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Research Paper

Investigation of Online Shopping Cart Abandonment on the Perspective of E- Procrastination Behavior

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ABSTRACT

Online cart abandonment is one of the most important key factors affecting e-commerce and showing up when consumers place products in their online shopping carts without making a purchase. It is also an important indicator of lost sales, as a revenue-reducing factor for retailers. With the effect of increasing online sales in recent years, online cart abandonment has become a major concern for retailers. Considering the economic impact of the subject, it is very important to understand the factors that lead consumers to this behavior. The purpose of this research was to investigate the factors that affect online cart abandonment. For this purpose, it was aimed to examine the effects of e-procrastination behavior, comparison shopping, need for more information, research and organization need, and emotional ambivalence on online cart abandonment. The partial least square method of structural equation modeling was employed to examine the proposed research model. An online survey was applied to 197 consumers selected by convenience sampling method, who had online cart abandonment experience, and the data set was analyzed using SmartPLS 3 software. Obtained findings showed that comparison shopping and need for more information, need for research and organization, and emotional ambivalence had an effect on e-procrastination behavior, while e-procrastination affected online cart abandonment. In the study, it was also determined that e-procrastination behavior had a partial mediation effect between the need for comparison shopping and more information, the need for research and organization, emotional ambivalence and online shopping cart abandonment behavior.

Keywords: Online shopping cart abandonment; E-Procrastination behavior; Emotional ambivalence; Consumer behavior.

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1. INTRODUCTION

One of the biggest changes that have occurred with developments in information technologies and the growth of e-commerce is the growing growth of online shopping and the rapid increase in its share in total trade. This growth has increased the importance of online shopping worldwide, especially with the effects of the Covid-19 epidemic, recently. While millions of people around the world were confined to their homes in early 2020 for the purpose of containing the epidemic, online channels have become an alternative to crowded physical stores. This situation has created significant changes in e-commerce and online consumer behavior. As a result of these effects, global retail e-commerce traffic reached a record of 22 billion visits in June 2020 (Coppola, 2021). Additionally, over 65% of global internet users buy their products online, and worldwide online retail sales are estimated to be total $ 2.8 trillion by the end of 2021 (Rubin et al, 2020; Statista, 2021). These amounts do not include uncompleted purchases left in the shopping cart. Baymard's study (2020) shows that 70% of online shoppers abandon their carts before completing their purchase. Cart abandonment is a major cause of lost revenue for online retailers. According to Forrester Research, online shopping cart abandonment causes more than $18 billion in losses annually (Nichols, 2018). Considering this economic impact, it is very important to understand and reduce shopping cart abandonment behavior in online retailing (Egeln, Joseph, and Johnson, 2012).

When the literature on the concept of shopping cart abandonment specific to online shopping is examined, it was seen that it is surprisingly under-studied (Rubin et al., 2020; Zanjani, 2012). Also, while the marketing literature examines the consequences of consumers' actions (purchases), the consequences of consumers' inaction (procrastination) have not been examined (Azimi et al., 2020). In addition, online shopping cart abandonment does not indicate consumer will never purchase products in the shopping cart, but also indicates that consumers have decided to delay their purchase or purchase

product from another channel (Close et al., 2012; Moe, 2003). At this point, the study focuses on the concept of online procrastination (e-Procrastination).

E-procrastination is the delay process of a planned purchase by the consumer due to psychological and situational reasons, or the consumer's decision to wait instead of making a purchase (Darpy, 2000; Zanjani, 2012). The time between that consumers realizing of the need for the product and purchasing the product is usually long. This is because decision making itself takes time. Even if the consumer has intention to buy fast, it usually takes a long time for purchase to happen. For example, only 25% of consumers who consider purchasing a computer in the next 12 months will be able to do so (Greenleaf & Lehmann, 1995: 186). Negra, Nzoughi, & Bouhlel (2008) stated that consumers who shop online exhibit more e-procrastination than those who shop in-store. The online environment offers too many alternatives. The lack of trust due to high price uncertainty increases e-procrastination behavior of a consumer, negatively affecting the quality of the shopping experience and post-purchase satisfaction ultimately (Negra et al., 2008; Zanjani, 2012). For this reason, understanding e-procrastination behavior has critical importance for retailers. Although e-procrastination has begun to be studied after 2000, there is a research gap in Turkey to examine this issue from a marketing perspective. According to Turkey's latest sector calculations; it is Considered that it will rank first in the world in terms of retail e-commerce development with a combined annual growth rate of 14.59 percent between 2020 and 2025 (Statista, 2021b). This study, which investigates the effect of e-procrastination behavior on online cart abandonment in the focus of Turkish consumers, contributes to the literature.

2. LITERATURE REVIEW

This section gives the theoretical underpinnings of online shopping cart abandonment and e-procrastination behavior. First the literature on online shopping cart abandonment is reviewed, followed by an overview of research on with an emphasis on e- procrastination behaviour. Based on this literature review, four hypotheses were developed in study.

2.1 Online Shopping Cart Abandonment (OCA)

There has been an ever-increasing e-commerce boom since the 1990s. However, research shows that nearly two-thirds of consumers leave an online portal without completing the transaction (Nair, 2016; Sondhi, 2017). This situation was named “cancellation of online transactions” by Cho (2004), “consumer hesitation or delay in online purchases” by Cho, Kang & Cheon (2006) and “shopping cart abandonment syndrome” by Moore and

Mathews (2006) in the literature. This behavior, known as online cart abandonment, is defined as "the consumer placing a product or products in online shopping cart without purchasing any product during an online shopping session" (Kukar-Kinney & Close, 2010). By expanding the definition, Song (2019) defined it as "the act of deleting all or some products from shopping cart of shopper or leaving products in shopping cart until they are automatically deleted by system". According to Egeln et al. (2012), there are three decision points in online transactions; when product is added to the cart, at the checkout point and at the time of product delivery. Online cart abandonment takes place at checkout stage, which is second decision point. Even consumers with high intent to shop have potential to leave online environment at checkout stage (Negra & Mzoughi, 2012). The literature on online cart abandonment focuses specifically on antecedents that cause this behavior. In general, four key dimensions were discussed as risk, need for information, price concern (cost), and hedonic shopping value in existing studies on online cart abandonment (Song, 2019).

It was summarized which studies used these specified dimensions in Table 1.

Table 1. Dimensions of OCA

Dimension	Variable Used in Research - Author (Year)
Risk	Risk Perception - (J. Cho, 2004) Perceived Risk- (Moore and Mathews, 2006; Rajamma et al., 2009; Egeln et al., 2012; Xu and Huang, 2015; Nair, 2016; Sondhi, 2017; Erdil, 2018) Privacy / Security Concerns - (Kukar-Kinney and Close, 2010)
information	Control in Information Search - (J. Cho, 2004) Shopping and Information Search - (Close and Kukar-Kinney, 2010) Search and Organization Tool - (Kukar-Kinney and Close, 2010) Research Purpose - (Erdil, 2018)
Price (Cost) Concern	Taking Advantege Promotion - (Close and Kukar-Kinney, 2010) Wait For a Lower/Sale Price - (Kukar-Kinney and Close, 2010; Song, 2019) Perceived Cost - (Xu and Huang, 2015) High Price - (Nair, 2016)
Hedonic Shopping Value	Entertainment Value - (Kukar-Kinney and Close, 2010) Hedonic Tendencies - (Nair, 2016) Entertainment Purpose - (Erdil, 2018) Hedonic Shopping Value - (Song, 2019)

In addition to these studies, it was also argued that perceived waiting time (Rajamma et al., 2009), perceived processing discomfort (Erdil, 2018; Rajamma et al., 2009; Xu &

Huang, 2015), culture (Changchit & Christi, 2013), comparison with other sites (Xu & Huang, 2015), technical glitches (Nair, 2016) may also cause consumers to abandon their online baskets. Apart from these studies focusing on the causes and preventers of online cart abandonment, Egeln & Joseph (2012) stated that consumers are high in abandoning their online carts even with a sense of ownership. In current studies on online cart abandonment; Rubin et al. (2020) argued that consumers with an abstract mindset are more likely to buy because they consider the products they add to their shopping carts to be more important in online shopping, and this reduces cart abandonment. Zhao, Wang, & Jiang (2020) contributed to the literature by shedding light on how pop-up messages affect consumers' taste and purchase intention. They also provide new theoretical evidence on why online companies should set limits on maximum number of products that can be placed in consumers' online shopping carts. Huang, Korfiatis, & Chang (2018) expanded online cart abandonment literature in the context of mobile devices by focusing on mobile shopping cart abandonment in their study. They stated that personal (conflicts related to mobile shopping features and low self-efficacy regarding mobile shopping) and interpersonal (inconsistencies between other consumers' attitudes and their own self-attitudes) conflicts, which disturb consumers' emotions during mobile shopping are effective to be abandoned shopping cart. Overall, their findings showed that device used for online shopping can also affect purchasing behavior (Rausch et al., 2020).

2.2 Comparison Shopping and The Need for More Information (CSNI)

Consumers compare prices at other websites and physical retail stores to ensure that they get the best price online (Mishra, 2021). Consumers spend quite a long time comparing prices, shipping costs, return policies and products prior to purchasing. Adding products to online shopping cart is the easiest way for consumers to save time spent on these comparisons (Ouellet, 2010). Due to its interactive nature, internet retailing provides more efficiency than traditional direct retailing, especially in the information search stage (Cho, 2004). For this reason, online shopping carts can be used by consumers to learn more about products that are frequently interested in (Close & Kukar-Kinney, 2010). Also, the more alternatives consumers evaluate in order to obtain information, the more likely they are to make the right decision. However, considering various alternatives takes time and effort (Punj & Moore, 2009). For this reason, consumers may delay final purchase decision to gather more information (Negra & Mzoughi, 2012; Negra, Mzoughi, & Bouhlel, 2008). Similarly, Janis & Mann (1977) and Greenleaf & Lehmann (1995) argued that when an individual feels that they have insufficient information to make a decision,

they may delay making a decision to learn more. The reason for this is consumer's desire to evaluate products in the basket later and compare them with other sites (Fernandes, 2012). In addition, when the relevant literature is examined, it was observed that there is a relationship between the need for comparison shopping and need for more information and e-procrastination behavior (Negra et al., 2008; Negra & Mzoughi, 2012), between the need for comparison shopping and more information and online cart abandonment (Cho et al., 2006; Mishra, 2021) and between e-procrastination behavior and online cart abandonment (Negra et al., 2008; Negra & Mzoughi, 2012). Based on these relationships, it was predicted that e-procrastination may have a mediating effect in the interaction between comparison shopping and the need for more information and online cart abandonment.

For this reason, the following hypotheses was developed based on the assumption that consumers postpone their shopping in order to obtain more information and make comparisons while shopping online, and that this behavior causes cart abandonment in online shopping;

H_1: *Comparison shopping and need for more information has a positive effect on e-procrastination behavior.*

H_2: *Comparison shopping and need for more information has a positive effect on online shopping cart abandonment behavior.*

H_3: *E-procrastination mediates positive relationship between comparison shopping and need for more information and online shopping cart abandonment behavior.*

2.3 The Need for Research and Organizing (NRO)

The way consumers use their online shopping carts and their intended use differs from those in traditional shopping (Close et al., 2012). According to Close & Kukar- Kinney (2010), this difference arises from the consumer's intention to collect and store products in order to make the purchase immediately while in the traditional environment, it is used as an online browsing tool without intention to buy it immediately in the online environment. Moreover, in online shopping, consumers often use their shopping carts as an online shopping list in order to monitor products they are interested in and want to buy, to access products more easily, and to make purchasing decision more easily. Also, online shopping carts is used by consumers as a research or organizational tool in the shopping process since they can display product prices, colors, sizes, number, etc. The likelihood of cart abandonment increases as online shopping carts are used as a research and organizational tool (Close et al., 2012; Kukar-Kinney & Close, 2010). In summary, shopping cart abandonment behavior depends on shopping processes, and organization and search of

products in shopping cart is an important variable that affects shopping cart abandonment (Xu & Huang, 2015). However, consumer experiences a lack of confidence due to frequent price changes especially in online shopping. This situation deteriorates the quality of shopping experience and post-purchase satisfaction by enabling consumer to postpone purchasing their products (Zanjani, 2012). When consumers use their online carts as a research and organizational tool during evaluation stage, they may prefer to wait with the intention of making purchase at a different time and through a different channel, as they target the most favorable conditions (price, payment facilities, etc.) (Kukar-Kinney & Close, 2010). In the light of this information; It is thought that it is possible to have an e-procrastination mediating effect in the relationship between the need for research and organization and online shopping cart abandonment behavior. In line with the above information, the following hypothesis was proposed;

H_4: *The need to research and organize has a positive effect on e-procrastination behavior.*

H_5: *The need to research and organize has a significant effect on online shopping cart abandonment behavior.*

H_6: *E-procrastination mediates positive relationship between the need for research and organizing and online shopping cart abandonment behavior.*

2.4 Emotional Ambivalence (EA)

Emotional ambivalence refers to a unique emotional experience in which an individual experience both positive and negative emotions about the same event simultaneously (Fong & Tiedens, 2002; Fong, 2006). Rees et al. (2013) stated that indecisive individuals think that their environment is both safe and problematic at the same time. Emotionally unstable individuals are more likely to consider alternative perspectives by thinking dialectically or thinking the opposite before making a judgment (Rees et al., 2013). For this reason, consumers who experience emotional indecision may delay their decision to expand alternatives. In addition, in online transactions, consumers experience multiple aspects and features of the service simultaneously (Chea & Luo, 2008), therefore, simultaneous feeling of positive and negative emotional states is inherent in online transactions. Online consumers who deal with confusing information may perceive difficulty in ordering online and delay termination of transactions (Negra et al., 2008). Darpy (2000), defined the concept of indecision as one of the dimensions of procrastination behavior in his study examining consumer procrastination. Undecided customers spend more cognitive effort researching a product, searching for and comparing alternatives (Negra et al., 2008). At this stage, consumer is likely to experience uncertainty

and stress due to emotional ambivalence. Negra et al. (2008) argued that consumers are more likely to delay decision-making process under uncertain conditions and stressful situations. According to Wang et al. (2022); consumers with emotional ambivalence were more likely to abandon their online shopping carts. Consistent with this, Huang et al. (2018) revealed a positive relationship between emotional ambivalence and online shopping cart abandonment. When the related literature is examined, no study was found to determine whether e-procrastination behavior has an effect on the relationship between emotional ambivalence and online shopping cart abandonment behavior or not. In line with the above information, the following hypothesis was developed.

H_7: *Emotional Ambivalence has a positive effect on e-procrastination behavior.*

H_8: *Emotional Ambivalence has a positive effect on online shopping cart abandonment behavior.*

H_9: *E-procrastination mediates positive relationship between the emotional ambivalence and online shopping cart abandonment behavior.*

2.5 E-Procrastination Behavior (EPB)

Online consumer procrastination is defined by Darpy (2000) as "a chronic and deliberate tendency of consumer to slow down or stop a planned purchase while evaluating alternative options by avoiding entering decision process at purchase stage". e-procrastination behavior is voluntary and rational delay of a planned online purchase (Negra & Mzoughi, 2012). There are situational and individual antecedents of consumer procrastination. While situational antecedents are lack of time, discouraging shopping tasks, performance and financial risks of purchasing, need for advice, need for further research, and fear of price change, individual antecedents are indecision or lack of energy (Azimi, Milne, & Miller, 2020).

The reason for this delay; specifically, it is notion that value of future costs and benefits is smaller than their present value. This situation increases procrastination behavior by making it more attractive to complete task at a future time (Kurt & Bayraktaroğlu, 2013; Soman et al., 2005). However, due to high price uncertainty in the market, consumer often suffers from a lack of confidence caused by deep price changes and this causes consumer to delay purchase decision (Zanjani, 2012). Therefore, e-deferrers may delay purchase process instead of completing it because they think that they can buy products they plan to buy in another environment (online or offline) on better terms (Negra & Mzoughi, 2012). Also, with millions of websites competing for attention in today's conditions, some online consumers are likely to delay their purchase by waiting weeks for a purchasing decision to

be made and browse more than 10 websites in the meantime (Mzoughi et al., 2007). For this reason, consumer procrastination is a common behavior in online environments (Azimi et al., 2020). One of the observed consequences of this behavior is purchase abandonment (Fernandes, 2012). In line with the above information, the following hypothesis was proposed;

H_{10}: *E-procrastination behavior has a significant positive effect on online shopping cart abandonment.*

3. METHODOLGY

3.1 Sampling and Data Collection

In this study aimed to examine the effect of e-procrastination behavior on online cart abandonment; users over age of 18 who experience cart abandonment in online shopping in Turkey constitute the main body of the research. However, since there is no recorded information showing the number of members of the population (individuals over the age of 18 who have experience of abandoning the cart in online shopping in Turkey) in the population, convenience sampling method was preferred among the non-random sampling methods. A total of 235 questionnaires were applied between August 10 and September 23, 2020, but 197 valid data were obtained after erroneous and incomplete questionnaires were removed. This sample size meets the 10 times limit of the largest structural paths oriented to a certain structure in structural model suggested by Hair et al. (2017). All structures and measurement items were adapted from scales in theory, whose validity and reliability were tested to ensure structure validity and reliability.

Scales were used in the research are online shopping cart abandonment behavior (Kukar-Kinney & Close, 2010), comparison shopping and need for more information variables (Cho, Kang & Cheon, 2006), need for research and organization variable (Kukar-Kinney and Close, 2010), the variable of emotional ambivalence (Priester, Petty & Park, 2007; Huang, Korfiatis, & Chang, 2018) and online consumer procrastination behavior variable (Negra & Mzoughi, 2012). The questions in the scales were formed by using a 5-point Likert scale (1. Strongly Disagree, 5. Totally Agree).

In the data analysis, descriptive statistics were analyzed using SPSS 23 and the research model was analyzed using Smart PLS (Version 3.3.2) software.

3.2 Research Model

The research model was determined as in Figure 1, taking into account the purpose and theoretical information of the research.

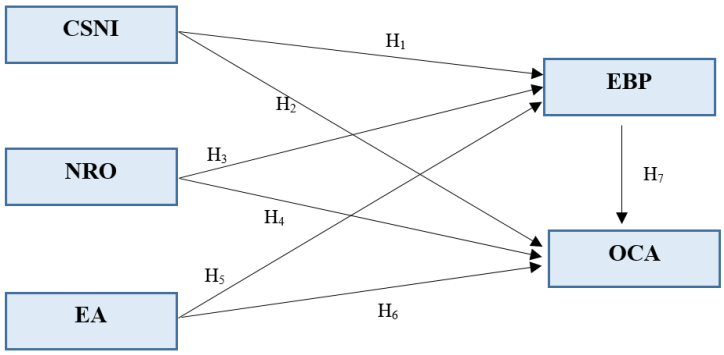

Figure 1. Research Model

4. RESULTS

4.1 Demographic Characteristics and Online Purchasing Behaviors of Participants

According to the findings 67% of the participants were women, 29.9% of the participants were between the ages of 25-31 and education levels were at undergraduate level with 46.7%. Demographic data are in Table 1.

Table 2. Demographic Properties

Variables	N	%
Gender		
Woman	132	67
Man	65	33
Age		
18-24	22	11,2
25-31	59	29,9
32-37	35	17,8
38-45	46	23,4
46-51	21	10,7
Over 51	14	7,1
Education		
Primary-Secondary	0	0
High School	11	5,6
Associate Degree	21	10,7
Undergraduate	92	46,7
Master of Science	45	22,8
PhD	28	14,2
Total	**197**	**100**

86.8% of participants abandon their car in online shopping. They stated that they left shopping cart by not completing the payment stage in online shopping and ending the transaction. It was determined that the respondents who had the experience of abandoning shopping carts mostly left products in their carts with 28.9% of clothing products, while the participants left products in the category of mothers, babies, and toys the least with 2.5%. Also, it was determined that both women (86.4%) and men (60%) left clothing products in shopping carts more than other products in the analyzes made.

While 18% of the participants stated that there are too many alternatives and they had difficulty in choosing the reason for leaving the cart, 16.2% stated that they left the shopping cart because they thought it was over the budget. Having too many alternatives and having difficulty in choosing for both women (51.5%) and men (52.3%) were identified as the most important reason for abandonment.

4.2 Testing the Research Model

PLS SEM, which is a variance-based structural equation modeling technique from structural equation modeling techniques, was used to test the research model. In this context, first, the validity of scales was tested. For reliability; Cronbach's Alpha (α), Composite Reliability (CR), and Dijkstra-Henseler's Rho_A values were calculated for internal consistency reliability.

Table 3. Reliability and Validity Results

Variable	Term	Reliability			Validity		VIF
		Cronbach's Alpa	Composite Reliability	Rho_A	Factor Loads	Conv. Validity	
Threshold Values		**α≥0.70**	**CR≥0.70**	**Rho_A≥0.70**	**≥0.70**	**AVE≥0.50**	**VIF<5**
The Need For Research And Organizing (NRO)	NRO1	0,764	0,862	0,859	0,606	0,682	1,296
	NRO2				0,930		2,639
	NRO3				0,901		2,29
Emotional Ambivalence (EA)	EA1	0,918	0,935	0,980	0,887	0,743	4,689
	EA2				0,874		4,183
	EA3				0,873		4,027
	EA4				0,872		3,264
	EA5				0,803		1,582
Comparison Shopping And The Need For More Information (CSNI)	CSNI1	0,730	0,843	0,861	0,868	0,650	1,929
	CSNI2				~~0,591~~		1,193
	CSNI3				~~0,920~~		1,958
Online Cart Abandonment (OCA)	OCA1	0,746	0,839	0,763	0,747	0,567	1,786
	OCA2				~~0,831~~		1,895
	OCA3				~~0,709~~		1,316
	OCA4				~~0,720~~		1,342
E-Procrastination Behavior (EPB)	EPB1	0,799	0,860	0,818	0,704	0,555	1,592
	EPB2				0,822		2,015
	EPB3				0,850		2,146
	EPB4				0,612		2,049
	EPB5				0,712		2,419

Hair et al. (2012) stated that Cronbach's Alpha (α) and Composite Reliability (CR) value should be ≥ 0.70 and Henseler et al. (2016) stated that Dijkstra-Henseler's Rho_ A value should be ≥ 0.70. To determine construct validity, convergent and divergent validity were calculated. To determine convergent validity of the construct, factor loadings of the

expressions and average variance extracted (AVE=Average Variance Extracted) values were calculated. AVE values should be ≥ 0.50 (Bagozzi ve Yi, 1988; Hair et al., 2012) and factor loads should be above the threshold of 0.700 (Hair et al., 2017). Items CSNI4, CSNI5, and CSNI6 below this value were excluded from the model. NRO1, CSNI2, and EPB4 items were not removed from the model even though they were below 0.70, since they did not have a great effect on validity and reliability when we removed these items from the model. As can be seen in Table 2, it is seen that the measurement model meets the criteria of construct safety and validity.

Evaluation criteria proposed by Fornell and Larcker (1981), Heterotrait-Monatrait (HTMT) criterion, and cross-loads were used to determine discriminant validity. Fornell and Lacker (1981) stated that the discriminant validity of a model could be evaluated by comparing the square root of the AVE value of each construct and the correlation between that construct and other constructs. As a result of these comparisons, discriminant validity can be provided with the fact that square roots of the AVE values are higher than the correlation value of the relevant variable with other variables, in other words, squares of the correlations between the variables are lower than the AVE values. HTMT criterion suggested by Henseler et al. (2015) expresses the ratio of the mean of the correlations of the expressions belonging to variables to geometric means of the correlations of the expressions of the same variable. Henseler (2015) stated that if HTMT values are < 0.90, construct has discriminant validity. Convergent validity results of the study were shown in Table 3 according to Fornell-Lacker and HTMT criteria.

Table 4. Convergent Validity Results (Fornell-Lacker Criterion / HTMT Criteria)

Fornell-Lacker Criterion						**Heterotrait-monotrait (HTMT) Criterion**				
	NRO	**EA**	**CSNI**	**OCA**	**EPB**	NRO	EA	CSNI	OCA	EPB
NRO	0,826									
EA	0,217	0,862				0,234				
CSNI	0,236	0,065	0,806			0,267	0,143			
OCA	0,280	-0,055	0,243	0,753		0,368	0,134	0,296		
EPB	0,366	0,297	0,295	0,412	0,745	0,437	0,321	0,372	0,490	

The third option to verify convergent validity is to examine cross-loads of indicators. This method, which is generally considered more liberal, requires that a load of each indicator on the structure be higher than all cross-loadings (Henseler et al., 2009). Cross-loadings of the variables of the study were given in Table 4.

Table 5. The indicator loadings and cross-loadings

NRO		EA	CSNI	OCA	EPB
NRO1	**0,606**	0,086	0,103	0,162	0,168
NRO2	**0,930**	0,165	0,277	0,314	0,341
NRO3	**0,901**	0,251	0,176	0,203	0,354
EA1	0,208	**0,887**	0,062	-0,052	0,242
EA2	0,187	**0,874**	-0,005	-0,107	0,194
EA3	0,159	**0,873**	-0,070	-0,056	0,164
EA4	0,163	**0,872**	0,023	-0,036	0,194
EA5	0,192	**0,803**	0,159	-0,012	0,364
CSNI1	0,172	-0,003	**0,868**	0,199	0,225
CSNI2	0,054	0,167	**0,591**	0,012	0,133
CSNI3	0,277	0,049	**0,920**	0,288	0,311
OCA1	0,255	-0,165	0,121	**0,747**	0,232
OCA2	0,235	0,026	0,281	**0,831**	0,376
OCA3	0,175	-0,081	0,153	**0,709**	0,302
OCA4	0,186	0,009	0,143	**0,720**	0,302
EPB1	0,304	0,256	0,112	0,381	**0,704**
EPB2	0,302	0,251	0,222	0,341	**0,822**
EPB3	0,293	0,146	0,294	0,404	**0,850**
EPB4	0,168	0,242	0,211	0,094	**0,612**
EPB5	0,265	0,238	0,271	0,223	**0,712**

When Table 3 and Table 4 data are examined, it is seen that the study provides Convergent validity. For this reason, it was determined that the present model can be used to test the structural model.

In the second stage, to evaluate the structural model, at first, problems of linearity among the variables in the analysis were evaluated. Variance inflation factor (VIF) values were used to evaluate linearity problems. Hair (2011) states that the VIF value should be <5. As seen in Table 2, obtained VIF values are below the threshold value of <5. Therefore, it is seen that there is no linearity problem in this study. Second, bootstrapping method (5000 resampling) was used to test the assumed relationship at 0.05 significance level ($p<0.05$) in the structural model established to test the hypotheses. Table 5 shows the results of path analysis and hypothesis testing. According to the results; CSNI ($\beta=0.217$, $t=3,643$, $p<0.000$), NRO ($\beta=0.266$, $t=3.711$, $p<0.000$), and EA ($\beta=0.225$) , $t=3,373$, $p<0.001$) affects EPB, and EPB ($\beta=0.412$, $t=6,768$, $p<0.000$) affects OCA positively and significantly. In this direction, H1, H2, H4, H5,H7, H8, H10 hypotheses that we determined for the study were accepted.

Table 6. Path Coefficients

		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
H1	**CSNI -> EBP**	0,217	0,228	0,060	3,643	**0,000**
H2	**CSNI -> OCA**	0,090	0,096	0,029	3,036	**0,002**
H4	**NRO -> EPB**	0,266	0,268	0,072	3,711	**0,000**
H5	**NRO -> OCA**	0,109	0,114	0,037	2,923	**0,003**
H7	**EA -> EPB**	0,225	0,233	0,067	3,373	**0,001**
H8	**EA -> OCA**	0,093	0,097	0,028	3,297	**0,001**
H10	**EBP -> OCA**	0,412	0,424	0,061	6,768	**0,000**

Regarding the research model; PLS algorithm was used to calculate path coefficients, $R^{2,}$, and Blindfolding analysis was used to calculate predictive power (Q^2) (OD=8). R2 value is interpreted as <0.25 (weak), 0.25-0.50 (moderate), and >0.50 (strong) (Hair et al., 2011, s. 147). When obtained R^2 values are examined, it was determined that CSNI, NRO, EA variables explain 23%, of EPB variable and EPB variable explains 17% of OCA variable. Hair et al. (2014) stated that it indicates the predictive explanatory level of the model if predictive power coefficients (Q^2) are greater than zero.

When the values in Table 5 are examined, it is seen that explanation levels of EPB ($Q^2=0.09$) and OCA ($Q^2=0.12$) variables are high. After this stage, model fit was evaluated. RMStheta value and SRMR (Standardized Root Mean Residual) value were calculated for

model fit. According to Garson (2016), SRMR values below 0.10 are considered cut-off values, while Hu and Bentler (1998) stated that values close to or below 0.08 are considered cut-off values. The SRMR value for the current study was calculated as 0.08. Since this value is close to the cut-off value, it can be said that there is a model fit when this criterion is taken into account. In addition, Hair et al. (2017) stated that the RMStheta value should be ≤0.12. In the present study, RMStheta value was found to be 0.19, above the threshold value.

4.3 Mediating Effect of E-Procrastination Behavior

In the study, mediating effect of the e-procrastination behavior was tested. Path coefficient values, which are Smart PLS values, were used to test the H8, H9 and H10 hypotheses. According to Hair et al. (2017), previous studies suggest Sobel test to determine mediating effect. However, Hair et al.(2017) stated that Sobel test requires unstandardized path coefficients as input for test statistics and lacks statistical power, especially when applied to small sample sizes. Therefore, he suggested bootstrapping sampling distribution of indirect effect instead of using the Sobel test to evaluate mediation analysis in PLS-SEM studies. Bootstrapping indirect effect provides a high level of statistical power for the PLS-SEM. For this reason, in the study; The mediation effect was examined by calculating the VAF (Varyance Accounted For) value suggested by Nitzl et al. (2016). Nitzl et al. (2016) stated that VAF value less than 20% shows zero mediation effect, VAF value greater than 20% and less than 80% shows partial mediation effect, and VAF value greater than 80% shows full mediation effect. The results for the calculation of the mediator effect are shown in Table 7. Table 7 shows (a) the path coefficient value between the independent variable and the mediating variable, (b) the path coefficient value between the mediating variable and the dependent variable, (c) the path coefficient value between the independent variable and the dependent variable.

Table 7. Path Coefficients

Hypothesis	Paths	Path Coef. (a)	Path Coef. (b)	Path Coef. (c)	Total Indirect Impact (a)*(b)	Total Impact (a*b+c)= c′	P Value	VAF a*b / (a*b+c′)	Decision
H3	CSNI -> EPB ->OCA	0,217	0,412	0,090	0,089	0,179	0,002	0,333	Partial Mediation Effect
H6	NRO -> EPB -> OCA	0,266	0,412	0,109	0,110	0,219	0,003	0,334	Partial Mediation Effect
H9	EA -> EPB -> OCA	0,225	0,412	0,093	0,093	0,186	0,001	0,333	Partial Mediation Effect

Considering the VAF values calculated in Table 7, it is seen that the H3, H6 and H9 hypotheses were accepted and show partial mediation effect.

4.4 Importance-Performance Map Analysis (IPMA).

According to Ringle and Sarstedt (2016); IPMA analysis provides an opportunity to enrich analysis by combining analysis of importance and performance dimensions in PLS-SEM applications, thus obtaining additional conclusions and findings.

Obtained Importance-Performance Map as a result of the analysis performed based on the variables were shown in Figure 2.

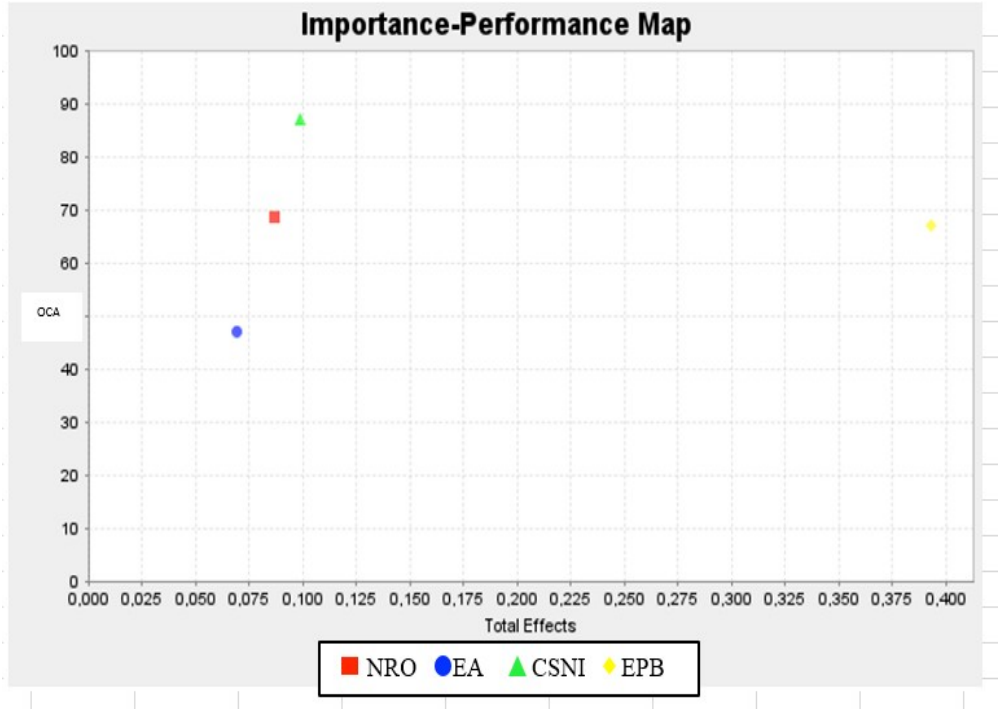

Figure 2. Importance- Performance Map

In Figure 2, According to the OCA dependent variable; The structure with the highest total effect is the EPB structure. This structure is followed by CSNI, NRO and finally EA structures, respectively. In addition, the construct with the highest contribution to model performance can be expressed as CSNI.

Table 7. Significance - Performance Map Results

Variables	LV Index Values	LV Performance Index Values
NRO	0,087	68,723
EA	0,069	47,125
CSNI	***0,099***	***87,032***
EPB	***0,393***	***67,163***

5. DISCUSSION AND CONCLUSIONS

According to the results of the study investigating the factors affecting cart abandonment in online shopping, e-procrastination behavior has a positive and significant effect on cart abandonment. In other words, when consumers exhibit the behavior of delaying purchasing products in their online shopping, their probability of abandoning the shopping cart increases. This finding obtained from the research is compatible with previous studies (Negra et al., 2008; Negra & Mzoughi, 2012).

Another finding is the need for research and organization has a positive and significant effect on e-procrastination behavior, and is the most important factor on e- procrastination behavior. In online shopping, shopping carts are used by consumers to store and organize products they want more easily and to search for more advantageous offers. In this research process, consumers may prefer to leave the shopping cart by postponing the purchase, to check the advantages of the products they have added to the cart at different time intervals. This finding is consistent with studies in the literature (Kukar-Kinney & Close, 2010; Negra et al., 2008; Erdil, 2018; Negra & Mzoughi).

Findings showed that the comparison shopping and the need for more information have a positive and significant effect on e-procrastination behavior, and it is the second important factor on e-procrastination behavior. Consumers may prefer to abandon their shopping cart by postponing their purchases because they need more information to compare discounted price expectations with advantageous offers in different channels. Studies in the literature (Azimi et al., 2020; Negra et al., 2008; Negra & Mzoughi, 2012) also support this result.

Finally, emotional indecision has a significant effect on e-procrastination behavior. According to Darpy (2000), indecisiveness is one of the dimensions of consumer procrastination, and in case of indecision, consumer experiences maximum confusion about all the details about shopping and fails to make a decision.

Huang et al. (2018) argued that emotionally indecisive consumers hesitated at the checkout stage after placing products in the shopping cart and left shopping cart for this reason. Therefore, the results obtained from the study are compatible with the studies in the literature (Darpy, 2000; Huang et al., 2018).

In the study, it was also tried to determine the mediating effect of e-procrastination behavior between the variables of comparison shopping and need for more information, the need for

research and organization, emotional indecision and online cart abandonment. Within the framework of the analysis, it was determined that the e-procrastination behavior had a partial mediating role between the need for comparison shopping and more information, the need for research and organization, and emotional indecision and online cart abandonment.

5.1 Theoretical and practical contribution

The results of this research were based on the experiences of users who abandon their shopping carts in online shopping. Research provides empirical evidence for comparison shopping and the need for more information, the need to research and organize, and emotional ambivalence lead to online cart abandonment behavior through e-procrastination behavior. In addition, the results of the study offer some practical and managerial implications. First of all, 86.8% of the consumers who participated in the research stated that they left products in their shopping carts in their online shopping and ended transaction without completing payment stage. It can be said that this result is quite high when compared to cart abandonment rates in the existing literature, which generally focuses on the western context. Considering that the period in which the research was conducted reflects Covid-19 global epidemic period, it can be thought that the result is due to changes in t income levels and consumption habits of consumers in Turkey as well as all over the world. Secondly, as a result of the research, among the most important reasons why consumers abandon products in their carts online, there are too many alternatives and difficulty in choosing, thinking that it exceeds the budget of the relevant month and price of a product. This result supports the first conclusion, too. The fact that e- commerce has become almost a global necessity during the epidemic period has led all retailers to turn to e-commerce and m-commerce applications, and the number of alternatives for the consumer has increased, and this has led to the fact that consumers encounter too many alternatives and have difficulty in choosing. In addition, it was concluded that consumers left their online shopping carts because they thought that they exceeded the budget of the relevant month and product price was high. This result shows that consumers abandon online carts with a focus on budget and price, especially due to income losses in Turkey during the pandemic period. Third, the most abandoned products in online carts are clothing and accessories such as shoes/bags. This can be explained by the fact that consumers stay away from shopping for clothing and accessories since they cannot leave their homes during the pandemic period. Güven (2020) similarly stated that the clothing industry in Turkey is one of the sectors

negatively affected by the global epidemic period. For this reason, it can be suggested that retailers operating in this sector organize more aggressive promotional campaigns to attract consumers. Fourth, it was concluded that consumers abandon their shopping carts when they feel mixed feelings and indecision about the online shopping process. Retailers need to create online environments that reduce the impact of such emotional reactions in shopping environment of consumers who often experience complex emotions along with emotional ambivalence. Because, consumers may show abandonment of their shopping carts due to concerns about the risks of online shopping although they feel positive about purchasing a product. For this reason, it is recommended that retailers develop policies to reduce these risks that consumer is aware of. In this study, it was seen that the behavior of delaying online shopping within the framework of consumers' need for comparison shopping and more information, the need for research and organization, and emotional indecision is effective in consumers' abandoning their online shopping carts. Therefore, online marketers should understand the factors that influence e-procrastination behavior, which is an important precursor to purchase intent and use a variety of selling strategies online.

5.2 Limitations and future research

Despite the practical and theoretical implications described above, the study has some limitations. In the study, data were obtained from consumers who shop online. Therefore, obtained results cannot be generalized for Turkey. No brand or sector was determined in the study. In future studies, comparisons can be made in terms of sectors, and the research can be extended to the mobile environment. Future studies may focus on possible effects of factors such as seller and product uncertainties, return policies, and personal properties on e-procrastination and online cart abandonment.

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