**Impact of platform structure on the relationship between value consciousness and online shopping cart abandonment**

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# **Abstract**

The e-commerce business has evolved over time to make it easier for customers to discover products online and purchase them from online retailers. In the last 10 years, the online sector of the internet economy has grown significantly. Since its popularity, one of the major problems faced by them is shopping cart abandonment (SCA). The current research aims to understand how people shop online and provide insights regarding factors like product information, return policy and reviews & ratings behind cart abandonment. The study analyses the data collected using structural equational modelling using process macro model 14 in SPSS. The result from the study explains that value conscious customers abandon the shopping cart through comparison. But factors like product information, return policy, and reviews & ratings do not moderate the mediation. This study aims to contribute to the Theory of Buyer Behaviour and EKB model by understanding the reasons for online shopping cart abandonment in the UK online market. It outlines several significant implications and techniques for online retailers to reduce shopping cart abandonment.

Keywords: Shopping cart abandonment, value consciousness, comparison shopping, product information, reviews & ratings, and return policy, SEM

This study follows the structure used by Kapoor & Vij (2021)

**1. Introduction**

## **1.1. Background**

With the introduction of internet there has been a drastic growth with the number of people using. As per Statista (2023) it is recorded that 5.18 billion people use internet daily in 2023 which is approximately 64.6 percent of the world population. As a result, this has led to the development of purchasing products conveniently from online being in their home. This method is called e-tail. E tail has become a major player in the retail industry. It has completely changed how people purchase goods and services. Worldwide this market is expected to grow at the rate of CAGR of 7.9% that is around 6.2 trillion in 2027 (businesswire report, 2020). This rapid growth has opened many doors for new and established players. The growth of these technologies has made it difficult for physical stores to compete with online stores. They provide customers with a different collection of products, less time on purchasing and low prices. It also provides different offers and can compare different sellers. (Rasty et al., 2021)

Particularly, United Kingdom is one of the 4th largest markets in the e-tail world. It is expected to grow around 190,274 million in 2027. The UK market is divided into five segments. Fashion is the largest market (30%). It is followed by Food & Care (24.1%), Electronics (18.6%), Toys & Hobbies (15.7%) and finally, furniture (11.6%). (Mishra et al., 2021) This rapid growth can be due to large population and more people with the access of internet and mobile phones. The E tailers also have looked to capitalize this growth by introducing various infrastructure like augmented realty. (Fu’adi et al., 2021) With this growth comes challenges. The e-tailers also faced challenges to gain consumers trust, coping with the technologies, ease of using the websites and others. (Chandra, 2017). One of the most important challenges faced by e-tail is online shopping cart abandonment (SCA).

This phenomenon occurs when consumers add the products to the shopping cart, but not all the products added are purchased. According to a survey 75% of the products are removed after being added to the cart (Cho et al., 2006). Worldwide the average shopping cart abandonment rate is between 75% to 85% (Mishra et al., 2021). In the second quarter of 2023 in UK, around 85% of orders were abandoned on mobile phones. Also, computers and tablets accounted for about 75% and 80% respectively (Statista, 2023). Many researchers like Hasan (2016) and India Retailing Bureau (2018) have tried to identify why there is a high rate of cart abandonment happening in recent years. Some of the reasons for abandonment may be due to slow website, concern with security while transaction, having to make an account before purchase, difficult checkout process, high shipping tax, website crash, poor exchange, and refund procedures. Hence, it is essential to have a better knowledge of abandonment behaviour, considering the numerous challenges that are faced by e-commerce businesses.

## **1.2. Previous Studies and Research Gaps**

Even though online purchasing behaviour has been thoroughly examined as a separate trend from offline buying, most of the studies have seen customers as being flexible to attractive signals that boost the sales (Sondhi, 2017). Others argue that in order to understand customer mobility across e-commerce websites in a broad manner, it is essential to look at individual differences and customer drives on the individual or customer level (PwC, 2016). Mishra et al., (2021) mostly focused on the buyer characteristic of value consciousness, which could lead consumer to comparison shopping when they think they might get a good deal. According to Sarkar & Khare (2017), customers may remove the products from the shopping cart when they are looking at the items or even after the payment process is done if they don’t see a value in purchasing them. In this study (Mishra et al., 2021) they have considered comparison shopping and cognitive factors as the variables influencing SCA activity. The result of this study shows that cognitive conflict moderates the relationship between value consciousness and cart abandonment through comparison shopping. Given the limited existing body of research on this subject, it is imperative to delve deeper into the exploration of additional moderating factors, like platform structure variables (e.g., return policy, product information, and reviews & ratings) which have a potential to influence the SCA behaviour among value conscious customer.

## **1.3. Research Question and Potential Contribution**

The present study examines the shopping cart abandonment behaviour of UK customers in the context of online shopping. This study examines the factors that contribute to the consumer’s abandoning behaviour by examining the concepts of value consciousness (VC), comparison shopping (CS), and platform structure (PS) as they relate to the consumer’s decision-making process before making a purchase. Online retailers need to understand why customers abandon the shopping cart, which could be because of the complexity while placing the order or while comparing the goods. The customers might have problem with the way the platform is built. This study paid special attention to the value-consciousness of customers, which may lead them to compare prices as they are looking for a good deal. Therefore, its important for the online stores to know why customers leave their shopping carts. Hence, this study answers the following research questions:

**RQ 1:** Do value consciousness and shopping comparison lead to Shopping cart abandonment behavior?

**RQ 2:** How does the platform structure (reviews, information, return policy) influence the shopping cart abandonment behavior?

This paper is divided into 9 sections. The first section provides a brief description of the phenomenon of shopping cart abandonment and outlies the focus and purpose of the research study. The second section of the paper focuses on the existing research and theories that have been utilized. It also proposes a set of theories. The third section presents the research framework model. The fourth section involves the methodology used in this research. The fifth section encompasses the analysis of data and the presentation of the results. The sixth section discusses the significance that has been uncovered through our study. Section 7, 8 ,9 elaborates the implication of the study, providing a comprehensive conclusion to the research and finishes the study with its limitations and future research.

# **2. Literature Review**

## **2.1. Theoretical Background**

Different departments of psychology are used to decide how people make decisions. Five major approaches explained the need to look at different variables (Foxall 1990). Economic Man, Psychodynamic, Behaviourist, Cognitive, Humanistic. This research uses the cognitive approach as it has gained more acceptability due to its applicability in explaining behaviour. This study uses the theory of buyer behaviour and consumer decision model from the cognitive approach as these identify a lot of different factors that affect customer decision and relationship between them in decision making (Bray, 2008). In the Howard and Sheth (1969) Theory of Buyer Behaviour paradigm, the process of behaviour formation is described as the one in which beliefs or thoughts lead to either positive or negative emotional responses, which leads to either online buyer or non-buyer behaviour, especially for people with high level of involvement (Huang et al., 2018). This theory is effective in explaining both the purchasing and non-purchasing behaviour of the consumers. This model also discusses in detail the factors that influence the buying and non-buying behaviour of consumers, known as the determinants and inhibitors of shopping. According to Kinney (2010) cart abandonment is a reflection of non-purchase behaviour of consumers, which is an inhibitor that the online environment introduces to the purchasing process. Within the scope of this research, this paradigm is used to define cart abandonment as “non-buyer behaviour” in the context of online shopping.

According to Lo et al., (2016) the customer decision making model is an approach to explain the consumer buying behaviour with the help of a conceptual model and set of decision-making processes. The EKB model (Engel, Kollat, and Blackwell model) or consumer decision model developed by Engel, Kollat, and Blackwell is a widely used consumer decision-making model which consists of five stages: need recognition, information search, evaluation of alternatives, choice transaction and, and post purchase services as shown in figure 1 (Engel and Blackwell, 1982).

The search stage (Richins and Bloch, 1986), evaluation of alternatives stage (Nedungadi et al., 2018), the purchase stage and post purchase phase (Howard and Sheth, 1969) are mainly the four stages that a customer undergoes during the purchase (Howard and Sheth, 1969). These stages are not necessary to follow a particular order (Li and Chatterjee, 2005). Moreover, according to Karimi et el. (2018), different individuals take different paths which influence the way they make decisions regarding purchases. As people have diverse approaches to decision-making, as a result they have different decision-making styles, hence they follow different paths (Schwartz et al., 2002).

The use of theory of buyer behaviour model is a basis for understanding abandonment and the consumer decision-making model’s purchase stages and acknowledgement of different decision-making style all enrich our understanding of how behaviour of individuals is related to online shopping. As customer’s behaviour continues to grow within the online environment, these frameworks provide a basis for more in-depth research and understanding.

Need Recognition

Information Search

Evaluating alternatives

Purchase

Cart abandonment stage

**Figure 1.** Purchase journey pathway (Kapoor & Vij, 2021)

## **2.2. Shopping Cart Abandonment**

Many brick-and-mortar retail enterprises are expanding their operations into the online retail sector. A customer’s decision to make an online purchase is very flexible process, where their decision may be different which leads to diverse online shopping experiences (Karimi et al., 2015; Hall et al., 2017). When it comes to e-tail shopping, more risk is involved since customer can’t see or touch the products, enquire the seller, or trust them (Jarvenpaa et al., 2006; Chang and Wu, 2012; Rasty et al., 2021). According to Kukar-Kinney and Close (2010), both online and offline shopping has several similarities. But there exist fundamental dissimilarities like cart abandonment which is rarely seen in offline behaviour. Studies since the 1990s, amid the ecommerce boom, focused on understanding why almost two-thirds of the consumers abandon the online portal before completing the transaction (Lee & Lee, 2004). According to Cho (2004) SCA is when a customer starts the checkout process but decides not to proceed. It is when a possible customer stop purchasing online before finishing the payment process. Any product that a customer adds to their shopping cart but not purchase is said to be ‘abandoned’ (Sondhi, 2017). Tang and Lin (2019) described SCA as a situation when a customer adds items into the cart but decides not to complete the purchase leading to abandonment. Figure 2 explains how abandonment was developed over the years. According to Kapoor and Vij (2021), mathematically we can represent car abandonment as

Cart abandonment = 1 – transaction finished X 100



transaction initiated

Pervious research says that shopping cart abandonment is due to several factors like issue while doing transaction, privacy and security concerns, cost, behavioural and cognitive reasons, stress, platform issues, lack of payment alternatives, problems with returns and shipping, previous bad experiences (Rajamma et al., 2009; Kukar-Kinney and Close, 2010; Huang et al., 2018; Cho at el., 2006; Albrecht et al., 2017; Zheng et al., 2020). Also, SCA can happen when customer use shopping portal as an entertainment and exploration platform (Kukar-Kinney and Close, 2010).

A diagram of a shopping list

Description automatically generated with medium confidence

**Figure 2.** Historical Development of Shopping cart abandonment (Wang et al., 2023).

## **2.3. Hypothesis Formulation**

### **2.3.1. Effect of value consciousness on comparison shopping**

Though buying goods increases happiness and reflect social standings, not all customers feel this way. Cautious customers are more value conscious. They tend to reduce waste and use resources properly (DeYoung, 1986). The term Value Consciousness is a behavioural trait concerned as ‘Paying low prices, subject to some quality constraints’ (Lichtenstein, et al., 1990). In order to get ‘good deal’, consumers are motivated by perceived value and reasonable ability of the product or service. People who are conscious are concerned to get the best value for a product with less price. Hence, they keep on comparing them with different brands (Ismail et al. 2020). As a result, we can say that price has a great influence on the purchase. Also, value of the product is an important element for customers while purchasing an item (Chen and Tsai 2008; Peng et al. 2019). According to previous research, consumers in the developing nation tend to be more value and cost conscious because of their comparatively low purchasing power, high price variation of demand and they have high probability to spend their saving rather than borrowing (Brouthers and Xu, 2002). Value consciousness plays a major role in a customer’s level of satisfaction (Cronin et al., 2000).

Hence unsatisfied customers look for other options available (O’Malley and Tynan 2000; Thakur 2019), and satisfied customer purchase the product. To get the best value for money a customer sends lot of time on different websites to get more information about a product and its aesthetics to get an idea about its usage (Anaza and Zhao 2013). It can be said that when a customer compares a product across all the possible ways like e-tailers/ websites outlets and offline stores it is because they are conscious about the money they spent and get a worthy product. (Hasan 2016; Mishra at el. 2021; Prashar et al., 2017). During this period, customers not only compare the cost but also check for their previous experiences with a particular product or brand. Before planning to buy, they consider the monetary and societal benefits of the product. (Aksoy et al., 2013). Authors have found that consumers will get attracted to displays that promote incentives (Erdem et al., 2001). Hence price has a significant impact on shopping cart abandonment (Song, 2019). As a result, value-conscious customers search for the most suitable deal. Based on the above discussion, we can say that there is a positive relationship between value consciousness and shopping comparison. So, we can hypothesize:

**H1**: Value consciousness is positively correlated with shopping comparison.

### **2.3.2. Comparison Shopping’s impact on shopping cart abandonment**

Customers usually compare to get the best information about products. A customer compares items in different online shops before making a purchase. Comparison can involve all forms of comparison like price, marketing, product variety and availability (Anić et al., 2008). Customers always compare and contrast their selection criteria, deciding on key factors for their decisions. (Howard and Sheth 1969). The probability of customers purchasing product from other retailers might increase with more comparison (Kukar-Kinney and Close 2010). Overall, the digital market has widened the collection of products by which the customers can compare the products with all the brands available before making a purchase (Ozer and Gultekin 2015). Several factors like online promotional deals, discovering more information about certain products, sorting shopping items, and entertainment may have an influence on why people place items to their shopping cart and decide not to buy it (Kukar-Kinney and Close 2010). Rajamma et al., (2009) say that complicated checkout methods, lack of confidence in the website supporting credit card, delayed delivery, slow webpage, shipping charges, crashed webpage, being forced to create an account, unfair return policies are some of the major reasons for cart abandonment. Indirectly but significantly shopping cart abandonment is also influenced by perceived importance, experience, symbolic value, and number of purchases. Customers who intend to do comparison shopping to reduce confusion exhibit greater cart abandonment (Taylor, 2018). As per the above arguments, we can say that shopping comparison might affect shopping abandonment in a positive way. Hence, we hypothesised:

**H2**: Comparison shopping is positively correlated to shopping cart abandonment.

### **2.3.3. Mediating effect of comparison shopping**

Previous research studied the influence of value consciousness, cognitive factors, platform structure and various other factors on shopping cart abandonment relationships (e.g., McGoldrick and Marks 1987; Rajamma at el., 2009; Peng et al. 2019, Jiang et al., 2021). However, there is still a gap in explaining what acts as a mediator for value consciousness’s effect on cart abandonment. With online retails increasing customers get lot of options to choose from. So, they tend to compare between different websites. As a result, there is a significant growth in shopping comparison. Most of the customers first look for items in offline stores, then check the same product in online and may purchase them for lower price (Teixeira and Gupta 2015). Comparison shopping involves customer tendency to know more about the product and compare their prices in different online websites and physical stores, also have concern about returning the product it not satisfied (Grewal et al., 2004). Additionally, Cart abandonment occurs when a customer closes the website, which results in inconsistency in the choice and preferences of the product to be purchased. Customers sometimes find the best offers and obtain the best economic motivations and save the money on their purchases (Yeo et al., 2017). However, comparing lot of items on online websites can result in shopping cart abandonment as the customer may get impatient during decision making. According to the above discussion, we can hypothesise:

**H3**: A positive relationship between value-consciousness and shopping cart abandonment is mediated by comparison shopping.

### **2.3.4. Moderating effect of platform structure**

#### **2.3.4.1. Return Policy**

When a customer purchases items online, the retailers provide policies that enables a customer to return the product in a specific time from the date of purchase if he/she dislikes the product (Petersen & Kumar, 2010; Khouja et al., 2019). The time period after purchase during which an item is eligible for return, refundable amount (e.g., 100% or 50% refundable), and the kind of reimbursement (like cash back or credit etc.) are all mentioned in the return policies. According to previous studies on return policy a customer’s perception of a seller’s return policy impacts the buyer’s decision making. (Petersen and Kumar, 2010 and Minnema et al., 2018). Also, return policy boosts the platform’s sales as they enhance user perception of the system’s reliability and reduce their perceived risk. (Janakiraman et al., 2016). Additionally, the implementation of a flexible return policy helps to decrease the financial burden on the customers who choose to return an inappropriate purchase, hence reducing their perceived risk. (Constantinides, 2004; Mukhopadhyay & Setaputra, 2007). Return policies also allows a customer to change their purchase decision even after having used the products. This way they ensure customer against any potential losses even after making a purchase (Wang and Qu, 2017). The empirical evidence tells that a customer evaluates a product to be favourable if it has flexible return policy rather than a restricted one. (Yoo and Kim, 2016). Furthermore, the findings presented by Bower and Maxham III (2012) indicates that a customer order frequency is influenced by the return policy. According to a consumer, a retailer’s quality and trustworthiness is determined by the return policy of the platform, there by influencing a customer to make or abandon a purchase (Shao et al., 2013). Also, the return policy influences a customer to decide whether to purchase with the platform in the future (Oghazi et al., 2018).

#### **2.3.4.2. Reviews & Ratings**

A review of the product is provided by an individual who has previous experience or has purchased the product earlier (Kaufmann and Loureiro, 2019). A decision maker seeks for reviews or recommendations so that they can minimise the uncertainty and the volume of information before making a purchase (Olshavsky and Granbois, 1979). Also, the textual factors have influence on the customer decision making (Ghose and Ipeirotiss, 2010). Jiménez and Mendoza (2013) tell that the level of information in a product review affects the customer purchase behaviour and the number of people agreed to that review. The number of reviews also determine the purchase behaviour of the customer (Kapoor and Vij, 2021). It also reflects the product popularity (Zhang et al., 2010). Though, there has been studies opposing this as there are lot of fake and forced reviews. So, reviews alone cannot determine the quality of product (Mayzlin et al., 2014). Large volume of reviews results in more consumers purchasing the product and is either satisfied or not with the product (Tsao et al., 2015). Previous studies indicate a positive relationship between the increase of reviews and an increase in the sales. We can say that when more reviews are present, a customer tends to make a purchase which eliminates the shopping cart abandonment.

Also, the rating of the seller decides the quality of the product. It allows a customer to decide whether to purchase a product. Seller rating is generally a five-star based rating system used to showcase the performance of the seller in a platform. Further, it also evaluates the overall quality and the effectiveness of after sale service offered by the seller (Bruce et al., 2004; Tseng et al., 2017). Higher rating indicates that the customers are highly satisfied. It also represents the customer experience when engaging with the seller in the specific platform. Previous studies suggest that the purchase intention is also influenced by seller ratings (Bruce et al., 2004; Kozak, 2007; Ye et al., 2009; Lin et al., 2020). As a result, we can conclude that both reviews and ratings affect a customer decision before they make a purchase. More reviews and ratings result in less cart abandonment.

#### **2.3.4.3. Product Information**

The literature indicates that the presence of product information on the website or mobile app of an online retailer has a positive impact on user engagement (Peters et al., 2016). The influence of information design related to a particular product, including its description, policies regarding refunds and returns, and seller details, has a significant impact on the consumer purchase decisions, which results in completion of the transaction (Kapoor and Vij, 2018). The concept of information design of a website or mobile app usually refers to the capacity of the platforms to effectively convey the users with relevant, up-to-date, and clear information (Kapoor and Vij, 2018). Various authors highlighted that the importance of information design is to represent the quality of information including key attributes like relevance, accuracy, sufficiency, and timeliness. (Dwivedi et al., 2013 and Chatterjee et al., 2018). Hence, we can say that the information provided impacts an individual’s behavioural beliefs which lead to the behavioural intention to use or make a purchase (Barbara and Wixom, 2005). Online purchases involve a significant amount of data including product description, payment options, returns and refunds and seller information. The availability of pertinent, precise, and adequate information plays a crucial role in building trust among the online shoppers and subsequently influencing their purchase behaviour (Gao and Wu, 2010; Kapoor and Vij, 2018). Though authors like Lin (2007) have argued about the relationship between the availability of essential information and consumers purchase and non-purchase decisions. In contrast, it has been observed that incomplete information leads to high dissatisfaction (MacKenzie and Spreng, 1992) which in turn results in irritation (Zhou, 2014). Moreover, irritation has an impact on the non-purchase behaviour. Thus, leaving a customer to close the webpage without any purchase.

This study includes platform structure (Return policy, product information, reviews, and ratings) as a moderating variable, especially how customers decide to abandon their shopping cart by comparing products. To determine the value of a product, customers find information (policies, product information, reviews etc) offered by different online retailers (Kapoor and Vij, 2018). Moreover, customers who value-conscious select a product and add it in their carts, but when comparing the same product on different portal they get confused and abandon the shopping cart (Taylor, 2018). The possible reason for cart abandonment is due to poor platform structure which includes missing of some crucial details (Petersen and Kumar, 2010; MacKenzie and Spreng, 2002; Jiménez and Mendoza, 2013). Hence, we can conclude that platform structure has an influence in customers shopping behaviour. So, we hypothesise:

**H4**: Return policy moderates the effect of value consciousness on SCA through mediator comparison shopping.

**H5**: Reviews and ratings moderates the effect of value consciousness on SCA through mediator comparison shopping.

**H6**: Product Information moderates the effect of value consciousness on SCA through mediator comparison shopping.

# **3. Conceptual Framework**

**Moderators**

Reviews

Return Policy

**Mediator**:

Shopping Comparison

Information Provided

Value Consciousness

Shopping cart abandonment

**Methodology**

**Figure 3.** Research model for investigating the relationship between value consciousness and cart abandonment with comparison shopping as mediator and platform structure as moderator.

The present study aimed to explore the relationship between the constructs, specifically the direct, mediating, and moderating effects by using the above conceptual framework.

# **4. Methodology**

**Figure 4.** Research methodology flowchart

The step-by-step procedure followed in the methodology is represented in figure 4.

## **4.1. Instrument**

The questionnaire was divided into 2 sections: the first section focuses on the factors affecting the shopping cart abandonment and next sections is about the demographic information about the respondents. This questionnaire consists of 5 constructs. In order to increase the validity and precision of the instruments and to avoid problems. The question items were taken from the past literature. Three items related to value consciousness were taken from Lichtenstein et al. (1993). Two items for product information were taken from Kapoor and Vij (2018). Three items related to return policy was adapted from Oghazi et al. (2018). Reviews were measured using three items from Yang and Leung (2018) and Lin et al. (2020). Three items associated to comparison shopping and shopping cart abandonment were adapted from Cho et al., (2006).All the constructs were measured using a 5 scale Likert scale from 1 (strongly disagree) to 5 (strongly agree).

## **4.2. Data Collection and Sample**

The study’s data was collected using a combination of meaningful, convenience, and snowball sampling as there was no reliable sample frame available for using probabilistic sampling methods. This technique is a research method where you find individual for your study, and they network you to others to gain more participants for the study (Etikan, 2016). Snowball technique is in line with the suggestions from previous research in these situations. (Amaro & Duarte, 2015; Chiang & Dholakia, 2003; Goldsmith & Horowitz, 2006). The Questionnaires were built with the help of Qualtrics. Then, was mostly circulated to online buyers in UK during the period 30 July 2023 to 10 August 2023. The average time taken to fill the questionnaire was 2 to 4 minutes. The questionnaire was mostly sent to the respondents with the help of social media (LinkedIn, WhatsApp, Instagram).

As a result, 137 responses were filled. Out of which 28 data were discarded as it was incomplete and cannot be used for the research. Also, there are various approach about the correct sample size for structural equation modelling. Generally, size of 100-200 sample is considered to be appropriate for doing SEM (Kline, 2005; Tabachnick & Fidell, 2001; Teo & Noyes, 2014). The standard norm for multi modelling is 100 samples or observation per group (Kline, 2005). In our case, we can say that the sample size is acceptable as it meets the requirements.

The survey was presented with instructions for self-administering by the researcher. Also, the survey was completely voluntary, no additional incentives were provided to the respondents. Hence, we can say that the data is not biased.

The study also gathered the demographic information about the respondents. In 109 responses, 49.5% were males and the other 48.6% were females as represented in figure 5. In terms of age group, 56.8% were from 18 – 24, 31.1% were 25 – 35, 10.1% were between 35 to 60 and the remaining were either less than 18 or above 60 as shown in figure 5. From figure 6, it can be said that about 75% respondents were studying postgraduate and 23% were undergraduate students and the remaining 2% were school students or PhD scholars. About 82.5 % use mobile phones for shopping online and the remaining use laptop or tablet for purchase.

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**Figure 5.** Gender (left) and Age (right) distribution of the sample.

A blue circle with a number of percentages

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**Figure 6.** Distribution of education

## **4.3. Structural Equation Modelling**

Previous studies have used SEM (Structural equation modelling) and regression for analysing the cause of Shopping cart abandonment (Mishra et al.,2021; Kapoor & Vij, 2021; Song, 2019; Rajamma et al., 2009; Kukar-Kinney and Close, 2010; Huang et al., 2018; Cho at el., 2006; Zheng et al., 2020). SEM can analyse both the direct and indirect effect between the factors (Menéndez et al., 2007). Also, our research involves the mediating and moderating effects. So, SEM is chosen for testing the hypothesis.

Structural Equation Modelling (SEM) is a multivariate technique i.e., multiple equations can be estimated simultaneously. Also, SEM can assess the errors associated with each variable providing information about the reliability and validity of the model.

Mediation is the process by which the effect of independent variable (X) on a dependent variable (Y) is explained by the influence of a third variable M which is the mediator. Moderation occurs when the magnitude or direction of a relationship is dependent on the intensity of a third variable called moderator (W). In this study we estimate the mediation and moderation effect into a single integrated analytical model. This model is called a conditional process model (Hayes, 2022).

![A white background with black dots

Description automatically generated]()A diagram of a algorithm

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**Figure 7.** process model 14 in conceptual (left) and statistical form (right).

As there are different models according to one’s use case. In our case the conditional process model 14 is used as shown in figure 6. The model 14 framework is builds upon the basic mediation model by including a moderator’s effect on the outcome path from M to Y. In our research, the indirect effect of value consciousness (X) on shopping cart abandonment (Y) through comparison shopping (M) is dependent upon the presence of platform structure (reviews, product information, return policy). Hence, we can represent this in the form of equation:

CS = iCS + aVC + eCS ----------------------------------------------------------------(1)

SCA = iSCA + c’VC + b1CS + b2PS +b3CS\*PS + eSCA -----------------------------(2)

Here, VC affects SCA through both direct and indirect path. As we can see there is a direct effect from VC to SCA without CS and indirect effect from VC to SCA through CS. As er the statistical form in figure 6 there are two components. The first component is the effect from VC to CS. The second component is the path from CS to SCA. The analysis was carried out in SPSS using Hayes’s (2022) Process Macro.

# **5. Data Analysis and Results**

## **5.1. Common method bias**

Common method bias is one of the important requirements for research, especially when only one source of data is used. Hence, Harman’s single factor test (Podsakoff, 2003) was used to check for the presence of common method variance (CMV). The result of our analysis shows that not a single factor accounts for more than 25.953% of the total variance. As it is well lower that maximum threshold 50%, we can say that CMV is not present in the study.

## **5.2. Measurement model**

KMO test was first conducted to check if factor analysis would be helpful for our analysis. As a result, the value was 0.762 which is greater than 0.5 as it is the acceptable score according to Kaiser (1974) hence we can perform factor analysis. Also, the Barrtlett’s test was significant. To investigate and analyse the structural relationships between the constructs, Anderson, and Gerbing (1988) suggested a two-step methodology. The first step is the implementation of confirmatory factor analysis (CFA) to evaluate the measurement scale’s reliability and validity. To check if the number of factors align with our research, we look at the scree plot. We consider the component which has an eigen value greater than 1 (Zwick and Velicer, 1986). From figure 7 we consider 6 components for our analysis. Hence, we crosschecked the number of constructs with the plot. This satisfies in our case. Table 1 shows the factor loading of six constructs and their Cronbach’s alpha. After the analysis of the loading with varimax rotation, we can see that one item from comparison shopping is below the threshold of 0.55. According to Guadagnoli and Velicer (1988) any score greater than 0.4 is considered stable. Hence, one item from comparison shopping was removed.

The second step involves reliability, convergent and discriminant validity tests. Cronbach’s alpha test was used to check if the variable items of the constructs were consistent with each other. The value of Cronbach’s alpha for the constructs were shown in table 1. According to Hair et al. (2008) the acceptable Cronbach’s alpha is greater 0.7. Except for Value Consciousness and Comparison Shopping all the other factors were greater than 0.70. But Heiko Hansjosten (2015), Hinton et al., (2014) and Cronbach (1951) stated that Cronbach’s alpha greater than 0.5 is also acceptable. Hence, we can consider alpha greater than 0.5. Table 2 consists of mean, standard deviation, correlation, square root of AVE, AVE. To check the convergent validity the AVE values are noted. As Bagozzi and Yi (1988) suggested that to establish convergent validity, the AVE value for all the constructs should be greater than 0.5. This means that the constructs explain more than half of the variance in the model items. Also, to prove discriminant validity, the square root of AVE values is noted for each construct. These values should be greater than the correlation between that and any other constructs (Fornell and Larcker, 1981). In our study, the highest correlation between any two constructs is 0.448 and the smallest square root of AVE is 0.694. Table 2 shows that the discriminant validity is supported for all constructs. Hence, the model is reliable and both the convergent and discriminant validity is verified using the measurement model.

A graph with a line and blue dots

Description automatically generated

**Figure 8.** Scree plot to check the number of components.

**Table 1.** Measurement model

|  |  |  |  |
| --- | --- | --- | --- |
| **Construct** | **Items** | **Factor Loading** | **Cronbach’s Alpha** |
| Value Consciousness | VC1: How concerned are you about low prices and simultaneously about product quality? | 0.646 | 0.592 |
|  | VC2: How often do you compare the prices of different brands and websites to be sure you get the best value for the money? | 0.670 |  |
|  | VC3: How often do you try to maximize the quality of product you get for the money you spend? | 0.762 |  |
| Comparison Shopping | CS1: I wanted to get a better idea of prices charged at different websites. | 0.704 | 0.506 |
|  | CS2: I wanted to get a better idea of prices charged at physical retail stores. | 0.721 |  |
|  | CS3: I was concerned that it would be difficult to return the products if not satisfied after purchasing. | 0.296\* |  |
| Reviews & ratings | RR1: How likely do you abandon your shopping cart, if the number of reviews for a product is less? | 0.767 | 0.821 |
|  | RR2: How likely do you abandon your shopping cart, if very few people have written reviews about a product? | 0.820 |  |
|  | RR3: How likely do you abandon your shopping cart, if the seller ratings of the products are low? | 0.869 |  |
| Product Information | PI1: How likely do you abandon your shopping cart if online retailer platform, provides you with inaccurate product information? | 0.731 | 0.737 |
|  | PI2: How likely do you abandon your shopping cart if online retailer platform provides you with incomplete product information? | 0.839 |  |
| Return policy | RP1: Does the return policy affect your decision to abandonment your shopping cart? | 0.733 | 0.823 |
|  | RP2: How often the return fee being charged has influenced your decision to abandonment your shopping cart? | 0.841 |  |
|  | RP3: Does the return mode offered influence your decision to abandonment your shopping cart? | 0.834 |  |
| Shopping cart Abandonment | SCA1: How often have you abandoned your shopping carts? | 0.593 | 0.726 |
|  | SCA2: How often do you close the shopping cart webpage or application before purchasing an item? | 0.748 |  |
|  | SCA3: How often have you abandoned your shopping carts, saving the product items in cart for later purchase? | 0.787 |  |

**Table 2.** Descriptive statistics (Mean, SD), Correlation, AVE, and square root AVE

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Construct** | **Mean** | **SD** | **AVE** | **VC** | **CS** | **PI** | **RP** | **RR** | **SCA** |
| **VC** | 4.13 | 0.702 | 0.482 | 0.694 | 0.306\*\* | 309\*\* | 0.260\*\* | 0.241\* | 0.277\*\* |
| **CS** | 4.06 | 0.644 | 0.508 |  | 0.713 | 0.362\*\* | 0.354\*\* | 0.347\*\* | 0.408\*\* |
| **PI** | 4.10 | 0.901 | 0.619 |  |  | 0.787 | 0.448\*\* | 0.359\*\* | 0.346\*\* |
| **RP** | 3.78 | 0.898 | 0.647 |  |  |  | 0.804 | 0.359\*\* | 0.439\*\* |
| **RR** | 3.80 | 0.935 | 0.671 |  |  |  |  | 0.820 | 0.305\*\* |
| **SCA** | 3.61 | 0.715 | 0.510 |  |  |  |  |  | 0.714 |

Note: Values on the cross diagonals represent AVE square root, \*\* p<0.01, \*p<0.05

## **5.3. Structural Model**

First, the Hypotheses 1 and 2 were tested using the path estimation (direct relationship) of the model. And the other hypotheses (H3, H4, H5, H6) were tested using the Hayes’s (2012) process model 14. As a result, Table 3, Table 4, Table 5 represents the results with each moderator. The R2 value for equation (1) is 0.094 and the R2 value for equation (2) with moderated product information, reviews and ratings and return policy is 0.226, 0.233, 0.251 respectively. We can see that the value of models is not close to 1. However, the aim of this research is to study whether the platform structure variables affect the relationship between VC and SCA through mediator CS instead of predicting SCA. So, we conclude that low R2 value has less effect on the analysis.

### **5.3.1. Direct Relationship**

As shown in the below tables, VC is positively and significantly related to CS (β = 0.280, t = 3.328, p = 0.001). In the same way CS is also positively and significantly related to SCA in all three tables below. (β =0.333, t = 3.159, p = 0.002) (β = 0.361, t = 3.411, p = 0.001) (β = 0.297, t = 3.411, p = 0.05). There is a change in the coefficient due to the presence of moderator. Thus, both the hypotheses H1 and H2 are supported.

### **5.3.2. Mediating Effect Estimation**

From the tables we can see that the relationship between VC and SCA is mediated through CS. Since SEM is a complex method, we used bootstrapping method with 5000 samples to estimate the standard error of the path coefficient so we can see how CS act as mediator. Bootstrapping is nothing but a statistical method that resamples the given dataset into many simulated samples. (Mills & Zandvakili, 1998). Also, the tables show that there is no direct relationship between VC and SCA. As it is not significant. (β = 0.113, t = 1.138, p = 0.258) (β = 0.120, t = 1.263, p = 0.210) (β = 0.113, t = 1.234, p = 0.218). But the indirect relationship via CS were significant. (effect = 0.094; 95%CI [0.023,0.188]) (effect=0.101; 95%CI [0.032,0.193]) (effect = 0.083; 95%CI [0.014,0.181]). As 0 wasn’t between the lower limit and upper limit of the confidence interval, therefore we can say that the indirect relationship between VC and SCA is significant (Mishra, at el., 2021). As we can see that though the mediator is affected by the moderator still it is significant in all three cases. Hence, we can conclude that the relationship between VC and SCA is fully mediated by CS. So, hypothesis H3 is supported. Full mediation means that the relationship between the independent variable (VC) and dependent variable (SCA) is fully explained by the mediating variable (CS) (Mishra, at el., 2021).

### **5.3.3. Moderating Effect Estimation**

To identify the moderating effect of platform structure between VC and SCA through the mediation of CS, we used Hayes (2012) process macro model. These variables explain how the process changes based on how the moderating variable is set. During the moderation mediation analysis, we examined the interaction term between CS and platform structure, to see if it has an indirect effect between VC and SCA via CS. We can see that the interaction term CS\*PI is not significant (b=0.0596, t=0.461, p=0.646). Similarly, the interaction between CS\*RR and CS\*RP is also not significant respectively (b=0.041, t=0.429, p=0.669) (b=0.149, t=1.546, p=0.125). With the help of the interaction term, we can conclude that there is no moderation. Also, to calculate the level and evidence of moderated mediation effect, we further investigated the effect (Table 3, Table 4, Table 5). As 0 lies between the confidence interval, we consider it as insignificant respectively (effect =0.094; 95%CI [-0.048,0.126]) (effect = 0.420; 95%CI [-0.017,0.193]) (effect = 0.083; 95%CI [-0.042,0.089]. Hence from the above discussion, we conclude that there is no moderating effect. So, hypotheses H4, H5, H6 is not supported.

**Table 3.** Regression analysis for direct and indirect effect (PI as moderator)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Direct effect**  **B** | **SE** | **t** | **p** | **Result** |
| H1: comparison shopping regressed over value consciousness | 0.280 | 0.084 | 3.328 | 0.001 | Supported |
| H2: Cart abandonment regressed over comparison shopping. | 0.333 | 0.106 | 3.159 | 0.002 | Supported |
| H3: Direct effect  Cart abandonment regressed over value consciousness (without the mediator CS) | 0.113 | 0.099 | 1.138 | 0.258 | Supported |
|  | **Effect** | **SE** | **LL 95%CI** | **UL 95%CI** |  |
| H3: Indirect effect  Cart abandonment regressed over value consciousness (with the mediator CS) | 0.094 | 0.042 | 0.023 | 0.188 | Supported |
| H6: Moderating effect of PI between VC and SCA through CS | 0.017 | 0.043 | -0.048 | 0.126 | Not Supported |

**Table 4.** Regression analysis for direct and indirect effect (RR as moderator)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Direct effect**  **B** | **SE** | **t** | **p** | **Result** |
| H1: comparison shopping regressed over value consciousness | 0.280 | 0.084 | 3.328 | 0.001 | Supported |
| H2: Cart abandonment regressed over comparison shopping | 0.361 | 0.106 | 3.411 | 0.001 | Supported |
| H3: Direct effect  Cart abandonment regressed over value consciousness (without the mediator CS) | 0.120 | 0.094 | 1.263 | 0.210 | Supported |
|  | **Effect** | **SE** | **LL**  **95%CI** | **UL**  **95%CI** |  |
| H3: Indirect effect  Cart abandonment regressed over value consciousness (with the mediator CS) | 0.101 | 0.042 | 0.032 | 0.193 | Supported |
| H5: Moderating effect of RR between VC and SCA through CS | 0.420 | 0.037 | -0.017 | 0.126 | Not Supported |

**Table 5.** Regression analysis for direct and indirect effect (RP as moderator)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Direct effect**  **B** | **SE** | **t** | **p** | **Result** |
| H1: comparison shopping regressed over value consciousness | 0.280 | 0.084 | 3.328 | 0.001 | Supported |
| H2: Cart abandonment regressed over comparison shopping. | 0.297 | 0.103 | 2.873 | 0.005 | Supported |
| H3: Direct effect  Cart abandonment regressed over value consciousness (without the mediator CS) | 0.113 | 0.091 | 1.234 | 0.218 | Supported |
|  | **Effect** | **SE** | **LL**  **95%CI** | **UL**  **95%CI** |  |
| H3: Indirect effect  Cart abandonment regressed over value consciousness (with the mediator CS) | 0.083 | 0.042 | 0.014 | 0.181 | Supported |
| H4: Moderating effect of RP between VC and SCA through CS | 0.013 | 0.032 | -0.042 | 0.089 | Not Supported |

# **6. Discussion**

With online shopping growing in the world. It is important to know about customer behaviour while making an online purchase. Though, there have been many studies which discussed the factors affecting online shopping. (Rajamma et al., 2009; Kukar-Kinney and Close 2010; Hasan 2016; Zheng et al. 2020; Mishra et al., 2021; Kapoor & Viji, 2021), studies on mediating and moderating effect of platform structure on SCA is not discussed. Hence, the current research investigates the phenomena of customers leaving the items in the shopping cart without completing their purchase. Also, it tries to explain that comparison shopping mediates cart abandonment. One of the main understandings from this paper is to see if the platform structure (return policy, reviews, product information) moderates the shopping cart abandonment.

From our research, hypothesis H1 is supported. Hence, we can confirm that value conscious customers do a lot of comparison. In order to get the best quality for the money a customer spends, they often compare products across the online portal. Value consciousness is considered as an important factor in decision making process of customers when it comes to buying goods or services (Thakur, 2019). Customers think that high prices are a sign of quality and status. On the other side, people are not willing to pay more than the estimates they make (Lichtenstein et al.,1993). When people shop in stores, they usually see and feel the products and make a decision. But in the case of online shopping, a customer is not aware of the product and its worth. Also, there has been a rapid growth in the number of fake items or damaged items being sold in online shopping (Suthivarakom, 2020). Hence a customer looks for all the alternatives available and estimates the value.

From the results, H2 is also supported i.e., when customers start to compare products then they get confused and close the website. This is also backed by Taylor (2018) as customers are confused when given with lot of options. According to Cho et al., (2006) comparison shopping is the main reason for cart abandonment. Also, customers abandon the shopping cart due to decision fatigue as they have to many items to choose from making them enable to decide. More information and choices cause dissatisfaction and postponement of customer’s purchase decisions (Dong et al., 2020). Since online shopping is growing, customers can add any number of items in the shopping cart. Customers are now left with large number to make decision. This makes it harder to make decisions. Hence, they hesitate to decide leading to cart abandonment (Jiang et al., 2021). Sometime when customer find new options which align with their preferences or budget through comparison shopping. Thus, the items selected earlier before finding the best option would be discarded.

As discussed in the above two hypotheses VC is linked to CS and CS is linked to SCA. We further tested the indirect relation between VC and SCA (H3) which was also accepted. Hence, we can say that comparison shopping mediates the relationship between value consciousness and cart abandonment. Value conscious customer always try to get the best quality for the money they paid, which makes them to search for all the options available which results in too much of information to analyse leading to frustration and closing the website.

This study’s main aim was to understand the moderating relationship of platform structure (reviews, return policy and product information) between value consciousness and cart abandonment through comparison shopping. From the results we obtained, H4, H5 and H6 was rejected. Hence, we can say that return policy, reviews and product information does not moderate the relationship between VC and SCA through CS. Customers who have intention and know what to buy before they enter the online shopping will not look at the reviews, return policy or information as their main preference and purchase the products at a price they are willing to pay for that product. Customers who are conscious do not compare products based on the number of reviews, return policy or product information to abandon the products. This is because many websites have faked or forced reviews (Mayzlin et al., 2014). Hence customers do not depend on reviews for deciding the quality of the products and abandonment the cart. When people need a product urgently for a use, they don’t look at the return policy rather they would think whether the product is worth for the money. Since they are in urgent need they don’t consider the return option. Also, customer who shop brand doesn’t look at the information. Since they are already aware of the brand, so they do not seek for information rather choose based on the price. Also, studies have identified that price plays a major role in shopping cart abandonment (Wang et al., 2021). Further, people also abandon cart due to the risk of misusing personal information or feel unsafe to do transaction in online websites (Sondhi, 2017).

We can say that when shopping, people fix a price amount to spend, and they might leave the website if they think the product is expensive or it’s not worth the price. Also, security is rated as one the top problem for online shoppers. Shoppers are concerned about their personal and banking information this might lead to cart abandonment. On the other hand, though reviews are helpful, but it changes from person to person. Especially when they are familiar with the brand and own preferences reviews have less effect. Further, customers sometime assume that the information provided is accurate and if it meets their expectation, they don’t feel to explore more about it. Also, customers who have faith and confidence in well-known brand don’t care about the little information available. Furthermore, people consider price and brand ahead of return policy i.e., they are convinced if price and brand is according to their needs. Also, some customers would find the return process hard. So, they prefer to keep the product therefore they don’t consider the return policy with high priority.

Also, when a customer uses the online shopping portal as a research tool and price comparison without the intention of buying the products can lead to shopping cart abandonment. This type of behaviour is caused by the intention to explore and entertain, rather than to shop (Kukar-Kinney and Close 2010).

Further, as e commerce is growing, information about the products is easy to find and return policies are almost same between all shopping platforms and reviews are common. As a result of this saturation or standardisation people may think these factors are not important. Hence their role needs to be reinvestigated.

We can conclude that there are other factors like price, security concerns etc which are considered as some important factors for a customer to abandon the shopping cart. Even though product information, reviews, return policies are important, their effect changes person to person according to the situations. Also, though people access the shopping portal, not all of them make purchases. Moreover, they are all saturated and standardized, making them less influential.

# **7. Implication**

## **7.1 Theoretical Implications**

The study contributes to the literature, as it backs up the main idea of Theory of Buyer Behaviour model (Howard & Sheth, 1969). This theory explains that the factors influencing customer buying behaviour remains significant. The results of the current study reinstate previous results that show that value conscious customers abandon shopping cart by comparing products. But platform structure has appeared to have limited impact. Also, it helps us to understand that consumer decisions are based on several factors like price, security, brand loyalty etc. From our research we can say that the theory needs to be updated due to the growth in technology as return policy, reviews, product information might not be considered as essential factors.

Similarly, the EKB model (Engel and Blackwell, 1982) promotes us to understand the steps that customers take while shopping online. Though the platform structure was insignificant, it helps us to learn that customers follow a set of steps followed while shopping. As mentioned in the literature shopping cart abandonment takes place in either of these steps. Hence this gives us insight into the customers journey that influences the shopping behaviour.

## **7.2 Managerial Implications**

The result of this study presents that e-commerce businesses and website designers should pay attention to some key points. It is essential for online retailers to understand every cart abandonment has a reason depending upon the shopping stage of each customer. Our study findings recommend that customers do not abandon the shopping cart based on platform structure. Hence, online retailers need to focus on other factors like easy checkout process, price, quality, and security concerns to grow their business rather to focus more on product information, reviews, return policy. Also, the website designers need to focus on providing responsive and mobile-friendly shopping experiences.

# **8. Conclusion**

This study highlights that return policy, product information, and reviews & ratings were not the primary reasons for cart abandonment but demonstrated the complex and varied nature of it. The problem of cart abandonment should be taken seriously by online retailers and employ tactics that consider many different factors and change them according to the growing needs and expectations of the online buyers. By developing these strategies, the business can reduce the rates of shopping cart abandonment, make customer happier and survive in the competitive world of online shopping.

# **9. Limitation and future research**

Despite the insights discovered, our research has its limitations. The sample size employed in this study is constrained and predominantly comprises individuals in the young adult age range. Furthermore, it didn’t focus on any one single category while analysing cart abandonment. Behaviour in e-commerce can vary depending upon each category and the target audience.

Future studies can investigate additional factors like website design, shipping costs, payment option etc. that affect the decision-making of online shopping. Also, future researchers can investigate if the factors influencing shopping cart varies between different demographic factors. Furthermore, with technology like augmented reality becoming popular, its effect on cart abandonment can be studied.

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# **11. Appendix**

**Questionnaire**

**Information Provided**

How likely do you abandon your shopping cart if online retailer platform, provides you with inaccurate product information?

How likely do you abandon your shopping cart if online retailer platform provides you with incomplete product information?

**Return Policy**

Does the return policy affect your decision to abandonment your shopping cart?

How often the return fee being charged has influenced your decision to abandonment your shopping cart?

Does the return mode offered influence your decision to abandonment your shopping cart?

**Reviews**

How likely do you abandon your shopping cart, if the number of reviews for a product is less?

How likely do you abandon your shopping cart, if very few people have written reviews about a product?

How likely do you abandon your shopping cart, if the seller ratings of the products are low?

**Value consciousness**

How concerned are you about low prices and simultaneously about product quality?

How often do you compare the prices of different brands and websites to be sure you get the best value for the money?

How often do you try to maximize the quality of product you get for the money you spend?

**Comparison shopping** (CS)

I wanted to get a better idea of prices charged at different websites.

I wanted to get a better idea of prices charged at physical retail stores.

I was concerned that it would be difficult to return the products if not satisfied after purchasing.

**Shopping cart abandonment** (SCA)

How often have you abandoned your shopping carts?

How often do you close the shopping cart webpage or application before purchasing an item?

How often have you abandoned your shopping carts, saving the product items in cart for later purchase?

**Demographic Variables**

What is your age category?

What is your Gender?

What is your education status?

What type of Device do you use for shopping online?

**Cronbach alpha results**

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**Harman’s Test**

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**Component Selection**

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**Factor Loading**

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**Descriptive Statistics**

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**Correlation**A table with numbers and a number of text

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**KMO Test**

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**AVE and AVE Square root**

A table of numbers and letters

Description automatically generated with medium confidence

**SEM Results**

**a) Product Information as moderator**

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**b) Return Policy as moderator**

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**c) Reviews as moderator**

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A screenshot of a computer program

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