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EXPLAINING THE RELATIONSHIP BETWEEN FEMALE CUSTOMERS' ONLINE FLOW STATE AND LOYALTY THROUGH THEIR SMART PHONE ADDICTION AND BRAND EXPERIENCE

Adnan Veysel ERTEMEL
Istanbul Technical University, Turkey

Mustafa Emre CİVELEK
Antalya Bilim University, Turkey

Edin GÜÇLÜ SÖZER
Istanbul Okan University, Turkey

Mustafa ŞEHİRLİ
University of Health Sciences, Turkey

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Abstract:
This study investigates the relationship between female customers' online flow state and loyalty and the mediating roles of their smartphone addiction and brand experience in this mechanism. To achieve this purpose, data were collected from 507 female customers in Türkiye through a questionnaire survey and analyzed using the structural equation modeling technique. The findings indicated that brand experience mediated the relationship between online flow experience and customer loyalty. Additionally, smartphone addiction mediated the relationship between brand experience and customer loyalty. The analysis revealed that while online flow state significantly influenced brand experience, its direct effect on customer loyalty was insignificant. Moreover, the study identified that smartphone addiction plays a critical role in shaping customer loyalty, especially among young female users. These results emphasize the importance of designing ethical marketing strategies that enhance brand experience while considering the potential risks of smartphone addiction. This study contributes to the literature by being one of the first to examine these variables in an integrated model within the mobile commerce context.

Keywords:
Smart Phone Addiction, Flow State, Brand Experience, Customer Loyalty, Strategic Marketing

JEL Code:
M31

1. Introduction
Smartphones have gradually become a necessity in modern life offering a range of functions including email, text messaging, social media, internet search, photography, shopping, and video gaming (Rosen et al., 2013) to serve various purposes including information seeking, entertainment, and social interaction and messaging (Jeong et al., 2016). Prolonged smartphone usage has escalated to the extent that smartphone addiction has become a widespread global issue in recent years. Furthermore, it is argued that technology addiction and smartphone addiction are engineered by digital platforms (Ertemel and Ari, 2020; Ertemel, 2021; Kuss and Griffiths, 2017). This is achieved through various design features, such as notifications, social media updates, and rewards, that encourage constant use and create a feeling of addiction for many users. Digital businesses are accused of employing these practices to maximize user engagement and, consequently, profit within what is termed the 'attention economy (Daven-port and Beck, 2001). In this economy, be it YouTube, Instagram or WhatsApp, the consumers don't pay for the usage of the

digital platforms. However, the platforms have an indirect monetization model owing to the advertising companies seeking to get consumers' attention. Consequently, e-businesses have a great competition to grab as much attention span of con-sumers as possible in the attention economy. E-commerce websites are no exception to this trend.

This study makes use of a related phenomenon called flow theory, which has been increasingly used by various scholars in related contexts. Flow experience, defined as a state of total immersion and involvement in an activity (Csikszentmihalyi, 1975), is the ideal strategy to appeal to the unconscious of the consumers (Ertemel, 2021), which facilitates a pleasant, joyful state while making them forget about how the time passes by (also known as te-le-presence). Flow experience in online context is also known as online flow state. Therefore, the two terms will be used interchangeably in this study.

Ertemel et al. (2021) previously investigated the relationship of online flow state, brand experience, customer satisfaction and customer loyalty and found out that online flow state has a key role in building customer loyalty. It reveals that while online flow state plays a crucial role in fostering customer loyalty, it does not have a direct effect. Instead, brand experience mediates this relationship. This study aims to explore the relationship between these phenomena by introducing a new dimension: smartphone addiction, a concept closely related to the online flow state and an emerging yet significant concern in mobile consumer behavior. As evidenced by numerous studies in the literature, online flow state has the potential to exacerbate smartphone addiction (Shin and Lee, 2015; Jovicic, 2020; Wang et al., 2020). This study makes a significant contribution to the literature by proposing smartphone addiction as a determinant of customer loyalty, alongside online flow state and brand experience, within the context of mobile phone usage.

The reason why individuals addicted to smartphones develop more customer loyalty has not been clearly explained in a logical manner. However, the reasoning for this can be explained as follows: It's plausible that these a customer loyalty could be shaped by their prolonged exposure to a variety of content, including viral and promotional materials. Furthermore, as problematic smartphone usage does not involve active mind, customer loyalty emerges un-consciously in these individuals (Ertemel, 2021).

Supporting this assertion, Kim and Shin (2016) revealed that smartphone addiction positively impacts technostress and customer loyalty. Although not specifically on mobile commerce setting, an additional study carried out by the same authors found out that smartphone addiction has a positive effect on customer loyalty (Kim and Shin, 2016a). Another study carried out in South Korea found out that among other factors, addiction positively affect customer satisfaction and loyalty (Kim and Shin, 2016b). As such, it's suggested that smartphone addiction plays a role in shaping customer loyalty in the mobile commerce con-text, highlighting the importance of understanding and managing smartphone addiction in mobile commerce setting.

The interrelation of these concepts deserves attention. This is because online flow state is a momentary, transitionary state while, in contrast, smartphone addiction and customer loyalty have rather long term, persisting nature. There are previous studies like Mason et al. (2022) that investigates the relationship between smartphone addiction, flow experience and online compulsive buying behavior (Mason, Zamparo et al., 2022). However, this study is significant in that it contributes to the literature by proposing the role of smartphone addiction as a determinant of customer loyalty in conjunction with online flow state and brand experience in the mobile phone usage context. The interrelationship of these concepts, in time, might shed light into important findings.

The study focuses, specifically on females. The rationale behind this choice is that females reportedly demonstrate more obsessive smartphone usage behavior than their male counter-parts (Lee, Chang, Lin and Cheng, 2014; Demirci & Akın, 2015; Annoni, Petrocchi, Camerini and Marciano, 2021). Park and Lee (2011) confirm this phenomenon with their study by showing that females are more vulnerable to smartphone addiction (Park and Lee, 2011). Randler et al. (2016) have found a similar result on adolescent females (Randler et al., 2016). Some other studies on the subject have concluded with related results (Beranuy, Chamarro, Graner, and Carbonell, 2009; Mohammadi et al., 2015). Kuss and Griffiths (2017) suggest that females may be more likely to use technology for social and communication purposes, while males may be more likely to use it for entertainment and gaming (Kuss and Griffiths, 2017). Otero-Lopez and Villardefrancos (2014) argue that females are more likely to show compul-sive buying behavior via their smartphones. Similarly, Niu and Chang (2014) have found out in e-commerce context that females spend longer periods online and that flow experience is much stronger on female consumers than males (Niu and Chang, 2014). This finding also confirms the results of the previous study conducted by Crutchfield (1955).

The existing studies in the literature on addiction and flow experience didn't consider today's de-facto medium, smartphones, for shopping and addiction behavior. When it comes to flow experience in mobile context, it is particularly more important to create a compelling and immersive flow experience on smartphones than any other medium (Ertemel, 2021).

This study was conducted mainly by focusing on Generation Z consumer segment which is also known as millennials and relatively younger segments of Generation Y. There is evidence to suggest that both generation Z and generation Y are more prone to smartphone addiction compared to older generations. Kwon et al. (2013a) identified a significant correlation between younger age and increased levels of smartphone addiction (Kwon et al., 2013). This suggests that individuals from generation Z and generation Y, who are generally younger than their elder counterparts, may be at a higher risk for smartphone addiction. Kuss and Griffiths (2017) study confirmed this phenomenon by showing that smartphone addiction was signifi-cantly correlated with younger age and higher levels of anxiety and depression (Kuss and Grif-fiths, 2017). This suggests that individuals from generation Z and generation Y, who may be more likely to experience anxiety and depression due to the unique stressors of their age group (such as the COVID-19 pandemic and social media use), may also be at a higher risk for smartphone addiction. This study focuses mainly on women and aims to clarify the role of addictive behavior in building customer loyalty for women. The main question this research seeks to answer is what the role of online flow experience and addictive smartphone usage behavior in shaping brand experience and customer loyalty.

2. Theoretical Framework

The concepts and variables within the scope of the research are discussed under the following sub-headings.

2.1. Online Flow Theory

The flow state refers to a psychological condition in which individuals become fully absorbed in an activity, losing their sense of time and external distractions (Csikszentmihalyi, 1990). In digital environments, flow emerges when users perceive a balance between their skills and the task requirements, resulting in deep concentration and intrinsic enjoyment. When applied to online and mobile commerce contexts, flow is characterized by focused attention, a sense of control, and effortless interaction with the platform (Hoffman & Novak, 2009).

Prior research emphasizes that online flow can significantly influence user behavior. Webster et al. (1993) demonstrated that individuals who experience flow tend to remain longer on digital platforms and engage more actively with tasks. In e-commerce settings, flow enhances users' emotional involvement with the website or application, creating a pleasurable experience that may trigger repeated interactions (Bilgihan et al., 2014). Therefore, flow functions not only as a temporary affective state but also as a behavioral driver that supports deeper engagement and future usage intentions.

2.2. Brand Experience

Brand experience encompasses the multidimensional responses that consumers form as a result of direct or indirect interaction with a brand. These responses can be sensory, emotional, cognitive, or behavioral (Brakus et al., 2009). In online commerce environments, users evaluate brand experience through elements such as screen design, content clarity, ease of use, and the emotional tone of the communication.

Positive brand experiences create meaning beyond functional benefits. They contribute to the formation of psychological attachment, influencing not only how consumers evaluate the brand but also how they act toward it (Zarantonello & Schmitt, 2010). In mobile commerce, where interactions occur through small screens and instant feedback loops, brand experience becomes even more critical. A seamless, aesthetically pleasing, and consistent experience strengthens consumer perceptions and encourages repeat use (Iglesias et al., 2020).

2.3. Smartphone Addiction

Smartphone addiction is characterized by the inability to regulate or limit smartphone use, leading to excessive engagement that disrupts daily routines (Kwon et al., 2013). The addictive nature of smartphones is reinforced by constant notifications, instant gratifications, and the convenience of performing multiple tasks through a single device.

The literature shows that high levels of smartphone addiction are associated with impulsive decision-making and increased time spent on mobile shopping applications (Lin et al., 2015). Kim et al. (2019) suggest that compulsive smartphone use also heightens emotional dependence on digital environments. As a result, smartphone addiction becomes a relevant psychological variable in explaining how consumers interact with brands in mobile commerce contexts.

2.4. Relationships Among Flow, Brand Experience, and Customer Loyalty

Existing research confirms that flow contributes to positive brand experience by increasing users' emotional involvement and perceived enjoyment (Bilgihan et al., 2014). When consumers experience flow during online shopping, their attention and emotions shift from transactional motives (e.g., "I need to buy something") toward experiential motives (e.g., "I enjoy interacting with this platform").

Brand experience, in turn, plays a crucial role in loyalty formation. Yoo and Donthu (2001) highlight that intense and positive brand experiences lead consumers to develop favorable attitudes toward the brand, recommend it to others, and choose it over alternatives. Thus, brand experience typically acts as a mediating mechanism between flow and customer loyalty.

Despite the importance of smartphone use in digital commerce, very few studies have examined whether smartphone addiction alters or mediates these relationships. Particularly among young female consumers—who often represent the most active segment in mobile shopping—addictive smartphone use may intensify engagement with the platform and amplify loyalty outcomes.

2.5. Research Model and Hypotheses

2.5.1. Online Flow State and Smartphone Addiction

Nakamura and Dubin (2015) suggest that engaging in flow-inducing activities can result in addictive tendencies, including smartphone addiction, because the intrinsic rewards associated with the flow state reinforce usage behavior. Smartphone activities often provide clear goals, instant feedback, and opportunities for deep concentration, which are characteristics that facilitate the flow experience and may lead to compulsive use.

Supporting this idea, Mulla et al. (2022) demonstrated that flow—particularly the emotional aspects associated with perceptual distortion and enjoyment—strongly influences addictive behaviors (Mulla, Jha, Dawande, & Patil, 2022). They argue that smartphone addiction may arise for several reasons: (1) users may experience flow during smartphone use, leading to prolonged use; (2) the pleasurable nature of flow reinforces continued smartphone engagement; (3) flow increases the gratification derived from smartphone use, prompting users to seek the experience repeatedly; and (4) flow can distort time perception, encouraging users to spend more time on their devices.

Similarly, Chou and Ting (2003) found that flow—defined by the presence of enjoyment and perceptual distortion—significantly contributes to addictive tendencies. Flow experiences may overlap with characteristics of behavioral addiction, such as mood regulation or exploratory behavior, making the relationship between flow and addiction complex. Although their research focused on cyber-game addiction, the conceptual link between flow and addictive behaviors applies to other forms of technology use, including smartphones (Meydan & Şen, 2011).

Chen et al. (1998) further argue that flow can cause users to become deeply immersed in smartphone activities, resulting in excessive use. Chou and Ting (2003) also show that flow can increase repetitive behaviors, which may ultimately lead to addiction in online contexts. Walker (1998) posits that excessive flow experiences may contribute to addiction, potentially leading to detachment from one's surroundings and causing negative consequences in daily life (Tse et al., 2016; Wanner et al., 2006; Wu, Scott, & Yang, 2013). Based on the theoretical framework and prior research, the following hypothesis is proposed:

H1: Online Flow State has a positive effect on Smartphone Addiction

2.5.2. Online Flow State and Customer Loyalty

The literature provides extensive evidence that experiencing flow during mobile commerce activities increases the likelihood of customer loyalty (Bilgihan et al., 2014). Zhou et al. (2010) demonstrated that websites capable of creating memorable flow experiences enhance user loyalty, identifying online flow as the strongest predictor of loyalty in the context of social networking sites. Hausman and Siekpe (2009) also suggest that when consumers enter

a flow state—characterized by challenge, concentration, enjoyment, and perceived control—they are more inclined to remain loyal in online shopping environments (Chen, Wigand, & Nilan, 1998). In a similar vein, Koufaris (2002) found that enjoyment derived from a website increases the user's intention to revisit it.
Su et al. (2016) further support this relationship by revealing that flow experiences in mobile gaming applications positively affect emotional responses, which ultimately translate into loyalty behaviors. More recent findings indicate that flow during live-streaming shopping also predicts customer loyalty (Ye & Ching, 2023). Additionally, the authors' earlier work shows that online flow indirectly contributes to customer satisfaction and loyalty by enhancing the overall customer experience on e-commerce websites (Ertemel et al., 2021).
Taken together, these studies indicate that experiencing flow not only shapes consumer emotions and behavior during online shopping but also plays a significant role in strengthening customer loyalty.
Based on these insights, the following hypothesis is proposed:
H2: Online Flow State has a positive effect on Customer Loyalty

2.5.3. Online Flow State and Brand Experience
Bridges and Florsheim (2008) argue that e-commerce consumers increasingly seek richer and more engaging experiences when shopping online. According to Webster et al. (1993), when individuals enter a flow state, they become deeply absorbed in the activity to the point that their self-awareness diminishes. Online flow, which reflects both subjective and behavioral responses, is likely to influence all dimensions of brand experience—sensory, affective, intellectual, and behavioral (Hoffman & Novak, 1996; Hoffman & Novak, 2009).
For example, when flow occurs on a brand's website, heightened concentration and involvement can intensify sensory and intellectual brand experiences. In parallel, the enjoyment associated with flow can amplify affective brand experiences, while behavioral brand experience may be enhanced as users engage more with brand-related tasks or explore product-related content. Through flow, online shopping environments can simulate real-life interactions with a brand, reinforcing consumers' relationship with the brand in both cognitive and emotional terms.
Grounded in this conceptual and empirical background, the following hypothesis is proposed:
H3: Online Flow State has a positive effect on Brand Experience

2.5.4. Smartphone Addiction and Customer Loyalty
The relationship between smartphone addiction and customer loyalty has been increasingly explored in recent research. Prior studies indicate that individuals with higher levels of smartphone addiction tend to demonstrate stronger loyalty tendencies (Park & Lee, 2011; Kim & Shin, 2016; Harun, Soon, Kassim, & Sulong, 2015). Kim and Shin (2016) reported that smartphone addiction is positively associated with customer loyalty in online shopping settings. Likewise, Lee et al. (2014) found that individuals exhibiting symptoms of smartphone addiction display higher levels of loyalty within mobile commerce environments. These findings suggest that consumers who are more attached to or dependent on their smartphones are also more likely to develop loyalty toward mobile commerce brands.
Based on these insights, the following hypothesis is proposed:
H4: Smartphone Addiction has a positive effect on Customer Loyalty

2.5.5. Brand Experience and Customer Loyalty
Consumers generally seek pleasurable experiences and avoid discomfort, and they require stimulation to prevent boredom (Cacioppo & Petty, 1982). From this perspective, brand experiences provide value across multiple dimensions, which can ultimately foster customer loyalty. In line with Brakus et al.'s (2009) brand experience conceptualization, the sensory, affective, and intellectual dimensions reflect consumers' emotional and cognitive responses to a brand, while the behavioral dimension reflects observable actions, such as using the brand or recommending it to others.
Even though brand experiences are often momentary and spontaneous, these short episodes accumulate over time and gradually form a more enduring perception of the brand, which in turn enhances loyalty (Oliver, 1997; Shim, Forsythe, & Kwon, 2015). Thus, brand experience contributes to long-term brand loyalty (Brakus et al., 2009). Additionally, Aaker and Keller (1990) demonstrated that loyal consumers tend to have more favorable attitudes toward the brand and can recall and recognize it more easily—factors that are closely linked to loyalty. More recent

evidence from Nilowardono (2022) shows that brand experience positively influences customer loyalty, particularly in digital contexts where website quality shapes user experience.
In light of these arguments, the following hypothesis is proposed:
H5: Brand Experience has a positive effect on Customer Loyalty

2.5.6. Brand Experience and Smartphone Addiction

Only a limited number of studies have examined the relationship between brand experience and smartphone addiction specifically within mobile environments. Zhou et al. (2010) found that when users have a positive brand experience, they are more likely to perceive smartphones as useful and easy to operate. This increased perceived usefulness strengthens engagement with the device, contributing to higher levels of smartphone addiction. However, additional research is still required to better understand how brand experience relates to smartphone addiction in different contexts and user groups.
Based on this reasoning, the following hypothesis is proposed:
H6: Brand Experience has a positive effect on Smartphone Addiction
Table 1 shows the hypotheses proposed in light of the conceptual framework and literature review. The theoretical model and associated hypotheses are presented in Table 1.

Table 1. Proposed Hypothesis

No	Content and Direction
1	Online Flow State has a positive effect on Smart Phone Addiction.
2	Online Flow State has a positive effect on Customer Loyalty.
3	Online Flow State has a positive effect on Brand Experience.
4	Smartphone Addiction has a positive effect on Customer Loyalty.
5	Brand Experience has a positive effect on Customer Loyalty.
6	Brand Experience has a positive effect on Smart Phone Addiction.

Theoretical Model and Hypothesis Proposed

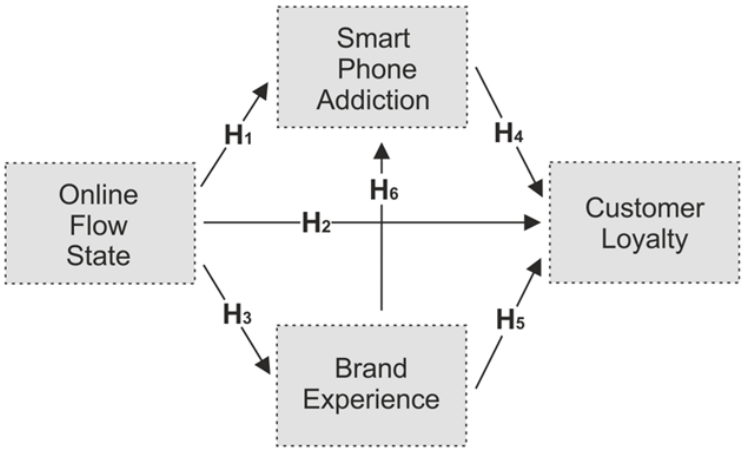

Figure 1. Research Model

3. Method

3.1. Research Design and Participants

This research employed a cross-sectional design where the data were collected through a questionnaire survey. The sample was determined through convenience sampling technique. A total of 507 female customers participated in this research. Of participants, 13 (3%) had a doctoral degree, 106 (21%) had a master's degree, 347 (68 %) had a bachelor's degree, 41 (8 %) had a highschool degree.

3.2. Data Collection Instruments

3.2.1. Online Flow State Scale

A scale developed by Bilgihan et al. (2013), adapted Webster et al., (1993) and adapted to Turkish context by Alperer, S. (2005) has been used. The scale comprised four dimensions and eight items.

3.2.2. Customer Loyalty Scale

A scale developed by Yoo and Donthu (2001) has been used. The scale comprised one dimensions and three items.

3.2.3. Brand Experience Scale

A scale developed by Brakus et al. (2009) has been used. The scale comprised four dimensions and 12 items.

3.2.4. Smart Phone Addiction Scale

A scale developed by Kwon et al., (2013) and adapted to Turkish context by Şata and Karip (2017) has been used. The scale comprised five dimensions and 10 items.

Each item on the scales have been scored over five points (1: completely disagree, 5: completely agree).

3.3. Data Collection Procedure

The field study was carried out between August 1st to August 31st, 2023. More than 650 were given out, and 507 legitimate surveys from different Turkish female consumers were gathered. The scales were taken directly from extant works. Since the study was not conducted on students of a specific university and since personal information was not asked in the survey form, there is no need for a written ethical consent. Therefore, the verbal consent of the subjects was found sufficient.

3.4. Data Analysis Strategy

In order to examine extremely complicated multiple variable models and to identify direct and indirect impacts among variables, the structural equation modeling method was selected. To establish the convergent validity, confirmatory factor analyses were first carried out. To assess the scales' reliability and discriminant validity, respectively, composite reliability and AVE values were computed. In the AMOS statistics program, the structural equation modeling method was used to evaluate the assumptions. The theoretical model's hypotheses have been tested using structural equation modeling, a multivariate sta-tistical technique (Meydan and Şen, 2011). This method was chosen to reduce measurement errors and was applied to comprehend the indirect and direct impacts in the theoretical model (Civelek, 2018). The analyses were carried out using the statistical software SPSS and AMOS.

3.5. Validity and Reliability Tests

To prepare the data for confirmatory factor analysis (CFA), first the exploratory factor analysis (EFA) was employed (Anderson and Gerbing, 1988). After principal component anal-ysis, 23 components were still present. CFA was then used to determine convergent validity. The CFA's fit indices values were deemed adequate (i.e., CFI = 0.943, IFI = 0.944, RMSEA = 0.054) (Civelek, 2018). The loads of factors in the CFA Results are shown in Table 2. As can be shown in Table 3, average extracted variance values were close to or greater than the threshold (i.e., 0.5) (Byrne, 2010). These findings demonstrated the constructs' convergent validity. The square roots of AVE values for each variable were calculated to determine dis-criminant validity. The diagonals in Table 3 show the AVE values' square roots. The correla-tion values in the same column are all less than the square roots of the AVE values. This im-plies that the validity of the discriminant is established (Civelek, 2018). Each structure's re-liability was evaluated independently. Composite reliability and Cronbach's scores are close to or higher than the suggested cutoff criterion of 0.7 (Fornell and Larcker, 1981).

Table 2. Confirmatory Factor Analysis Results

Variables	Items	Standardized Factor Loadings	Unstandardized Factor Loadings
Smart Phone Addiction (SPA)	SPA39	0.737	1
	SPA36	0.774	1.041
	SPA38	0.774	1.024
	SPA35	0.757	1.041
	SPA37	0.719	0.974
	SPA34	0.702	0.953
	SPA31	0.594	0.872
	SPA30	0.565	0.754
	SPA33	0.679	0.968
	SPA32	0.497	0.700
Brand Experience (BEX)	BEX12	0.774	1
	BEX09	0.671	0.849
	BEX10	0.622	0.781
	BEX18	0.738	0.883
	BEX14	0.690	0.914

	BEX15	0.688	0.875
	BEX20	0.664	0.812
Customer Loyalty (CLY)	CLY29	0.715	1
	CLY28	0.754	0.975
	CLY27	0.600	0.816
Online Flow State (FLS)	FLS07	0.636	1
	FLS06	0.815	1.123

$p<0.01$ for all items

Descriptive statistics of the dimensions, Cronbach α and composite reliabilities, average variance extracted values and Pearson correlations among the dimensions are indicated in Table 3.

Table 3. Construct Descriptives, Reliability and Correlation

Variables	1	2	3	4
1. Smart Phone Addiction	(.686)			
2. Brand Experience	.285*	(.694)		
3. Customer Loyalty	.273*	.512*	(.693)	
4. Flow State	.192*	.562*	.187*	(.731)
Composite reliability	.897	.866	.733	.693
Average variance ext.	.470	.482	.480	.534
Cronbach α	.899	.872	.725	.676

*$p < 0.05$ Note: Values in diagonals are the square root of AVEs

4. Results

The correlation values representing the relationships between the variables are presented in Table 3. Structural equation modeling (SEM) was used. Since SEM is a confirmatory method, in this research, it is used to confirm the hypotheses (Civelek, 2018). The goodness of fit indices was used to determine how well the structural model fit. The

structural model's fit index results were deemed to be adequate (i.e., χ^2/DF = 2.410, CFI = 0.946, IFI = 0.947, RMSEA = 0.053) (Civelek, 2018).
Note: χ2/DF = 2.410, CFI = 0.946, IFI = 0.947, RMSEA= 0.053 (1)
Results of the SEM Analysis in Figure 2.

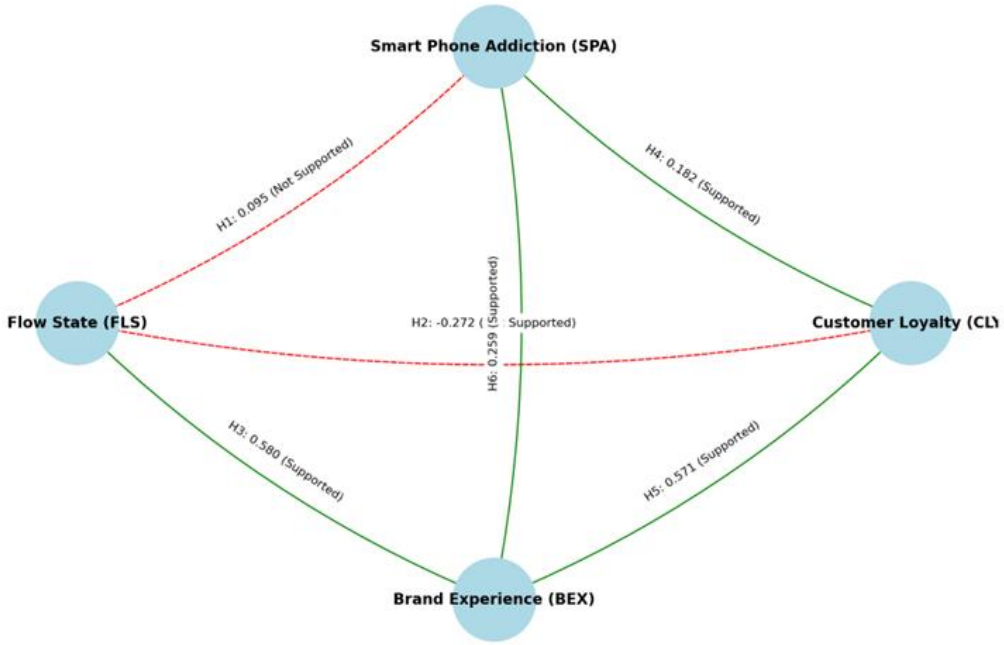

Figure 2. AMOS Structural Equation Model (SEM) with Hypotheses Support Indicated

H1 hypothesis has been rejected. This implies FLS do not impact SPA. H2 hypothesis has been rejected. As seen in Table 3, although the correlation value between these two constructs is positive, the model resulted a negative value. This implies FLS do not affect CLY directly. Relationship between these constructs transmitted through BEX and SPA. H3 hypothesis has been accepted. This implies that FLS have a direct effect on BEX. H4 hypothesis has been accepted. This indicates that SPA has a direct effect on CLY. H5 hypothesis has been accepted. This implies that BEX has impact on CLY. H6 hypothesis has been accepted. This implies that BEX has a direct effect on SPA.
Addiction and the flow experience have mainly been studied in the literature in the cyber-gaming context (Fornell and Larcker, 1981, 88-92). However, there is a shortage of studies that investigate this phenomenon in the e-commerce context except for the one undertaken by Niu and Chang (2014), which was done purely on the e-commerce context. This study is significant in the sense that it is the first to investigate this phenomenon specifically in the smartphone addiction and mobile commerce context. Furthermore, this study takes a more integrated approach to incorporate brand experience and customer loyalty and uses structured equation modeling to investigate the roles of smartphone addiction and brand experience in the effect of online flow experience on customer loyalty.

5. Discussion

Regarding the inconclusive results, the analysis of the impact of online flow state on smartphone addiction did not yield statistically significant results. However, previous studies in the literature confirmed the positive effect of flow experiences on addictive behavior in different contexts. Chou and Ting (2003) argued the positive effect of online flow experience on addictive behavior through the repetitive consumption in the online gaming context. Similarly,

Walker (1998) investigated the effect of flow experiences on addictive behavior and suggested that when there is an optimal quantity of flow experiences, this leads to addictive behavior. Another important implication of this study is related to the effect of Online Flow State on Customer Loyalty. The results of the analysis showed that there is no significant effect of Online Flow State on Customer Loyalty. Previous studies in the literature reported positive and significant effects of flow experiences on customer loyalty. In their study, Zhou et al. (2010) reported the positive and significant effects of unforgettable flow experiences on the loyalty of customers in the web context and identified unforgettable flow experiences as the main source of user loyalty in social networking sites. Similarly, Hausman and Siekpe (2009) suggested that flow experiences are expected to support customer loyalty under specific conditions in the e-commerce context. A similar confirmation of the positive and significant effect of flow experiences on customer loyalty is reported by Khang et al. (2013) in the online gaming context (Tse et al., 2016).

The discrepancies in this study's findings regarding the effects of online flow state on smartphone addiction and customer loyalty may be attributed to the demographic composition (female users) of the sample and the specific context of mobile phone usage. Therefore, the direct effects of online flow state on both smartphone addiction and customer loyalty in the mobile phone usage context remain inconclusive and warrant further investigation in different demographic contexts.

An important finding of this study is related to the mediating effect of Brand Experience on the effect of Online Flow State on Customer Loyalty. The results of the analysis showed that there is a strong, positive, and significant effect of Online Flow State on Brand Experience. This result is in line with the findings of previous studies in the literature, which suggest that Online Flow State is related to the sensory, affective, behavioral, and intellectual dimensions of brand experience (Venkatesh et al., Zhou et al., 2010). Additionally, Brand Experience is found to have a strong, positive, and significant effect on Customer Loyalty. This finding of the study is also in line with the findings of previous studies in the literature (Schmitt, 2009; Su et al., 2016). Thus, the results of the analysis lead us to conclude that brand experience plays a mediating role in the relationship between Online Flow State and Customer Loyalty since there is no significant direct effect of Online Flow State on Customer Loyalty. This mediating effect of Brand Experience on the effect of Online Flow State on Customer Loyalty is in line with previous studies in the literature (Su et al., 2016). However, this study contributes to the literature by confirming this mediation effect in the female mobile phone user context.

Another important finding of this study is related to the mediating effect of Brand Experience on the effect of Online Flow State on Smartphone Addiction. In addition to the strong, positive, and significant effect of Online Flow State on Brand Experience, the results of the analysis show that there is a positive and significant effect of Brand Experience on Smartphone Addiction. This result is in line with the findings of previous studies in the literature, which confirm the positive and significant effect of Brand Experience on addictive behavior. In their study, Kwon et al. (2013a) reported the significant effect of experience on smartphone addiction in the mobile commerce context (Kwon et al., 2013). Similarly, Zhou et al. (2010) reported the same significant effect of brand experience on smartphone addiction through the perceptions of usefulness and ease of use.

A final important contribution of this study is related to the significant effect of Smartphone Addiction on Customer Loyalty among young female users. This is consistent with previous research on technology addiction and its impact on consumer behavior (Kuss and Griffiths, 2017). The aforementioned research highlights females' more intensive social media use and the pressure to be constantly connected among this group. Young females may also be more susceptible to the psychological rewards and reinforcement provided by technology and social media, such as the feeling of social acceptance and validation through likes and comments on social media posts (Rajesh and Draper, 2022). One possible explanation for the relationship between addictive behavior and customer loyalty is that individuals who are highly addicted to their smartphones may be more likely to engage in activities that strengthen their loyalty to a particular brand or company. For example, they may spend more time browsing and purchasing products on a brand's app. However, it is important to note that the relationship between addictive behavior and customer loyalty in this study was not necessarily causal. Other factors, such as personal values or social influence, may also help determine an individual's customer loyalty level. Further research is needed to fully understand the complex factors that contribute to customer loyalty.

The findings also support the idea that Online Flow State and Brand Experience are crucial factors in building customer loyalty, as these variables were significantly correlated with addictive behavior in the sample. Upon analyzing the relationship between the flow experience and addictive behavior, we can characterize addictive behavior as a kind of rational addiction. That is, the study implies that the temporal flow experience doesn't affect

addictive behavior directly. However, it gradually enhances the brand experience. As consumers' brand experience with the brand increases, it gradually becomes a preference, which paves the way to addictive behavior, which could also be described as rational addiction. The rejection of H1 and H2 hypotheses has the following implications: Brand Experience may possibly play a mediating role in the relationship between Online Flow State and Customer Loyalty. At the same time, Brand Experience may possibly play a mediating role between Online Flow State and Smartphone Addiction. The fact that the significant correlations seen in Table 3 disappear in the integrated model run on SEM implies this. Disaggregating these mediator roles among the constructs is the subject of future research. These findings are also supported by the extant literature. Shim et al. (2015) previously found a similar mediating effect of Brand Experience between Online Flow State and Customer Loyalty (Ertemel et al., 2021). However, this study is significant in that, to the authors' knowledge, it's the first one to investigate all of these variables together.

Additionally, it is important for companies to be aware of the potential negative consequences of promoting smartphone addiction in their customers. While building customer loyalty through technology may be effective in the short term, it may also lead to negative outcomes such as decreased productivity, social isolation, and negative impacts on physical and mental health (Kuss and Griffiths, 2017).

It is essential to address the higher-order aim of modern marketing, which extends beyond merely maximizing profit. Modern marketing should prioritize consumer welfare and embrace societal marketing principles that focus on ethical, responsible practices. It is imperative for businesses to recognize that fostering long-term customer loyalty should not come at the expense of consumer well-being. The concept of societal marketing emphasizes the importance of balancing company profits with consumer needs and societal well-being. In this context, while flow experiences can enhance brand engagement, it is crucial for marketers to design these experiences in a manner that promotes healthy usage patterns rather than addiction. This approach aligns with the broader objective of creating value for consumers, businesses, and society at large. Businesses should aim to cultivate customer loyalty by delivering authentic value and engaging experiences that do not exploit addictive tendencies.

This research contributes to the understanding of how flow experiences and addiction behaviors intersect within the realm of mobile commerce. It underscores the need for further studies exploring how brands can ethically engage consumers without fostering dependency. By integrating ethical considerations into marketing strategies, businesses can contribute to a healthier digital environment while maintaining customer loyalty, thus achieving a more balanced and socially responsible approach to marketing. Therefore, it may be beneficial for companies to consider alternative approaches to building customer loyalty, such as through strong customer service and high-quality products, rather than relying solely on technology addiction as a means of retaining customers.

Once again, these findings highlight the critical importance of brand experience in building customer loyalty. The results also highlight that smartphone addiction, which is more prevalent especially among females in today's world, is an important precedent to customer loyalty. Overall, the findings of this study suggest that addictive behavior may be an important factor in building customer loyalty among young females. These results highlight the potential impact of addictive behavior on consumer behavior and the importance of considering this factor in marketing strategies.

Regarding managerial implications, the results of the study signify the necessity for businesses to conduct more research regarding mobile applications and addictive behavior for businesses. After all, brands need to develop new strategies, considering these new concepts. As a result, e-businesses must consider online flow state and brand experience from a strategic standpoint. This is because addictive behavior is especially prevalent among the young population and the young population undoubtedly dominates the digital consumer market in the upcoming years. The results also imply that focusing on a better brand experience is key for businesses to succeed in the modern digital era. Furthermore, online flow state and smartphone addiction concepts are going to be increasingly important in digital mediums as new and more appealing metaverse-like digital mediums will enable more intuitive, enhanced experiences that put consumers in a flow state. Such metaverse-like experiences are expected to be much more widespread in the future. Therefore, it could be argued that the aforementioned phenomenon is going to be of critical importance for brands to build loyalty among their customers. Some brands like Gucci and H&M have already started to open virtual stores in the metaverse (Mashable, 2022; UToday, 2022). The results of this study scientifically support the viability of such practices.

The limitation of this study is that it was conducted in only one country, so its results will not be sufficient to generalize the identified relationships. Therefore, the study needs to be applied repeatedly to women in different age

groups in different countries. Taking this limitation into consideration in future research, selecting different female samples and repeating the research would be beneficial to clarify the issue. Future research could also continue to explore the role of smartphone addiction in building customer loyalty, as well as the potential risks and bene-fits of this phenomenon.

6. Conclusion

This study examines the impact of online flow state, brand experience, and smartphone ad-diction on customer loyalty as well as the effect of online flow state on smartphone addiction and brand experience. The research offers three key contributions to the existing literature: it identifies the positive and significant influence of smartphone addiction on customer loyalty, reveals the mediating role of brand experience in the relationship between online flow state and both customer loyalty and smartphone addiction. The research presents some inconclusive findings relative to prior studies. Thus, the results of the analysis lead us to conclude that Brand Experience plays a mediating role in the relationship between Online Flow State and Smartphone Addiction since there is no significant direct effect of Online Flow State on Smartphone Addiction. This is also an important contribution of this study by measuring and confirming the mediation effect of Brand Experience on the effect of Online Flow State on Smartphone Addiction in the female mobile phone user context. Moreover, to the best of the authors' knowledge, the study is the first one to investigate all these effects together. The findings support the idea that Online Flow State and Brand Experience are crucial factors in building customer loyalty, as these variables were significantly correlated with addictive behavior in the sample. Upon analyzing the relationship between the flow experience and addictive behavior, we can characterize addictive behavior as a kind of rational addiction. That is, the study implies that the temporal flow experience doesn't affect addictive behavior directly. However, it gradually enhances the brand experience. As consumers' brand experience with the brand increases, it gradually becomes a preference, which paves the way to addictive behavior, which could also be described as rational addiction.

Overall, this study adds to the growing body of research on the role of addictive behavior in consumer behavior and highlights the importance of considering this factor in marketing strategies.

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