, the growing trend of same-day and next-day delivery services has reshaped consumer expectations, making speed a competitive advantage for online retailers (Hassan et al., 2022). Research also highlights the importance of reverse logistics, as hassle-free return and exchange policies contribute to higher consumer satisfaction and repeat purchases.

2.5 Trust

Trust is one of the most significant factors affecting online shopping behaviour. It influences consumer willingness to share personal information and complete transactions on digital platforms (Tarafdar & Vaidya, 2006). Trust is built through positive past experiences, strong brand reputation, and transparent business practices. Online reviews, customer testimonials, and third-party certifications play a crucial role in shaping consumer trust (Tarafdar & Vaidya, 2006). Additionally, responsive customer service and prompt resolution of complaints strengthen trust and loyalty (Burman, D., & Agrawal, A.,2015) Studies indicate that consumers are more likely to engage with brands that prioritize ethical business practices, product authenticity, and secure payment mechanisms (Garg & Gupta, 2021). Hence, fostering trust through transparency and reliability is essential for sustained e-commerce success.

2.6 Innovation

Innovation in e-commerce is a driving force behind consumer engagement and loyalty. Technological advancements, such as artificial intelligence, augmented reality, and chatbots, have transformed online shopping experiences (Kumar et al., 2021). AI-powered recommendation systems personalize shopping journeys, increasing conversion rates and consumer delight (Hassan et al., 2022). Virtual reality (VR) and augmented reality (AR) allow customers to visualize products before purchase, reducing uncertainty and return rates (Gefen et al., 2023). Moreover, innovations like voice commerce, blockchain-based transactions, and drone deliveries are reshaping the future of e-commerce (Chakraborty et al., 2022). Businesses that embrace digital transformation and invest in cutting-edge technologies gain a competitive advantage by enhancing customer engagement and satisfaction (Kim & Stoel, 2021).

consumer perception of online shopping is shaped by multiple factors, as highlighted in the literature review including **website design, security & privacy, price, delivery, trust, and innovation**. customer satisfaction, trust, and purchase decisions are influence by these variables. So, the study will identify research question in light of the research gaps, following questions are:

RQ1. Identify the key factors which influence consumer perception with regards to shop online?

RQ2. Check the validity and reliability of the constructs related to consumer perception towards online shopping.

While considering the **website design, security & privacy, price, delivery, trust, and innovation,** study aims to identify the key factors influencing consumer perception of online shopping. Aim of the research is to understand importance of these elements in shaping the consumer preferences and purchasing behaviour.

This research paper is systematically divided into four key sections to provide a comprehensive understanding of the factors influencing consumer perception of online shopping. The **Introduction** establishes the foundation of the study by presenting the research background, defining key concepts, and highlighting the importance of investigating consumer perception in online shopping. The **Review of Literature** synthesizes existing research on consumer attitudes toward online shopping. This section provides theoretical insights and identifies research gaps, supporting the need for an empirical investigation. The **Analysis** section explains the statistical methods used, including **factor extraction, reliability testing, and model fit indices,** ensuring the robustness of the findings. Finally, the **Findings and Discussion** section interprets the results in the context of existing literature and provides meaningful insights for **businesses, marketers, and policymakers.**

3. Theoretical Framework

Online purchasing intentions are explained by the Theory of Planned Behaviour (TPB) (Ajzen, 1991), which places a strong emphasis on attitude, subjective standards, and perceived behavioural control. Digital transactions are more likely to be completed by customers who have favourable opinions about e-commerce, social approbation, and faith in their abilities to shop online.

In a similar vein, Oliver's 1980 Expectation-Confirmation Theory (ECT) emphasizes how customer expectations about product quality, price, and convenience affect their continuous usage of online shopping platforms. Repeat business results from increased pleasure when these expectations are fulfilled. From initial interest to long-term acceptance, both theories aid in understanding customer behavior when it comes to online purchasing. While ECT addresses post-purchase pleasure and loyalty, TPB concentrates on psychological and social factors that affect purchase intentions. When combined, they offer a thorough framework for examining customer perception, which aids companies in honing their marketing plans and enhancing the online buying experience.

4. Survey Instrument Design

This study employs a **quantitative research approach** with a **descriptive research design** to systematically analyze factors influencing consumer attitudes toward online shopping. The research was conducted across the **six administrative divisions of Haryana namely Ambala, Hisar, Rohtak, Gurugram, Karnal, and Faridabad** to ensure geographical diversity and a comprehensive understanding of online shopping trends across different regions. A total of **412 respondents** participated in the study, selected using a **random sampling technique** to enhance the generalizability of the findings and minimize selection bias.

Data was collected using a **structured questionnaire** consisting of two sections. The first section gathered **demographic information**, including age, gender, occupation, income level, and online shopping frequency. The second section focused on the six variables, where respondents rated their agreement with statements using a **5-point Likert scale** (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree). The study further examine the relationship, and to validate the underlying constructs the study use **Exploratory and Confirmatory Factor Analysis.**

Ethical considerations were maintained throughout the research. Respondents were **informed about the study's purpose**, and their **participation was voluntary.** Personal data confidentiality was ensured, and responses were used strictly for research purposes. This methodology provides a robust framework for understanding consumer attitudes toward online shopping in Haryana, offering insights that can guide e-commerce businesses and policymakers.

5. Analysis

The demographic analysis of consumers regarding **online purchase intention** provides valuable insights into shopping behavior. The **age distribution** reveals that the majority of respondents (37.7%) fall within the **18-28 age group**, indicating a strong inclination toward online shopping among younger individuals. The **29-38 (19.4%) and 39-48 (20.2%)** age groups also show considerable engagement, while older consumers participate at a lower rate. In terms of **education,** most respondents have completed **undergraduate (33.1%) and postgraduate (0.3%)** studies, suggesting that higher education levels contribute to increased online shopping activity.

Table 5.1: Profiling of Respondents

Particulars	Demographics	Frequency
Age	18-28	138
	29-38	71
	39-48	74
	49-58	38
	Above 58	44
Education	10^{th}	1
	12^{th}	74
	UG	121
	PG	170
Gender	Male	208
	Female	157
Income	10,000-30,000	67

	30,000-60,000	76
	60,000-100,000	81
	Above 100,000	55
Occupation	Student	118
	Self employed	12
	Services	85
	Professional	72
	Others	79
Administrative Division	Ambala	54
	Faridabad	30
	Gurgaon	81
	Hisar	43
	Rohtak	37
	Karnal	50
Marital Status	Single	141
	Married	224
Region	Rural	141
	Urban	224

Regarding **gender representation**, males constitute **56.8%,** while females account for **42.9%,** reflecting a nearly balanced participation in online shopping. The **income distribution** shows that **23.8%** of respondents earn below ₹10,000, while **22.1% fall within the ₹60,000-₹100,000 bracket,** indicating that individuals across different economic segments engage in online shopping. **Occupation-wise**, students form the largest group **(32.2%),** followed by service professionals **(23.2%),** which suggests that younger and working-class individuals are prominent online shoppers. The **regional distribution** highlights that **61.2%** of respondents reside in urban areas, whereas **38.5%** are from rural regions, demonstrating the growing reach of e-commerce beyond metropolitan areas. In terms of **marital status, 61.2%** of respondents are married, while **38.5%** are single, showing that online shopping is widely adopted across different family structures.

Table 5.2: Reliability, Sampling Adequacy and Sphericity

CRONBACH'S ALPHA	KMO measure of Sampling Adequacy	Bartlett Test of Sphericity
0.957	0.934	0.000

Source- *Primary Data*

The given data presents key statistical measures to assess the reliability and validity of the research constructs related to consumer perception of online shopping. **Cronbach's Alpha** is reported as **0.957,** indicating a high level of internal consistency, meaning that the survey items used to measure consumer perception are highly reliable. The **Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy** is **0.934,** which confirms that the dataset is well-suited for factor analysis, as values above 0.8 indicate excellent sampling adequacy. Furthermore, **Bartlett's Test of Sphericity** has a significance level of **p = 0.000,** demonstrating that the correlation matrix is significantly different from an identity matrix. This confirms that the dataset is appropriate for **Exploratory Factor Analysis (EFA)** and **Confirmatory Factor Analysis (CFA),** ensuring the statistical validity and robustness of the study.

Table 5.3: Structuring of Factors

		Recession		
Factors	**Names of Factors**	**Eigen Value**	**Variance (%)**	**Cumulative Variance**
F1	Price offering	10.512	30.917	30.917

F2	Trust	3.167	9.315	40.233
F3	Delivery	2.309	6.790	47.023
F4	Security & Privacy	1.899	5.585	52.608
F5	Website Design	1.747	5.138	57.746
F6	Innovation	1.612	4.704	62.486

Source- *Primary Data*

Extraction Method: *Principal Component Analysis.*

Rotation Method: *Varimax with Kaiser Normalization.*

The table illustrates the structuring of factors affecting consumer perception of online shopping during a recession, derived through **Principal Component Analysis (PCA)** with **Varimax rotation**. The analysis identified **six significant factors** with **Eigenvalues greater than 1**, collectively explaining **62.486% of the total variance,** demonstrating a strong factor structure.

The most influential factor, **Price Offering (F2)**, contributing 30.917% **of the variance**, emphasizing the significance of pricing strategies in consumer decision-making. **Trust (F3) and Security & Privacy (F4)**, accounting for 9.315**% and** 5.585**% of the variance,** respectively, highlight the necessity of ensuring consumer confidence in online transactions.

Additionally, **Website Design (F5)** contributes 5.138**%,** reinforcing the importance of an intuitive and user-friendly shopping experience. **Delivery (F6)** explaining 6.790**% of the variance**, underscore the role of seamless logistics and purchasing confidence in online retail. Meanwhile, **Innovation (F8)** accounting for 4.704**%** respectively, showcase the growing influence of technological advancements and targeted promotions on consumer perception.

These findings highlight the **multifaceted nature** of consumer perception regarding online shopping, offering key insights for businesses to refine their **e-commerce strategies**, enhance consumer trust, optimize pricing, and improve digital marketing efforts to sustain consumer engagement during economic downturns.

Table 5.4 Description of Factor loadings

Items	**Factors**	**Factor Loadings**	**Communalities**	**Cronbach Alpha**
	Factor 1- Website Design			**.824**
W1	The homepage of the online stores is personalized or customized to my needs.	0.805	.728	
W2	Website provides quick access to text and graphics.	0.800	.729	
W3	The home page tells me immediately where I can find the information I am looking for.	0.504	.299	
W4	The online website layout indicates quality of the store.	0.769	.653	
W5	The longer history of online store indicates credibility which allows me to shop online	0.790	.686	
	Factor 2- Price Offering			**.900**
P1	Different modes of payment are available while shop online.	0.817	.738	
P2	Online shopping app provide more	0.756	.632	

	offers during festival.			
P3	Online shopping app Provide more rewards and discount	0.683	.584	
P4	Cash back offers are available while shop through Debit/Credit card.	0.733	.588	
P5	Shopping through internet saves money	0.742	.615	
P6	Online products are reasonably priced.	0.731	.566	
P7	In online shopping easily price comparison can be done.	0.732	.639	
	Factor 3- Security & Privacy			
SP1	Personal information is confidential.	0.784	.727	**.891**
SP2	Shopping is better done at the privacy of consumer home.	0.773	.681	
SP3	No one can use the personal information.	0.727	.641	
SP4	Return policy available during online shopping.	0.705	.603	
SP5	I feel safe in my transactions with the online stores.	0.634	.603	
	Factor 4- Delivery			
D1	Timely delivery of products is assured through online shopping.	0.774	.731	
D2	Delivery agent able to locate the exact address on time.	0.681	.554	
D3	Accurate product delivery in terms of product specification.	0.650	.579	**.812**
D4	Delivered product properly packed and sealed.	0.736	.649	
D5	Fragile product delivered safe.	0.741	.660	
D6	Delivery staff friendly and supportive.	0.688	.601	
	Factor 5- Trust			**.900**

T1	Same Product quality received as ordered.	0.747	.664	
T2	Ordered items are well packaged .	0.729	.665	
T3	The system of online shopping is safe.	0.691	.548	
T4	Pop-ups on social networking sites persuade me to shop online.	0.627	.434	
T5	Reliable information is offered by the website.	0.649	.541	
T6	The system of online shopping feels right.	0.729	.618	
T7	I believe that online shopping is trustworthy.	0.694	.582	
	Factor 6-Innovation			
I1	Effective shipment tracking system inspire to shop online.	0.816	.749	**.821**
I2	Advertising on television inspires me to shop online.	0.760	.634	
I3	Development of environment-friendly products.	0.731	.646	
I4	Extension of the product range.	0.793	.676	

Source- *Primary Data*

Extraction Method*: Principal Component Analysis.*

Rotation Method*: Varimax with Kaiser Normalization.*

The given table presents factor loadings, communalities, and Cronbach's Alpha values for various factors influencing **consumer perception of online purchase intention** in a recession scale. The data, derived using **Exploratory Factor Analysis (EFA),** identifies six key factors: **Website Design, Price Offering, Security & Privacy, Delivery, Trust, and Innovation.**

Website Design (Factor 1) has a **Cronbach's Alpha of 0.824,** indicating strong internal consistency. This factor highlights the significance of website credibility, layout, and customization in enhancing user experience and trust in online shopping. **Price Offering** (Factor 2) is highly reliable with an **alpha value of 0.900,** emphasizing the role of multiple payment options, festival discounts, cashback offers, and price comparisons in shaping consumer decisions, considering **Security & Privacy** (Factor 3), with an **alpha of 0.891,** underlines consumer concerns regarding data protection, transaction security, and return policies, with strong factor loadings confirming their substantial influence on purchase intention. **Delivery** (Factor 4) has a **Cronbach's Alpha of 0.812,** reflecting the importance of timely and accurate deliveries, secure packaging, and friendly delivery staff in ensuring consumer satisfaction. **Trust** (Factor 5) exhibits **high reliability of 0.900,** highlighting that consumers value product quality, website reliability, and the overall trustworthiness of online shopping platforms. Lastly, **Innovation** (Factor 6) has an **alpha value of 0.821**, demonstrating how technological advancements such as shipment tracking, television advertisements, eco-friendly product development, and product range expansion inspire online shopping behavior.

With all **factor loadings exceeding 0.60,** the findings confirm that these six factors play a crucial role in shaping consumer purchase intention. Businesses can leverage these insights to refine their **e-commerce strategies**, particularly during economic downturns, to enhance customer engagement and trust.

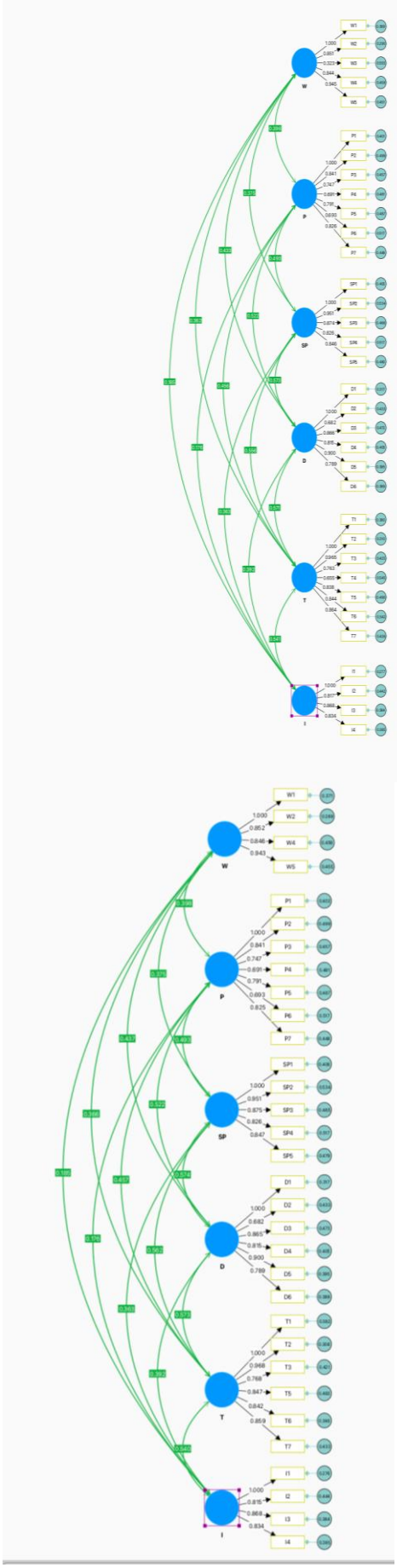

Figure 5.5: Confirmatory Factor Analysis Model

Source: *PLS Output*

*w stands for *Website Design*

*P stands for *Price offering*

*S&P stands for *Security & Privacy*

*D stands for *Delivery*

*T Stands for *Trust*

*I Stands for *Innovation*

Confirmatory Factor Analysis (CFA) was conducted on **45 items** using the **maximum likelihood estimation method** to validate the factor structure of online shopping determinants. Conceptually, six key factors influence online purchase intention: **Website Design, Price Offering, Security & Privacy, Delivery, Trust, and Innovation.** According to Exploratory Factor Analysis (EFA), **Website Design** consists of **five variables**, while **Price Offering** includes **seven items**. Similarly, **Security & Privacy** is represented by **five items, Delivery** comprises **six variables** with high factor loadings, **Trust** includes **seven variables**, and **Innovation,** the final factor, consists of **four items.**

CFA estimates **model fit, regression weights, correlations, variances, and covariances** to evaluate the relationships between the latent variables. Higher regression weight values indicate that the variance is well explained by the model, leading to a better model fit **(Holmes-Smith, Coote, & Cunningham, 2004; MacCallum et al., 1996)**. Covariances and correlations are also analyzed to examine the relationships between latent variables, with higher values indicating strong inter-variable correlations. **Table 2.2** presents the factor loadings for the six latent variables during both **recession and upswing** periods, confirming that all items are positively loaded on their respective latent variables, with values exceeding **0.50,** indicating strong construct validity.

Table 5.6: Standardized Factor Loadings

Factors	**Items**	**Standardized Loadings**		**Factors**	**Standardized Loadings**		
		1	**2**			**1**	**2**
Factor 1 Website Design	W1	0.822	0.821		T1	0.783	0.781
	W2	0.811	0.811		T2	0.802	0.804
	W3	0.355	-	**Factor 5**	T3	0.672	0.675

	W4	0.738	0.739	**Trust**	T4	0.567	-
	W5	0.777	0.775		T5	0.681	0.686
Factor 2 Price Offerings	P1	0.837	0.837		T6	0.746	0.743
	P2	0.755	0.755		T7	0.717	0.711
	P3	0.730	0.730				
	P4	0.701	0.701				
	P5	0.739	0.739	**Factor 6 Innovation**	I1	0.836	0.821
	P6	0.683	0.683		I2	0.702	0.811
	P7	0.767	0.767		I3	0.747	0.739
Factor 3 Security & Privacy	SP1	0.804	0.803		I4	0.733	0.775
	SP2	0.746	0.745				
	SP3	0.740	0.741				
	SP4	0.703	0.703				
	SP5	0.724	0.725				
Factor 4 Delivery	D1	0.827	0.827				
	D2	0.652	0.652				
	D3	0.722	0.722				
	D4	0.728	0.728				
	D5	0.765	0.765				
	D6	0.723	0.724				

***Source**: Primary Data of AMOS Output*

Furthermore, psychometric properties of the scale are also analyzed along with model fit (Farrell & Rudd, 2009). These properties include composite reliability and Cronbach's alpha (standardized), Cronbach's alpha (unstandardized) & Composite reliability (rho_c) of the scale for first order confirmatory factor analysis. Recommended threshold limit for composite reliability is 0.70 (Nunnally & Bernstein, 1994) which is fulfilled in first order CFA as shown in table 4.10. Even though EFA has also provided evidence of higher reliability of factors, CFA confirms the same. Thus, here it can be concluded that scale is reliable.

Factors	**Model 1**				**Model 2**			
	Cronbach's alpha (standardized)	**Cronbach's alpha (unstandardized)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**	**Cronbach's alpha (standardized)**	**Cronbach's alpha (unstandardized)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
Website	0.824	0.831	0.850	0.521	0.866	0.865	0.866	0.619

Design								
Price offering	0.896	0.897	0.899	0.555	0.896	0.897	0.899	0.555
Security & Privacy	0.860	0.860	0.862	0.554	0.860	0.860	0.862	0.554
Delivery	0.876	0.876	0.879	0.545	0.876	0.876	0.879	0.545
Trust	0.876	0.876	0.879	0.509	0.875	0.874	0.876	0.540
Innovation	0.840	0.840	0.843	0.572	0.840	0.840	0.843	0.572

Table 5.7: Reliability and Validity of Proposed Model

***Source**: Primary Data.*

In addition to psychometric properties validity of scale has also tested out. Convergent and discriminant validity of scale have been tested out by calculating average variance extracted. In first order CFA factor loadings are higher, so it explicated that observed variables correlated with the other variables of same construct positively. AVE is greater than 0.50 which shows satisfactory convergent validity. Therefore, it can also said that more than 50 percent variance has been accounted by the latent constructs in the scale with respect to their observed variables. Table 4.10 shows that AVE in website design was 0.521 in Model 1 and comes 0.619 in Model 2. Furthermore, AVE in Trust was 0.509 in Model 1 and 0.540 comes in Model 2.

Additionally, cross-loadings were examined to ensure that each item strongly loads onto its respective construct while exhibiting minimal loadings on unrelated constructs. The results, as presented in **Table 5.7**, confirm that all items demonstrate strong associations with their intended factors and weak correlations with irrelevant ones. Furthermore, the **Heterotrait-Monotrait (HTMT) ratio** was assessed, a recently introduced criterion for evaluating discriminant validity **(Henseler et al., 2014).** The HTMT threshold is recommended to be **below 0.90**, and as shown, all values meet this requirement. These findings confirm that **discriminant validity is established**, ensuring that each construct is distinct from the others in the model.

Table 5.8: Discriminant validity Heterotrait-monotrait ratio

- HTMT	DDDD	III	PPP	SPSPSP	TTT	WWW
D						
I	0.408					
P	0.525	0.173				
SP	0.585	0.368	0.502			
T	0.570	0.546	0.457	0.571		
W	0.441	0.184	0.399	0.371	0.361	

The given table presents the **Heterotrait-Monotrait Ratio (HTMT)** values, which assess **discriminant validity** in structural equation modeling (SEM). Discriminant validity ensures that different constructs measure distinct concepts and are not excessively correlated. The table displays HTMT values between the constructs **D, I, P, SP, T, and W**, with values ranging from **0.173 to 0.585.** Generally, HTMT values below **0.85** indicate acceptable discriminant validity, confirming that the constructs are statistically distinct. The highest HTMT value **(0.585)** is observed between **SP and D**, suggesting a moderate correlation, while the lowest value **(0.173)** is found between **P and I,** indicating a weak correlation and strong discriminant validity. These findings confirm that the constructs maintain adequate distinction, ensuring the robustness of the measurement model. Furthermore, discriminant validity has also been calculated to identify that latent construct explains only its own observed variables rather than others. Overall, measurement model confirms a good model fit, high reliability, good convergent validity and poor discriminant validity.

6. Finding & Discussion

The findings of this study highlight that website design, security & privacy, price, delivery, trust, and innovation significantly influence consumer perception of online shopping. The application of Exploratory Factor Analysis (EFA) helped identify the underlying structure of these variables, while Confirmatory Factor Analysis (CFA) validated their reliability and consistency. The results suggest that a well-designed website with easy navigation, appealing aesthetics, and user-friendly interfaces enhances consumer trust and satisfaction, making it a crucial factor in online shopping decisions.

Security and privacy also play a vital role in shaping consumer perception. The increasing number of cyber threats and online fraud has made customers more cautious about sharing personal and financial information.

The study confirms that strong security measures, including secure payment gateways, encryption protocols, and transparent privacy policies, positively impact consumer trust and confidence in online shopping platforms. Similarly, pricing strategies influence customer behavior, as affordability and discounts attract consumers, while hidden charges or high delivery costs discourage purchases.

Efficient and reliable delivery services significantly affect consumer satisfaction. Fast shipping, real-time tracking, and hassle-free return policies enhance consumer experience and build long-term loyalty. Additionally, trust emerges as a key determinant in online shopping behavior, reinforcing the need for authentic product descriptions, customer reviews, and responsive customer service to establish credibility. Finally, innovation in online shopping, such as AI-driven recommendations, chatbots, and AR/VR-based product previews, enhances engagement and personalizes the shopping experience, making consumers more likely to return.

Overall, the findings align with previous research, emphasizing the importance of these factors in consumer perception. Businesses must continually improve these aspects to enhance customer satisfaction, build long-term trust, and stay competitive in the rapidly evolving e-commerce landscape. Future research could explore emerging technologies and additional psychological factors influencing online shopping behavior.

7. Limitations & Future Directions

While this study provides valuable insights into the factors influencing consumer perception of online shopping, it has certain limitations that should be addressed in future research. Firstly, the study is limited to **six administrative divisions of Haryana**, which may restrict the generalizability of findings to a broader demographic or international context. Future research could expand the geographical scope to include diverse regions and consumer segments.

Secondly, the study primarily focuses on **website design, security & privacy, price, delivery, trust, and innovation** as key factors, but other variables such as **customer service quality, social influence, brand reputation, and psychological factors** could also impact consumer perception. Future studies could incorporate these dimensions to provide a more comprehensive analysis.

Additionally, the research employs a **cross-sectional survey design,** capturing consumer perceptions at a single point in time. Given the rapid evolution of e-commerce and technological advancements, a **longitudinal study** could provide deeper insights into changing consumer behaviors over time.

Lastly, while **Exploratory and Confirmatory Factor Analysis** validate the relationships among the selected factors, advanced techniques such as **structural equation modeling (SEM) and machine learning approaches** could further refine predictive models. Future research should explore these methodologies to enhance accuracy and applicability in the dynamic e-commerce environment.

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