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Dynamics of Online Shopping Trends for Fashion Products: A Case Study of Himachal Pradesh, India

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Conducting research on online shopping for fashion products in Himachal Pradesh is crucial to understand consumer preferences, behavior, and challenges unique to the region. Insights gained can inform businesses, policymakers, and retailers, facilitating tailored strategies that enhance the online shopping experience and boost the local fashion industry's growth in the region. The study was conducted on 1500 respondents of Shimla and Solan cities of Himachal Pradesh. The data analysis was divided into two sections: descriptive analysis and inferential analysis. Confirmatory Factor Analysis (CFA), Reliability Analysis, Validity Analysis, Mediation Analysis, Moderation Analysis, Structural Equation Modelling (SEM), t-tests, ANOVA, etc., were applied in order to achieve the stipulated objectives and hypotheses of the study. It is found that customer awareness of online shopping has a positive influence on their buying behaviour for fashion products, establishing a significant relationship. A positive correlation is identified between customer awareness of online shopping and their satisfaction level with the online shopping experience. Customer satisfaction is found to positively affect customer buying behaviour. Factors influencing online fashion purchases directly impact customer buying behaviour.

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Keywords: Online shopping; fashion products; perceived challenges; awareness level; customer satisfaction.

1. INTRODUCTION

India's digital journey is one of exuberance. The country has the world's second-largest internet population, with over 1.2 billion users in 2023. Of these, 1.05 billion users accessed the internet via their mobile phones. Mobile internet has been such a positive development in the country's digital progress, that in 2019, over 73 percent of India's total web traffic coming from mobile phones. But how did this come to be? Two main factors point to the sudden spike in mobile internet penetration in the south Asian country. Firstly, the increased availability of cheap smartphones since 2010 had created a fertile ground for digital adoption and literacy. Along with this, the Indian government understood the vitality of investments in its telecommunications sector and further opened the market with new telecom spectrum licenses [1]. India's rapid digitization is evident through shopping behavior, digital payments, digital ad spending, content consumption on social media, and the growing Direct-to-Consumer (D2C) ecosystem. It already leads in digital ad spending at 22%, ahead of the UK (9.3%), the US (10%), Australia (5.8%), France (11%) and China (3.3%), the report said (Livemint, 2023). According to a recent report, India will rank first among 20 countries worldwide in retail e-commerce development between 2023 and 2027, with a compound annual growth rate (CAGR) of 14.11 percent. The Indian e-commerce market is currently valued at 63.17 billion U.S. dollars. Argentina and Brazil are also among the fastest-growing e-commerce markets globally, with a CAGR of over 13.63 percent and 14.07 percent, respectively. The global retail e-commerce CAGR was estimated at 11.16 percent during the same period [2].

Online shopping has grown rapidly in the previous decade, owing to the fact that it is a more cost-effective and easy method of purchase than traditional methods. Nonetheless, the transition from one to another, more modern purchase method initially caused customers to be concerned about the following: leak of personal information, online fraud, inconsistency between the ordered product quality and the desired quality, unsuccessful shipping, and so on. Today, these fears are substantially smaller as individuals appreciate the benefits of online buying. The need to completely redefine the market role of online consumers has arisen as a result of the rapid advancement of information technology, ongoing digitization, and new market conditions. Online consumers, as market participants, have increased their involvement in the market's operation by assuming a new market role. Consumers are offered a variety of services, including buying, communicating, and creating [3].

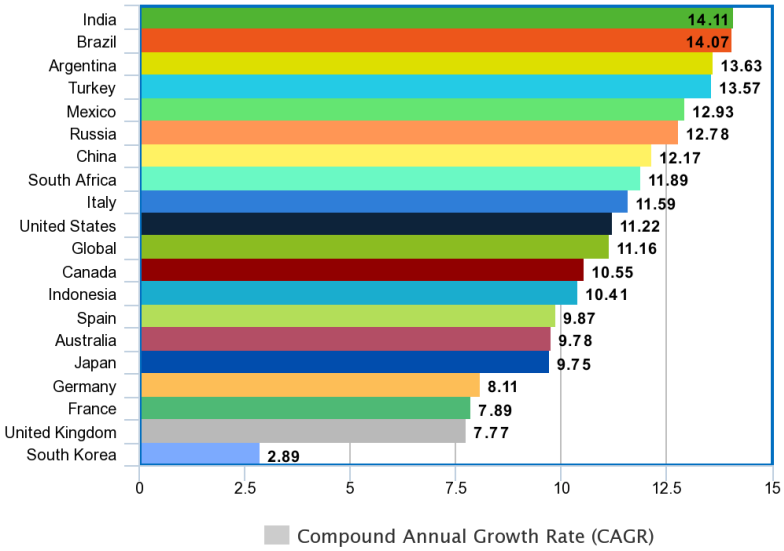

Fig. 1. Retail E-Commerce sales compound annual growth rate (CAGR) from 2023 to 2027 (Forecast) by Country
Source: www.statista.com

1.1 Concept of Fashion Products

Fashion products encompass clothing, footwear, accessories, and even cosmetics, that go beyond mere utilitarian functions to express individual identity and embrace the zeitgeist of a particular era. They often reflect the creativity of designers and the desires of consumers to stay in tune with contemporary styles and personal expressions [4]. In India, the concept of fashion products and its association with online shopping has undergone a remarkable transformation in recent years. Fashion, as a cultural and social expression, has always been an integral part of Indian society, reflecting its rich diversity, heritage, and evolving trends. Traditionally, fashion products were primarily associated with physical retail stores and local markets, where consumers could engage in a tactile and immersive shopping experience. However, with the advent of e-commerce and the rise of online shopping platforms, the concept of fashion products in India has expanded beyond geographical boundaries. Online shopping has opened up a vast digital marketplace, offering consumers access to a wide array of fashion products from both domestic and international brands. This has empowered consumers with greater choices and the ability to explore a diverse range of styles and designs without leaving the comfort of their homes.

Moreover, the rise of social media and influencer marketing has further shaped the concept of fashion products in India. Social media platforms have become significant avenues for fashion influencers and brands to showcase their latest collections, trends, and styling tips. Consumers are increasingly influenced by these online personalities, which has resulted in a more democratized fashion landscape, where individual tastes and preferences are celebrated. Social media provides a visual and interactive space for fashion brands to showcase their products, connect with audiences, and collaborate with influencers. Consumer-generated content, such as outfit posts and reviews, plays a pivotal role in shaping trends and building trust [5]. The online fashion industry in India has seen exponential growth, with e-commerce platforms dedicated exclusively to fashion products, such as Meesho, Myntra, Jabong, and Nykaa gaining immense popularity. Established e-commerce giants like Flipkart and Amazon have also heavily invested in their fashion segments, making it a crucial component of their overall business [6].

The concept of fashion products in India through online shopping has also been instrumental in promoting sustainable and ethical fashion practices. Consumers are now more conscious about the environmental and social impact of their fashion choices, leading to an increased demand for eco-friendly and ethical fashion brands. Despite the numerous advantages, online shopping for fashion products in India also faces certain challenges. One of the significant concerns is ensuring the authenticity and quality of products purchased online, as customers cannot physically examine the items before making a purchase. E-commerce platforms have worked to address these issues by offering easy return and exchange policies and providing detailed product descriptions and customer reviews [7].

In conclusion, the concept of fashion products in India, driven by online shopping, has undergone a significant paradigm shift, offering consumers unparalleled choices, convenience, and accessibility. The combination of e-commerce, social media, and changing consumer preferences has shaped a vibrant and dynamic online fashion industry, contributing to the evolution of India's fashion landscape. As technology continues to advance and consumer behavior evolves, the concept of fashion products in India will continue to change, presenting exciting opportunities and challenges for the industry and consumers alike.

2. REVIEW OF LITERATURE

Multiple research studies have been undertaken on the online buying behaviour of consumers globally from different perspectives, but only a limited number of relevant studies are comprehensively reviewed. This review would allow for a thorough understanding of the subject and the ability to identify knowledge gaps. A concise overview of the existing literature on several aspects of online buying, relevant to the proposed study, has been compiled at both national and international levels. The literature review on different dimensions of the topic is presented.

The objective of this research is to investigate the purchasing behaviour of consumers in Himachal Pradesh, India, specifically in relation to branded ready-made clothes. The study also attempts to identify the factors that have an impact on consumers' purchasing decisions in this context. This study also aims to assess the

level of consumer awareness about accessible brands and examine the variables that influence consumer purchase behaviour. The buying behaviour of consumers is influenced by both internal and external variables. The garment sector in Himachal Pradesh has potential chances for enterprises, since it remains relatively untapped. The proportion of consumers in Himachal Pradesh who exhibit a preference for both multinational and non-branded clothes is substantial. However, when comparing the preference between non-branded and multinational branded apparel, the latter is shown to be more favoured. The notion of multinational branded clothes, which was previously unfamiliar to customers in Himachal Pradesh, is now gaining familiarity [8].

This study investigated literary and empirical approaches. The former featured a collective study of 128 source materials, while the latter was performed using a Qualtrics-generated online poll that had 113 legitimate respondents obtained by convenience and snowball sampling. To effectively market the poll, it was posted across several social media sites. The findings also demonstrated that self-discrepancy decreased self-perception by increasing the frequency of internal and outward social comparison. Low self-satisfaction was shown to be associated with increased obsessive-compulsive and impulsive purchase habits [9].

This confirmatory study focused on customer views about the sustainability of fashion labels as well as how these sentiments impact their purchase choices. The goal was to see whether the difference between attitudes and purchase behaviour existed among Croatian consumers to the same level that earlier research had shown. A study of 263 customers with buying power was performed to explore their perceptions, awareness of, and attitudes towards sustainability and eco-fashion. Descriptive statistics and correlation analysis were used to assess the acquired data. The findings indicate that participants had a favourable perspective regarding the long-term viability of fashion businesses. Furthermore, a favourable relationship was discovered between the significance of fashion brand sustainability and customer choices to purchase sustainable apparel goods [10].

This paper examines the ways in which Instagram offers fashion businesses a platform to launch their online stores and monitor customer feedback. Particularly in the previous ten years, social media has transformed marketing channels and approaches. As a result, a lot of businesses look for these new channels to establish connection with potential start-ups. They see these portals as contemporary, affordable means of connecting with potential customers. This case study is focused on how customers respond to the firms' Instagram marketing tactics and how they buy products depending on their age and gender, respectively. Consumer reactions to the Instagram platform are evaluated, and marketing tactics are looked at. The results imply that a few of the tactics are significantly improving customer perception. The findings also imply that Instagram activity has a beneficial impact on website and online store traffic for the business [11].

In the context of clothing, the current research examines customers' behavioural intentions during COVID-19. Through a thorough review of the literature and a consumer survey, the research aims to establish connections between the purchasing patterns of consumers for garments in times of crisis or pandemic and during normal times. Through the use of the confirmatory factor analysis (CFA) methodology, the study contributed to our understanding of consumers' transition towards online garment purchases. The researchers also looked at the relationship between gender and age groups and the frequency of apparel purchases during COVID-19, in addition to the sociodemographic information of working personnel. The dependent and independent variables do not significantly relate to one another, according to the results. Nonetheless, internet shopping had a beneficial impact throughout the epidemic [12].

The purpose of this research was to investigate the association between online shopping trends and consumer purchasing behaviour. A cross-sectional design was adopted in the investigation. The study's population included final-year undergraduate students from Abubakar Tafawa Balewa University Bauchi's faculties of Science, Engineering, Environmental Technology, Agriculture, Management Sciences, and Education. The number of students enrolled in the faculties totals 3,332 pupils. The Krejcie and Morgan table was used to generate a sample size of 336 using a simple random approach. After cleaning the data, only the responses of 293 people were utilised for analysis. For data analysis and hypothesis testing, descriptive statistics and Spearman's

rank correlation were utilised. Empirical findings support the existence of a considerable positive association between the online shopping trend and consumer purchasing behaviour. The research demonstrated that the online shopping trend (performance expectation and enabling circumstances) is strongly connected to consumer purchasing behaviour [13].

Understanding consumer behaviour during the COVID-19 era was the aim of this research. The economy and consumer behaviour of India have been profoundly affected by the COVID-19 epidemic. The epidemic has caused a change in consumer purchasing behaviour from conventional, or offline, venues to internet platforms. This change aided in e-commerce sales, but they were forced to suspend their home delivery services during the first days of the state- wide lockdown due to the steadily rising number of cases in India. During the lockdown, economic activities were suspended, which had an adverse effect on consumer behaviour. Due to the nationwide requirement that consumers spend their money only on essentials, consumers' perception of money increased. The financial crisis has made customers more cautious when buying commodities on the open market. Through this research, we aimed to assess the effect of COVID-19 on consumer behaviour and purchase patterns as well as the legislative actions made by the federal and state governments to improve the pandemic situation [14].

The identification of consumers and their purchasing habits is often the focus of research on consumer behaviour in online shopping. Determining who purchases what, where, when, and how is the goal of this research. These studies' findings may be used to solve marketing-related issues. Numerous studies on the buying habits of customers have been presented and applied to actual issues. It is thought that data mining methods are more useful for analysing client behaviour. This research aims to analyse the behaviour of those individuals who frequent online shopping sites and spend their time browsing various products. In addition, the number of individuals present and the proportion of those who are actively shopping would be considered. In this study, several queries are used to mine a certain website's database, leading to an analysis of consumer behaviour about online buying [15].

The purpose of this article is to identify characteristics that influence customers' propensity to buy products from an online shop. The research looked at the characteristics that customers use to make online purchases. The author used main factor analysis to minimise the number of these criteria and came up with seven factors. To ensure that the factors are valid, the author performed confirmatory factor analysis, which demonstrated that the model comprised of the newly constructed factors matches the data well [16].

2.1 Research Gap

The practice of buying goods online is no longer unusual. It is an established notion in foreign countries and is fast spreading in India too. The assessment of the literature showed that a large portion of the research on online shopping has been undertaken outside the country, and in India, the majority of it has been conducted in the past 5-6 years only. Furthermore, there have been limited research efforts, particularly in the domain of fashion products within the region of Himachal Pradesh. Hence, it is imperative to undertake such a study in Himachal Pradesh. In the various previous studies, the majority of researchers have examined the link between demographic characteristics and consumer behaviour, the relationship between perceived risk and consumer behaviour, and the association between website design and consumer behavior. Therefore, research needs to be conducted to account for the influence of all these relevant factors, including the effect of mediating and moderating variables on customers' mindsets and actions when making online purchases.

2.2 Objectives of the Study

1. To study the demographic characteristics of customers.
2. To explore the level of customer awareness of online shopping trends towards fashion products.
3. To identify the factors influencing customer buying behaviour for online shopping of fashion products.
4. To investigate the perceived challenges involved in the online buying of fashion products.
5. To analyse the customer satisfaction level with online shopping for fashion products.
6. To ascertain the impact of online shopping Trends on customer buying behaviour towards fashion products.

2.3 Research Variables of the Study

In research, variables refer to characteristics or attributes that can be measured, manipulated, or controlled. They are the factors that researchers observe or manipulate to understand the relationship between them and the outcomes of interest.

2.3.1 Independent variables

- Customer Awareness
- Factors Influencing
- Perceived Challenges
- Customer Satisfaction*
- Demographic Variables

2.3.2 Dependent variable

- Customer Buying Behaviour

Note: * Taken as dependent variable in hypothesis ($H0_2$)

2.3.3 Mediating variable

Mediation examines the extent to which the influence of X (Independent Variable) on Y (Dependent Variable) occurs via a third variable, M (Mediator). In this way, mediator explain the causal relationship between two variables or "how" and "why" the relationship works. "Customer Satisfaction" is taken as mediating variable for the present study. Factors Influencing is taken as independent variable and Buying Behaviour is dependent variable. It helps the researcher to understand the "why" and "how" behind these relationships and inform interventions and strategies by identifying key factors in the mediating pathway.

2.3.4 Moderating variable

Moderation analysis enables researchers to examine the impact of a third variable, Z, on the relationship between variables X and Y. Moderation tests aim to determine the circumstances or conditions under which an effect takes place, rather than establish a causal relationship with other variables. Moderators have the ability to strengthen, decrease, or reverse the characteristics of a relationship. The moderating variable for the study is taken as "Customer Satisfaction". Perceived Challenges in online shopping is taken as independent variable and Buying Behaviour as dependent variable.

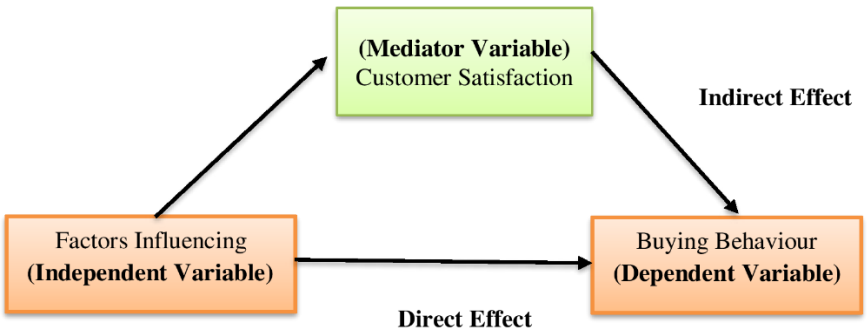

Fig. 2. Mediator variable

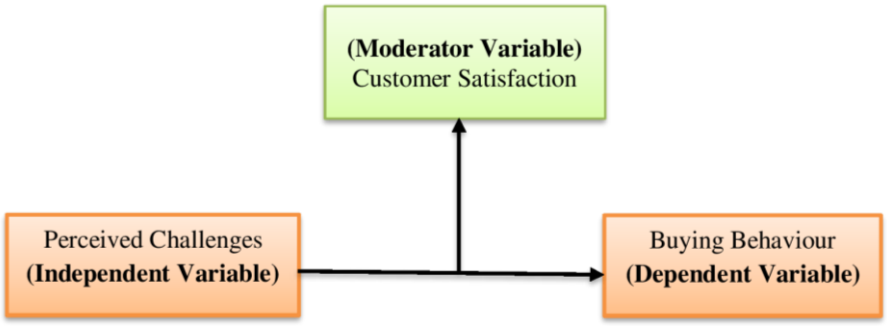

Fig. 3. Moderator variable

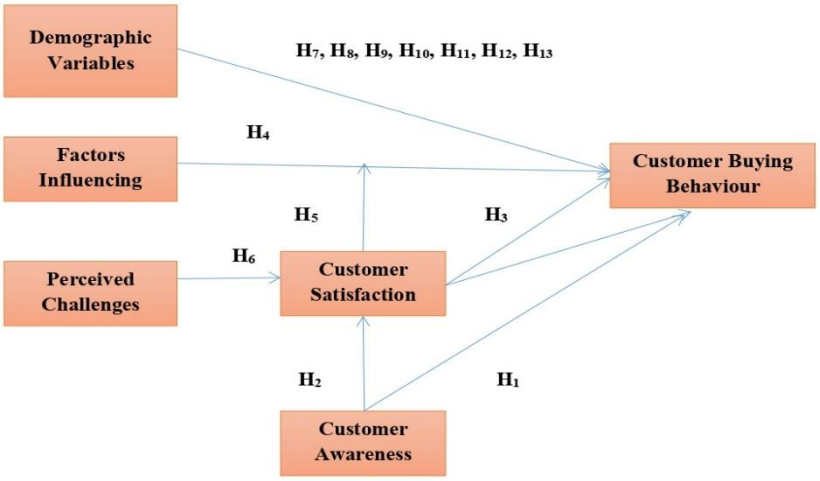

Fig. 4. Conceptual framework of the study

3. METHODOLOGY

The research methodology used for the study covers the research design, universe of the study, sampling technique, sample size, tools and techniques for data collection, and data analysis.

3.1 Research Design

A descriptive research design has been adopted in the current study. This kind of research design, as its name implies, describes a population's characteristics. It entails identifying the research problem and developing pertinent research hypotheses. Along with the content, setting, and methodology for the study, it details the goals of the investigation.

3.2 Universe of the Study

The study was conducted among the citizens of all 34 wards and 17 wards of the Municipal Corporation, Shimla, and Solan cities, respectively. The data for the study was collected from October to December of 2023.

3.3 Sampling Technique

The sample size was selected using the “Snowball Sampling Technique”, based on scientific data from previous studies and the specific requirements of the present study.

3.4 Sample Size

In order to achieve the objectives of the study, the final sample size was set at 1500 respondents, i.e., 780 from Shimla and 720 from Solan cities. The proportionate participation of male and female respondents in the final sample from both cities was decided on the basis of the ratio of registered male and female populations in both cities.

3.5 Data Collection Method

For the present study, the primary data was collected with the help of structured questionnaire administered to sample respondents of Shimla and Solan cities. Additionally, secondary data was collected from books, journals, newspapers, websites, theses, and other government documents.

3.6 Research Instrument

The questionnaire was designed in "Google Forms,” and the link to it was shared through social media platforms such as WhatsApp, emails, etc. All the variables of the study were measured on a 5-point Likert scale, and the questionnaire was divided into six sections as per the objectives of the study.

3.7 Data Analysis

The data analysis was divided into two sections: descriptive analysis and inferential analysis. Appropriate statistical tools, e.g., confirmatory factor analysis (CFA), reliability analysis, validity analysis, mediation analysis, moderation analysis, structural equation modelling (SEM), t-tests, ANOVA, etc., were applied in order to achieve the stipulated objectives and hypotheses of the study.

Table 1. Dimensions of the questionnaire

Sr. No.	Dimensions of the Questionnaire	Items
1	Demographic Characteristics/Variables	07
2	Customer Awareness Level of Online Shopping	38
3	Factors Influencing Customers to Buy Fashion Products	18
4	Perceived Challenges Involved in Online Shopping	12
5	Customer Satisfaction Level Towards Online Shopping	12
6	Impact of Online Shopping Trends on Customers Buying Behaviour	10

4. RESULTS AND DISCUSSION

4.1 Demographic Profile of Customers

It was found that the majority of participants, i.e., 777 (51.8%), are between the ages of 18 and 25 years. Out of the total sample, there are 818 men (54.5%) and 682 women (45.5%). The majority of participants, 43.3% (650 individuals), have obtained their bachelor's degree, out of total sample i.e., 695 (46.3%) are students, followed by private employees, i.e., 449 (29.9%), and 185 (12.3%) are businessmen. It was found that the majority of participants, i.e., 969 (64.6%), are unmarried. Out of the total sample, the majority of participants, i.e., 925 (61.7%), belonged to the nuclear family. The data demonstrates that the largest proportion, accounting for 26.80% (402 participants), is associated with households earning a monthly income exceeding Rs. 65000.

4.2 Awareness Level of Customers

Out of the total sample, the majority of respondents, i.e., 1262 (84.1%), reported using smartphones as their primary means of accessing the internet, indicating a strong preference for mobile connectivity. Laptops are the second most popular choice, with 207 (13.8%) respondents, while desktop computers are the least utilised device, representing only 2.1% (31 respondents) of the sample. It has been established that around 609 (40.6%) of the participants spend 2-3 hours online every day, with 474 (31.6%) reporting spending 4-5 hours online. The majority of participants, i.e., 714 (47.6%), have been actively shopping online for the past 4-6 years, and 580 (38.7%) for the past 1-3 years. It is concluded that the majority of participants reported shopping online on a monthly basis, accounting for 52.3% (785 participants) of the total sample.

It is inferred that 450 participants (30%) stated that they visit actual retail stores before buying online, indicating a substantial preference for in-person shopping. 639 participants (42.6%) stated that they occasionally visit physical retail stores before buying online, indicating a mix of buying strategies. It can be concluded that the majority of participants have expressed a positive attitude towards WhatsApp (mean value: 4.37), Facebook (mean value: 4.23), and Instagram (4.19), with them being the ‘most favourite’ social media websites among the rest, whereas Tumblr (mean value: 2.81) has been ranked as the ‘least favourite’ social media website.

It was found that the majority of participants, i.e., 1189 (79.3%), strongly agree on the point that they use the Internet for communication purposes. It can be inferred that the majority of participants prefer to buy products in the clothing segment (mean value: 4.42), followed by accessories (mean value: 3.83), and footwear (3.79). Whereas, jewelry is considered the least preferred item among the participants, with a mean value of 3.05. The majority of participants, i.e., 990 individuals (66%), preferred UPI payments for online shopping.

It can be concluded that the majority of participants have expressed a positive attitude towards Amazon (mean value: 4.63), Flipkart (mean value: 4.30), Myntra (4.24), Meesho (mean value: 3.72), and Nykaa (3.62) being the top five most favourite online shopping websites among all, whereas Shopclues (mean value: 2.97) has been ranked as the least favourite online shopping website.

It was discovered that the majority of participants sources of awareness about online shopping websites came from friend recommendations (mean value: 4.21), followed by social media advertisements (mean value: 3.85), and television advertisements (mean value: 3.83). Whereas, email advertisements (mean value: 3.30) have been classified as the least important source of awareness about online shopping websites.

4.3 Factors Influencing Customers to Fashion Products buy Online

This research has identified several significant factors that participants consider before doing online shopping. These factors include time savings (mean value: 4.51), exclusive availability of products (mean value: 4.16), price discounts (mean value: 4.15), variety of product choices (mean value: 4.11), easy payment options (mean value: 4.10).

4.4 Perceived Challenges Involved in the Online Buying of Fashion Products

Although to some extent every factor is considered a perceived challenge while doing online shopping, there are still certain significant factors that are identified and ranked among the top five perceived challenges by the participants, such as the inability to touch, feel, or see the actual product in order to access its actual quality (mean value: 4.57), fear of misuse of personal information entered on the shopping website (mean value: 4.11), fear that the product delivered might differ from what was advertised on the website (mean value: 4.04), fear of online financial fraud (mean value: 3.99), and doubt on the actual performance of the product (mean value: 3.91).

4.5 Satisfaction Level of Customers

After the analysis, the five most significant factors in calculating participants' satisfaction level towards online shopping are as follows: ease of using websites (mean value: 4.64), product categories (mean value: 4.19), discount offers (mean value: 4.04), payment options (including UPI, debit card, credit card, EMI, and COD) (mean value: 4.00), and return and cancellation policy (mean value: 3.92). Approximately three-quarters of the participants, i.e., 1127 (75.1%), expressed substantial satisfaction with their entire experience of shopping online. The mean total satisfaction score is 4.101, indicating a predominantly high level of contentment among the participants, with most of them expressing positive satisfaction.

4.6 Impact of Online Shopping Trends on Customer Buying Behaviour Towards Online Shopping

After the analysis, the five most significant factors identified in reference to the impact of online shopping trends on customer buying behaviour towards online shopping are as follows: increase in shopping frequency (mean value: 4.53), easy comparison of price (mean value: 4.22), easy comparison of products (mean value: 4.12), latest product designs (mean value: 4.05), and unplanned purchase (mean value: 4.02).

Out of the 1,500 participants, most (84.8%) stated that their online buying habits have increased post COVID-19. It suggests a notable shift towards greater online purchasing. At least 720 people (48.0%) stated they recommend online shopping to others "Always." A significant portion, 664 (44.3%), said "Sometimes," while 116 (7.7%) said "Rarely." It implies that most respondents recommended online shopping to others regularly or occasionally. Out of the 1,500 participants, 959 (63.9%) expressed that online shopping adversely affects the sales of shopkeepers, whereas 176 (11.7%) had a contrary opinion, indicating no such impact. Moreover, 365 (24.3%) participants expressed uncertainty or neutrality, indicating that the impact could be ambiguous or subject to change.

Out of the total sample, 75.1% (1127 participants) held a favourable perspective, affirming that online shopping possesses significant potential. Only a small fraction, specifically 7.6% (114 participants), expressed a pessimistic viewpoint, asserting that internet shopping lacks substantial potential in the future. Conversely, a total of 17.3% (259 participants) expressed uncertainty or readiness toward the idea, indicating their response as "May be." The greater frequency of positive replies suggests that most respondents hold an overall optimistic view of the potential of online shopping.

4.7 Inferential Analysis

The data analysis and interpretation part of this thesis relies on inferential statistics as a fundamental tool to enable detailed insights and well-informed inferences. This section explores a range of statistical techniques, including “Reliability Analysis” to assure data consistency, “Structural Equation Modeling” (SEM) for investigating complex relationships, and “Confirmatory Factor Analysis” (CFA) to evaluate measurement models.

4.7.1 SEM (Structural Equation Modelling)

Structural Equation Modelling (SEM), a flexible statistical approach, to describe complex

interactions between variables, whether latent or observable. Its ability to analyse intricate causal pathways, integrate latent components, test several hypotheses at once, account for measurement error, evaluate model fit, and combine aspects of factor analysis and regression are just a few of its special features. SEM is an essential tool for research in disciplines like psychology, sociology, economics, and beyond because it can be used to validate theoretical models, examine the effects of interventions or policies, and simplify complex datasets. This allows for more thorough and accurate data analysis and hypothesis testing.

4.7.2 Confirmatory Factor Analysis (CFA): measurement model and validity

Confirmatory Factor Analysis (CFA) is a type of model used for testing the theory. It is generally used to test a predetermined hypothesis for analysing and interpreting the results by analysing the correlation among the factors. It is important in theoretical contexts [17] CFA is commonly used in social research which helps to determine the scale quality. It is a technique of latent variable modelling. It provides theoretical and empirical support to the framework [18]. CFA is one of the important tools used in data analysis. It helps to bridge the gap between theory and practice. It is used to measure more than one dimension in the model CFA helps to figure out the relationship between a set of observed variables and other constructs of the study [19]. CFA is a type of multivariate statistical technique which estimates the structuring of an instrument, verifies the measured variables, and represents the number of constructs. The theoretical models can be tested by using CFA [20].

Measurement models and validity are indispensable in research as they establish a structured framework for ensuring the accuracy and meaningfulness of data. Measurement models clarify the relationships between observed variables and their underlying constructs, enabling researchers to assess complex concepts. Validity, on the other hand, ensures that the measurement instruments precisely capture the intended constructs, safeguarding against misleading or incorrect conclusions. Both measurement models and validity are essential components in research, serving as the foundation for reliable and credible findings, which is paramount for informed decision-making and advancing knowledge across diverse fields.

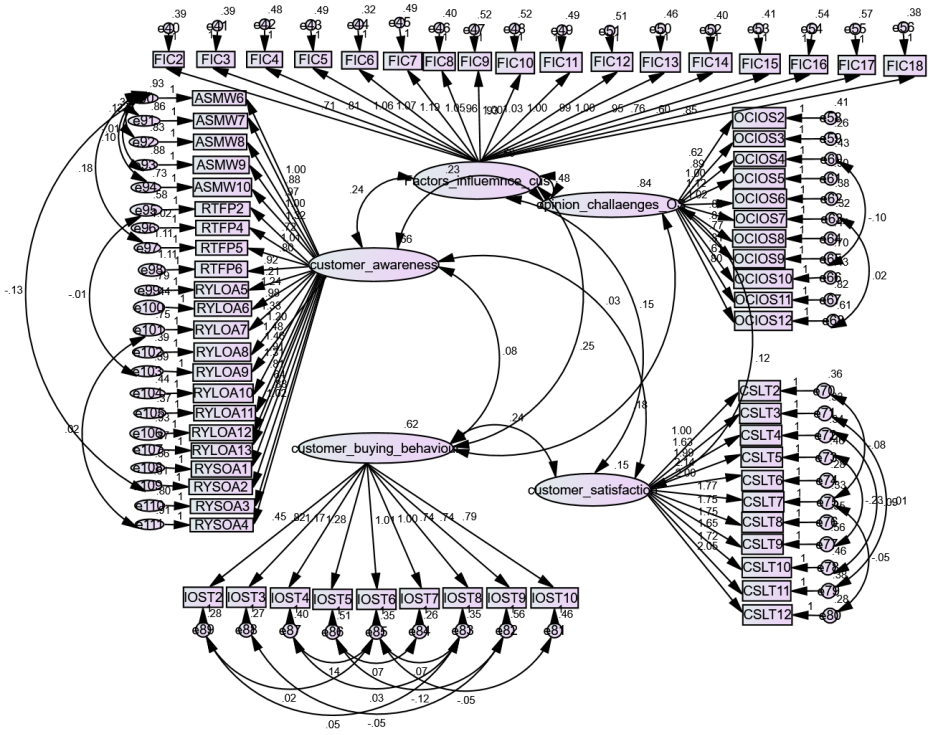

Fig. 5. Confirmatory factor analysis - Measurement model

Table 2. Regression weights: Confirmatory factor analysis

	Paths		Unstandardized Estimate	S.E.	Standardized Estimate	C.R.	P
ASMW6	<---	Customer Awareness	1.000	.029	.643	27.403	***
ASMW7	<---	Customer Awareness	.883	.032	.611	24.670	***
ASMW8	<---	Customer Awareness	.972	.039	.655	22.759	***
ASMW9	<---	Customer Awareness	1.000	.044	.654	27.958	***
ASMW10	<---	Customer Awareness	1.316	.047	.780	22.923	***
RYSOA4	<---	Customer Awareness	1.022	.045	.657	21.928	***
RYSOA3	<---	Customer Awareness	.876	.040	.624	18.385	***
RYSOA2	<---	Customer Awareness	.645	.035	.557	22.913	***
RYSOA1	<---	Customer Awareness	.806	.035	.657	25.645	***
RYLOA13	<---	Customer Awareness	1.315	.051	.753	21.411	***
RYLOA12	<---	Customer Awareness	.905	.042	.606	29.150	***
RYLOA11	<---	Customer Awareness	1.459	.050	.888	28.824	***
RYLOA10	<---	Customer Awareness	1.476	.051	.875	28.581	***
RYLOA9	<---	Customer Awareness	1.195	.045	.784	22.111	***
RYLOA8	<---	Customer Awareness	1.329	.047	.865	23.500	***
RYLOA7	<---	Customer Awareness	.981	.042	.677	27.833	***
RYLOA6	<---	Customer Awareness	1.239	.045	.836	25.346	***
RYLOA5	<---	Customer Awareness	1.213	.048	.742	20.493	***
RTFP6	<---	Customer Awareness	.916	.045	.577	20.679	***
RTFP5	<---	Customer Awareness	.797	.039	.524	22.181	***
RTFP4	<---	Customer Awareness	1.013	.046	.632	21.482	***
RTFP2	<---	Customer Awareness	.722	.034	.609	27.430	***
OCIOS2	<---	Opinion Challenges (OS)	.616	.022	.661	38.978	***
OCIOS3	<---	Opinion Challenges (OS)	.889	.023	.848	24.121	***

	Paths		Unstandardized Estimate	S.E.	Standardized Estimate	C.R.	P
OCIOS4	<---	Opinion Challenges (OS)	1.000	.027	.811	37.303	***
OCIOS5	<---	Opinion Challenges (OS)	1.125	.030	.823	37.913	***
OCIOS6	<---	Opinion Challenges (OS)	1.018	.027	.832	36.494	***
OCIOS7	<---	Opinion Challenges (OS)	.864	.024	.811	32.539	***
OCIOS8	<---	Opinion Challenges (OS)	.808	.025	.746	24.856	***
OCIOS9	<---	Opinion Challenges (OS)	.767	.031	.642	32.681	***
OCIOS10	<---	Opinion Challenges (OS)	.806	.025	.748	21.112	***
OCIOS11	<---	Opinion Challenges (OS)	.608	.029	.524	28.944	***
OCIOS12	<---	Opinion Challenges (OS)	.801	.028	.683	26.421	***
CSLT2	<---	Customer Satisfaction	1.000	.037	.547	21.203	***
CSLT3	<---	Customer Satisfaction	1.633	.077	.743	22.070	***
CSLT4	<---	Customer Satisfaction	1.986	.090	.800	21.731	***
CSLT5	<---	Customer Satisfaction	2.139	.098	.778	22.521	***
CSLT6	<---	Customer Satisfaction	2.001	.089	.830	19.849	***
CSLT7	<---	Customer Satisfaction	1.767	.089	.773	21.486	***
CSLT8	<---	Customer Satisfaction	1.751	.081	.760	20.030	***
CSLT9	<---	Customer Satisfaction	1.753	.088	.677	20.343	***
CSLT10	<---	Customer Satisfaction	1.653	.081	.694	21.165	***
CSLT11	<---	Customer Satisfaction	1.723	.081	.741	22.567	***
CSLT12	<---	Customer Satisfaction	2.047	.091	.835	36.210	***
IOST6	<---	Customer Buying Behaviour	1.009	.028	.802	29.145	***

	Paths		Unstandardized Estimate	S.E.	Standardized Estimate	C.R.	P
IOST7	<---	Customer Buying Behaviour	1.000	.098	.838	29.837	***
IOST8	<---	Customer Buying Behaviour	.739	.025	.698	25.334	***
IOST9	<---	Customer Buying Behaviour	.744	.029	.616	28.879	***
IOST10	<---	Customer Buying Behaviour	.794	.027	.676	34.889	***
IOST3	<---	Customer Buying Behaviour	.823	.024	.777	37.860	***
IOST4	<---	Customer Buying Behaviour	1.169	.031	.822	22.543	***
IOST2	<---	Customer Buying Behaviour	.453	.020	.555	42.327	***
IOST5	<---	Customer Buying Behaviour	1.276	.030	.815	28.342	***
FIC18	<---	Factors Influencing	.846	.030	.725	20.143	***
FIC17	<---	Factors Influencing	.601	.030	.523	24.121	***
FIC16	<---	Factors Influencing	.760	.031	.622	29.458	***
FIC15	<---	Factors Influencing	.946	.032	.751	30.385	***
FIC14	<---	Factors Influencing	.996	.033	.773	29.283	***
FIC13	<---	Factors Influencing	.987	.034	.747	28.730	***
FIC12	<---	Factors Influencing	1.004	.035	.734	29.357	***
FIC11	<---	Factors Influencing	1.029	.035	.749	25.610	***
FIC10	<---	Factors Influencing	.925	.034	.703	27.818	***
FIC2	<---	Factors Influencing	.706	.028	.659	27.573	***
FIC3	<---	Factors Influencing	.812	.029	.706	33.676	***
FIC6	<---	Factors Influencing	1.188	.035	.850	29.855	***
FIC4	<---	Factors Influencing	1.058	.035	.761	30.028	***
FIC5	<---	Factors Influencing	1.075	.036	.765	29.716	***

	Paths		Unstandardized Estimate	S.E.	Standardized Estimate	C.R.	P
FIC7	<---	Factors Influencing	1.054	.035	.757	29.790	***
FIC8	<---	Factors Influencing	.961	.032	.759	28.991	***
FIC9	<---	Factors Influencing	1.000	.041	.731	26.472	***

4.7.2.1 Kaiser-Meyer-Olkin (KMO) and bartlett's test of sphericity

The Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited your data is for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. The statistic is a measure of the proportion of variance among variables that might be common variance. The lower the proportion, the more suited the data for Factor Analysis. The Kaiser-Meyer-Olkin (KMO) statistic, which can vary from 0 to 1, indicates the degree to which each variable in a set is predicted without error by the other variables. A value of 0 indicates that the sum of partial correlations is large relative to the sum correlations, indicating factor analysis is likely to be inappropriate. A KMO value close to 1 indicates that the sum of partial correlations is not large relative to the sum of correlations and so factor analysis should yield distinct and reliable factors. It means that patterns of correlations are relatively compact, and so factor analysis should yield distinct and reliable factors. Values smaller than 0.5 suggest that you should either collect more data or rethink which variables to include [21]. Bartlett's Test of Sphericity tests whether a matrix (of correlations) is significantly different from an identity matrix (filled with 0). It tests whether the correlation coefficients are all 0. The test computes the probability that the correlation matrix has significant correlations among at least some of the variables in a dataset, a prerequisite for factor analysis to work [22]. In the present analysis the obtained KMO value was 0.925, indicating high sampling adequacy, and the Bartlett's test was highly significant (P = 0.00), supporting the factor analysis.

Interpretation: Confirmatory Factor Analysis (CFA) was applied to rigorously examine the validity of research instrument. The factor loadings for each individual question exceeded the 0.5 threshold, underscoring the instrument's strong capability to accurately measure the intended constructs. This outcome underscores the robustness of our measurement tool. It is suggested that standardized loading estimates are considered reliable if it has four or more loadings of at least 0.6 irrespective of sample size [23]. Moreover, when the items have different frequency distributions, it is suggested to use more stringent cut-offs, going from 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good), or 0.71 (excellent) [24]. Some items are removed from further analysis as the factor loading value is below the 0.5 threshold. ASMW1,2,3,4,5 is removed and RRYA1,2,3,4 is removed RTFPA1,3 is also removed RYSO5 is also removed and RYLOA1, 2, 3, 4 also removed from Customer Awareness variable. FIC1 removed from Factors Influencing variable. OCIOS1 is removed from Opinion about Challenges involved in online shopping variable. CSLT1 is removed from Customer Satisfaction. IOST1 is also removed from Buying Behaviour variable. The model fit values are as exhibited in Table 6 The AMOS software was used to run the Confirmatory Factor Analysis (CFA) to test the construct validity of all the measurements, which was assessed by two main components: convergent validity and discriminant validity. In order to assess convergent validity and the reliability of the scale, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's alpha are computed. Table 4 presents the Post-Confirmatory Factor Analysis (CFA) results, including Cronbach's alpha, AVE, and CR values. Discriminant validity is established if the square root of the AVE for a variable is greater than its correction values when compared with other variables. The findings that were collected are shown in Table 5, and they contribute to the determination of discriminant validity.

4.7.2.2 Discriminant validity

Discriminant validity is not a specific test performed in Statistical Package for the Social Sciences (SPSS) or any other statistical software but a concept within the context of validating measurement instruments and assessing the relationships between variables. Discriminant

validity is crucial to ensure that different constructs or variables in a study are truly distinct and not measuring the same underlying concept. Researchers use various techniques such as confirmatory factor analysis (CFA) or correlation analysis to demonstrate that the measures intended to assess different constructs are, indeed, different and not highly correlated [25]. Discriminant validity helps ensure that the measurement instruments accurately represent the unique concepts they are meant to measure, preventing construct overlap or redundancy and allowing for more robust and accurate data analysis and interpretation.

Interpretation: In assessing discriminant validity through the examination of correlations between constructs, it is essential to consider whether these correlations are sufficiently low, indicating distinct underlying concepts. While specific threshold values for "low" or "high" correlations may vary depending on the research context, the provided correlation matrix generally demonstrates favourable discriminant validity. Most correlations are below 0.70, which is often deemed an acceptable threshold, with the highest correlation of approximately 0.737 observed between "Customer Satisfaction" and "Customer Buying Behaviour," still falling below the commonly used 0.85 threshold [26]. Overall, this suggests that the constructs in the analysis appear to be measuring different underlying concepts, supporting the notion of discriminant validity.

Table 3. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**.925**
Bartlett's Test of Sphericity	Approx. Chi-Square	106841.794
	Df	2556
	Sig.	.000

Table 4. Convergent validity and reliability

Factors and Items	**Cronbach Alpha Values**	**Post CFA Factor Loadings**	**AVE**	**CR**
Customer Awareness	.955		0.691	0.953
ASMW6 (Rate Your Level of Awareness about the Pinterest)		.643		
ASMW7 (Rate Your Level of Awareness about the Telegram)		.611		
ASMW8 (Rate Your Level of Awareness about the Twitter)		.655		
ASMW9 (Rate Your Level of Awareness about the LinkedIn)		.654		
ASMW10 (Rate Your Level of Awareness about the Tumblr)		.780		
RTFP2 (Rate the Fashion Products that You Purchase from Online Shopping Websites (Accessories)		.609		
RTFP4 (Rate the Fashion Products that You Purchase from Online Shopping Websites (Jewellery)		.632		
RTFP5 (Rate the Fashion Products that You Purchase from Online Shopping Websites (Beauty and Personal Care Products)		.524		
RTFP6 (Rate the Fashion Products that You Purchase from Online Shopping Websites (Others)		.577		
RYLOA5 (Rate Your Level of Awareness About Following Online Shopping Websites (Tata CliQ)		.742		

Factors and Items	Cronbach Alpha Values	Post CFA Factor Loadings	AVE	CR
RYLOA6 (Rate Your Level of Awareness About Following Online Shopping Websites (Jio Mart)		.836		
RYLOA7 (Rate Your Level of Awareness About Following Online Shopping Websites (Ajio)		.677		
RYLOA8 (Rate Your Level of Awareness About Following Online Shopping Websites (Pepperfry)		.865		
RYLOA9 (Rate Your Level of Awareness About Following Online Shopping Websites (Snapdeal)		.784		
RYLOA10 (Rate Your Level of Awareness About Following Online Shopping Websites (PayTm Mall)		.875		
RYLOA11 (Rate Your Level of Awareness About Following Online Shopping Websites (Shopclues)		.888		
RYLOA12 (Rate Your Level of Awareness About Following Online Shopping Websites (Nykaa)		.606		
RYLOA13 (Rate Your Level of Awareness About Following Online Shopping Websites (Others)		.753		
RYSOA1 (Rate Your Source of Awareness About Fashion Products Available on Online Shopping Websites (Friends Recommendations)		.657		
RYSOA2 (Rate Your Source of Awareness About Fashion Products Available on Online Shopping Websites (Television Advertisements)		.557		
RYSOA3 (Rate Your Source of Awareness About Fashion Products Available on Online Shopping Websites (Print Advertisements)		.624		
RYSOA4 (Rate Your Source of Awareness About Fashion Products Available on Online Shopping Websites (Email Advertisements)		.657		
Factors that Influence the Customer to Buy Fashion Products Online	.950		0.724	0.949
FIC2 (Factors that Influence the Customer to Buy Fashion Products Online (Exclusive Availability of Product)		.659		
FIC3 (Factors that Influence the Customer to Buy Fashion Products Online (Price Discounts)		.706		
FIC4 (Factors that Influence the Customer to Buy Fashion Products Online (Latest Trendy & Innovative Products)		.761		
FIC5 (Factors that Influence the Customer to Buy Fashion Products Online (Availability of Size Options)		.765		

Factors and Items	Cronbach Alpha Values	Post CFA Factor Loadings	AVE	CR
FIC6 (Factors that Influence the Customer to Buy Fashion Products Online (Detailed Information of Product)		.850		
FIC7 (Factors that Influence the Customer to Buy Fashion Products Online (Privacy)		.757		
FIC8 (Factors that Influence the Customer to Buy Fashion Products Online (Variety of Products)		.759		
FIC9 (Factors that Influence the Customer to Buy Fashion Products Online (Easy Return and Cancellation Policy)		.731		
FIC10 (Factors that Influence the Customer to Buy Fashion Products Online (Easy Payment Options)		.703		
FIC11 (Factors that Influence the Customer to Buy Fashion Products Online (Shipping Cost)		.749		
FIC12 (Factors that Influence the Customer to Buy Fashion Products Online (Attractive Design of Website)		.734		
FIC13 (Factors that Influence the Customer to Buy Fashion Products Online (Customer Reviews & Ratings)		.747		
FIC14 (Factors that Influence the Customer to Buy Fashion Products Online (Timely and Safe Delivery of Product)		.773		
FIC15 (Factors that Influence the Customer to Buy Fashion Products Online (Notifications of Festival Offers)		.751		
FIC16 (Factors that Influence the Customer to Buy Fashion Products Online (Social Influence)		.622		
FIC17 (Factors that Influence the Customer to Buy Fashion Products Online (Technological Experience of Online Shopping Website)		.523		
FIC18 (Factors that Influence the Customer to Buy Fashion Products Online (Reputation of the Company in the Market)		.725		
Opinion About Perceived Challenges Involved in Online Shopping	.930		0.739	0.931
OCIOS2 (Fear of Misuse of Personal Information Entered on Shopping Website)		.661		
OCIOS3 (Fear of Online Financial Fraud (Debit Card/Credit Card etc.)		.848		
OCIOS4 (Fear of Non-Refund of Money in Case of Unauthorized Deduction)		.811		
OCIOS5 (Fear of False Information about the Product)		.823		
OCIOS6 (Doubt on Actual Performance of the Product)		.832		
OCIOS7 (Fear that the Product Delivered might Differ from what was Advertised on the Website)		.811		

Factors and Items	Cronbach Alpha Values	Post CFA Factor Loadings	AVE	CR
OCIOS8 (Fear of Delay in Delivery of Product After Payment)		.746		
OCIOS9 (Fear of Developing Eyestrain Problem)		.642		
OCIOS10 (Fear of Commitment of Product Guarantee/ Warranty)		.748		
OCIOS11 (Fear of Loss of Internet Connection while Ordering the Product)		.524		
OCIOS12 (Fear of Trust Worthiness of Vendor Selling on Shopping Website)		.683		
Customer Satisfaction Level Towards Online Shopping	.929		0.743	0.932
CSLT2 (Product Categories)		.547		
CSLT3 (Discount Offers)		.743		
CSLT4 (Availability of the Product)		.800		
CSLT5 (Design of the Product.)		.778		
CSLT6 (Quality of the Product)		.830		
CSLT7 (Pricing of the Product)		.773		
CSLT8 (Payment Options (UPI, Debit Card, Credit Card, EMI & COD)		.760		
CSLT9 (Packaging of the Product)		.677		
CSLT10 (Time Period of Delivery of the Product.)		.694		
CSLT11 (Return and Cancellation Policy)		.741		
CSLT12 (Customer Support Services)		.835		
Impact of Online Shopping Trends on Customer Buying behaviour for Fashion Products	.913		0.733	0.914
IOST2 (Easy Comparison of Price)		.555		
IOST3 (Easy Comparison of Products		.777		
IOST4 (Time Saving)		.822		
IOST5 (Too Much Choice)		.815		
IOST6 (Money Saving)		.802		
IOST7 (Latest Product Designs)		.838		
IOST8 (Better Decision Making)		.698		
IOST9 (Unplanned Purchase)		.616		
IOST10 (Economic Freedom)		.676		

Table 5. Discriminant validity: Heterotrait-Monotrait Ratio (HTMT)

Description	Customer Awareness	Factors Influencing	Opinion Challenges (OS)	Customer Satisfaction	Customer Buying Behaviour
Customer Awareness	**0.97621**				
Factors Influencing	.620**	**0.97416**			
Opinion Challenges (OS)	.507**	.628**	**0.96488**		
Customer Satisfaction	.273**	.473**	.305**	**0.96540**	
Customer Buying Behaviour	.254**	.430**	.216**	.737**	**0.956033**

Note: Diagonal values show the square root of AVE

Table 6. Model fit summary

Model Fit Measure	Measured Value	Recommended Value*
Chi-square value(χ^2)	482.162	-
Degrees of freedom (df)	139	-
CMIN/DF (Chi-Square Statistics/Degree of Freedom)	3.468	≤ 5
P-value	0.064	≥ 0.05
GFI (Goodness of Fit Index)	0.941	≥ 0.90
RFI (Relative Fit Index)	0.927	≥ 0.90
NFI (Normed Fit Index)	0.936	≥ 0.90
IFI (Incremental Fit Index)	0.928	≥ 0.90
CFI (Comparative Fit Index)	0.943	≥ 0.90
RMR (Root Mean Square Residual)	0.072	≤ 0.080
RMSEA (Root Mean Square Error of Approximation)	0.064	≤ 0.080

** Recommended values have been adopted from Bagozzi and Yi [27]*

Table 7. Summary of Hypotheses Results

Null Hypothesis	Statistical Test	Results
$H0_1$: Customer awareness of online shopping does not influence their buying behaviour towards fashion products.	Structural Equation Modelling (SEM) (P≤0.05)	Null Hypothesis Rejected
$H0_2$: Customer awareness of online shopping does not influence their satisfaction level with online shopping.	Structural Equation Modelling (SEM) (P≤0.05)	Null Hypothesis Rejected
$H0_3$: Customer satisfaction has no significant effect on customer buying behaviour.	Structural Equation Modelling (SEM) (P≤0.05)	Null Hypothesis Rejected
$H0_4$: Factors influencing online fashion purchases do not have a direct positive effect on customer buying behaviour.	Structural Equation Modelling (SEM) (P≤0.05)	Null Hypothesis Rejected
$H0_5$: Customer satisfaction does not mediate the relationship between influencing factors and customer buying behaviour.	Mediation Analysis (P≤0.05)	Null Hypothesis Rejected
$H0_6$: Customer satisfaction does not moderate the relationship between perceived challenges and customer buying behaviour.	Moderation Analysis (P≤0.05)	Null Hypothesis Rejected
$H0_7$: There is no significant gender-wise difference in customer buying behaviour.	Independent Samples t-Test (P≤0.05)	Null Hypothesis Rejected
$H0_8$: There is no significant age-wise difference in customer buying behaviour.	ANOVA Test (P≤0.05)	Null Hypothesis Rejected
$H0_9$: There is no significant education-wise difference in customer buying behaviour.	ANOVA Test (P≤0.05)	Null Hypothesis Rejected
$H0_{10}$: There is no significant occupation-wise difference in customer buying behaviour.	ANOVA Test (P≤0.05)	Null Hypothesis Rejected
$H0_{11}$: There is no significant marital-status wise difference in customer buying behaviour.	Independent Samples t-Test (P≤0.05)	Null Hypothesis Rejected
$H0_{12}$: There is no significant family-type difference in customer buying behaviour.	Independent Samples t-Test (P≤0.05)	Null Hypothesis Rejected
$H0_{13}$: There is no significant family monthly income difference in customer buying behaviour.	ANOVA Test (P ≥ 0.05)	Null Hypothesis Accepted

Interpretation: The quality of fit was acceptable representation of the sample data (χ^2 = 482.162), NFI (Normed Fit Index) =0.936; IFI (Incremental fit index) = 0.928, GFI (Goodness of Fit) = 0.941, RFI (Relative Fit Index) = 0.927 and CFI (Comparative Fit Index) =0.943 which is much larger than the 0.90. Similarly, RMR (Root Mean Square Residuals) =0.072 and RMSEA (Root mean square error of approximation) = 0.064 values are lower than 0.080 critical value**.** Results indicated a good fit for the model presented including RMSEA of 0.064, RMR of 0.072, GFI of 0.941, and CFI of .943

4.8 Hypotheses Results

The null hypotheses were formulated for the investigation, and the outcomes obtained are shown Table 7.

5. CONCLUSION

The results of this study reveal several important findings. Firstly, it is evident that customer awareness of online shopping has a positive influence on their buying behaviour for fashion products, establishing a significant relationship. Furthermore, a positive correlation is identified between customer awareness of online shopping and their satisfaction level with the online shopping experience. Customer satisfaction is found to positively affect customer buying behaviour. Factors influencing online fashion purchases directly impact customer buying behaviour. Moreover, customer satisfaction serves as a mediator between influencing factors and customer buying behaviour. However, it does not moderate the relationship between opinion about perceived challenges and customer buying behaviour. The study also highlights significant variations in customer buying behaviour based on gender, age, education, occupation, marital status, family type, and family monthly income. These findings shed light on the complex dynamics of online shopping trends and their impact on customer buying behaviour in the context of fashion products in Himachal Pradesh.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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