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Mobile shoppers' response to Covid-19 phobia, pessimism and smartphone addiction: Does social influence matter?

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ABSTRACT

Because of the Covid-19 pandemic, there has been a variety of changes identified in customers' shopping behaviours, and development of new practices as a response to the crisis. The purpose of this research is to examine the effects of Covid-19 phobia, and news exposure on individuals' psychological states, and their resulting mobile shopping behaviour. Relying upon the Activate, Belief and Consequences (ABC) model of the Cognitive-Behaviour Theory, this research applies the partial least square structural modelling (PLS-SEM) methodology for analysing the data from 302 mobile shoppers from India. The results confirm that Covid-19 phobia and Covid-19 news exposure are substantial determinants of consumers' smartphone addictive use and pessimism, which in turn affect mobile shopping frequency. Additionally, social influence is found to play a vital role in moderating mobile shopping frequency for individuals, who experience smartphone addiction. The current study is a pioneering effort to examine the influence of Covid-19-induced phobia on consumers' psychological states and their subsequent impact on their mobile shopping frequency. The study provides several contributions to theory and practice within the areas of technology use and mobile shopping in particular.

1. Introduction

Covid-19 pandemic has seriously damaged world economy, critically undermining travel, tourism and hospitality sectors and retail trade (Prentice et al., 2020; Mehroliya, Algarasamy & Solaikutty, 2020; Kur-san-Milakovic, 2021; Nayal et al., 2021; Sharma et al., 2021). However, some contexts have been deemed increasingly important, such as the electronic markets, especially highlighting mobile devices as the means for obtaining products and services (Brem et al., 2021). The pandemic has changed consumer buying behaviour in both traditional and electronic commerce space (Eger et al., 2021). The Covid-19 pandemic has made consumers reconsider their familiar shopping habits or even learn newer ones. Due to strict containment measures and protocols, consumers have had to move to online shopping, home deliveries or cashless payments, which they had not considered before (Pantano et al., 2020). Likewise, retailers have been investing in their transition towards the mobile provision of goods with the aim to ease the consequences of the restrictions hugely impacting shopping behaviour (Leone et al., 2020; Škare et al., 2021). The Covid-19 crisis has generated a massive use of

mobile devices and mobile shopping (m-shopping) as a mechanism for individuals' communication, information and dealing with the emergency (Drouin et al., 2020; Jaspal and Nerlich 2020). Accordingly, in times of Covid-19 confinement, most countries have marked, growth in the size of its digital market of 43%, in 2020, compared to 2019. Smartphone use has escalated to an incredible 94% of the time spent online, skipping in this way the traditional channel of accessing the Internet and jumping directly to mobile computing (Comscore, 2020).

The previous literature has emphasized that for companies to achieve customers with a greater consumer lifetime value, it is of crucial importance to implement multichannel and omnichannel activities, giving individuals the possibility for seamless access to products and services (Neslin and Shankar, 2009; Rodríguez-Torrico et al., 2020b; Wang et al., 2015; Mishra et al., 2021). Moreover, the necessity precisely for the mobile channel integration and frequent usage has been highlighted, providing the opportunity for a ubiquitous experience that enables consumers to engage independently on the temporal or spatial situation (Natarajan et al., 2017; Schadler and McCarthy, 2012; Shankar et al., 2010).

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It is important to underline that, in times of crises, people consider smartphones as indispensable and functional (Cumiskey and Hjorth, 2018; Mazer et al., 2015; Mehra et al., 2020). In effect, during Covid-19 pandemic individuals express worry to find the digital services interrupted and regard as problematic the incidental impossibility to communicate (Anderson and Vogels, 2020; Drouin et al., 2020).

Furthermore, in situations when people feel unwell, lonely, or bored, conditions that have been repeatedly reported by individuals due to the Covid-19 social distancing (Hougaard et al., 2020), shopping could be seen as the way for coping, to alleviate negative states and make people feel more connected (Rice et al., 2020). A comprehensive appraisal of current literature on m-shopping resulted in identifying few scholarly works which have examined m-shopping phenomenon by decoding individuals' psychological motive through the lens of behavioural reasoning theory, stimulus-organism-response theory, and stress-coping theory (Chen et al., 2019; Chopdar and Balakrishnan, 2020; Gupta and Arora, 2017). Whereas the application of Cognitive-Behaviour Theory to understand the purchase behaviour of m-shopping app users is scant. The ABC model related to the Cognitive-Behaviour Theory is an apt theoretic approach which embodies the impact of specific events on an individual's psychological beliefs and their consequent behavioural response. Accordingly, with all the previous in mind, the objective of this study is focused on exploring the extent to which the increase of m-shopping in India since the pandemic is determined by individuals' psychological conditions incited by the Covid-19 crisis. Based on the various issues delineated from extant literature, we seek to address: (a) Do phobia associated with Covid-19 and exposure to Covid-19 related news affect consumers psychological states of smartphone addiction and pessimism? (b) Whether consumers' psychological beliefs, like smartphone addiction and pessimism, influence their m-shopping frequency on the app? and (c) Does social influence moderate the relationship between consumers beliefs and m-shopping frequency? Overall, the present study makes three key contributions to the current body of knowledge related to consumer behaviour on the use of m-shopping applications. Firstly, this research is one of the earliest works to identify and assess the role of Covid-19-induced phobia/fear, and Covid-19 news on the m-shopping behaviour of app users. Secondly, it highlights the role of the user's psychological beliefs as antecedents of m-shopping

frequency amongst app shoppers. Thirdly, it sheds light on the influence of social influence on individuals' beliefs (smartphone addiction and pessimism) in fostering greater intensity of m-shopping.

The remainder of the paper is arranged in the following manner. Section 2 presents the theoretical background, followed by the research model and the development of hypotheses in Section 3. Section 4 presents the methodology of research followed for the proposed investigation. The results obtained from the data analysis are presented in section 5. The ensuing section 6 provide a discussion of the findings, numerous implications for theory and practice, and limitations and future research opportunities. Lastly, section 7 concludes the paper.

2. Theoretical background

The necessity to encourage consumer towards continuous adaptation and stable actions has been always an ongoing challenge in marketing (Davies et al., 2020; Varey, 2010), which has been even more emphasized with the new circumstances due to the Covid-19 pandemic. That is why, customers' quality of life and all stakeholders' well-being, must be seen as a key portion of sustainable marketing, which should not be neglected (Lunde, 2018). In fact, in the need for a unifying approach, marketing research has largely combined psychology and economics as the means for exploring consumer behaviour. Nevertheless, scholars call on the necessity for a more integrating conceptualisation and research in marketing, a combined approach, where concepts would be observed from different perspectives and envisioned from new theoretical viewpoints (Davies et al., 2020). Consequently, importance rises here to contemplate on the transformation in consumers' practices and alternative forms of consumption, as might be related to the introduction of new technology, such as m-shopping, while relying on interdisciplinary approaches with wider focus (Davies et al., 2020; Magaudda, 2011). One such model that could be adapted to explore the Covid-19 pandemic's consequences on consumers' psychological states and subsequent behavioural responses, with the final objective to contemplate m-shopping as an alternative form of the most expanded physical shopping in India, is the ABC model which is explained as follows.

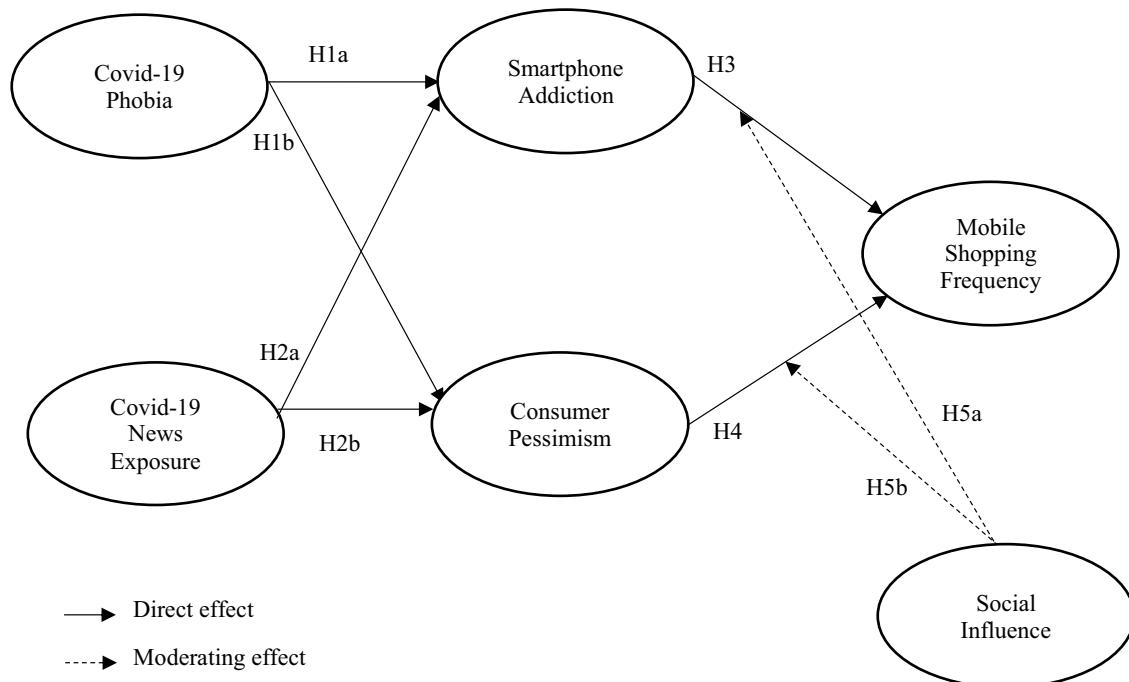


Fig. 1. Research model.

2.1. The ABC model in times of covid-19

The ABC model of the Cognitive-Behaviour Theory and Rational-Emotive Therapy describes individuals' responses as consequences of their personal beliefs triggered by precise events. Indeed, the activating event (A), coming from the individual or the environment, shapes people's beliefs (B) about that event and they further exert an impact on the consequences (C) in form of individuals' behavioural responses (Ellis, 1991).

The activating events in individuals' lives could be external (e.g. unpleasant news about the Covid-19 situation) or internal (e.g. a positive or negative thought or perception of the Covid-19 happenings), and might provoke cognitive, emotional and behavioural functional or dysfunctional consequences, given their interrelation with people's rational (e.g. reality-based, logical, flexible) or irrational (e.g. non-pragmatic, absurd, rigid) beliefs, on which then people form their actions (David et al., 2010; Dryden and David, 2008; Ellis, 1991; Soflau and David, 2019). In other words, the behavioural response of the person is a consequence of his/her intention to eliminate the activating event. Therefore, a change in people's thinking will help decrease disturbance and contribute to a healthier personality (Ellis, 1991).

The ABC model has been found especially useful for addressing psychological problems, for instance, paranoia, anxiety, compulsive buying disorder or similar obsessive conducts (Ellis, 1991; Nabeshima and Klontz, 2015; Soflau and David, 2019), issues that have been recurrently emerging since the Covid-19 isolation measures (Elhai et al., 2020; Xiong et al., 2020). Nonetheless, this approach has not received farther attention out of the health frames and for therapy purposes, although it has proven to thoroughly explain the cognitive, emotional, and behavioural processes that individuals go through (David and Szentagotai, 2006; Ellis, 1991; Soflau and David, 2019). Similarly, up until now, the related research has been focused rather on the emotional consequences provoked basically by the irrational beliefs, than on exploring the cognitive outcomes in the ABC model (Soflau and David, 2017; Soflau and David, 2019). Besides, the literature claims that it is of substantial importance to identify the activating event, on whose foundation the extent and meaning of the later relationships between beliefs and consequences will be built (Soflau and David, 2017). Identifying this gap, which overlooks the simultaneous influence of both, individuals' emotional and cognitive circumstances, especially determined by crises incidents such as the current related to Covid-19, this approach has a research potential for improved understanding of consumers' personal conditions and shopping practices during this pandemic. The previous research on the rational and irrational beliefs as part of the ABC model has described rational beliefs with preferences, acceptance and catastrophe or frustration tolerance, while irrational beliefs with high exigency and low tolerance of catastrophe or frustration (David et al., 2010; Soflau and David, 2019). Likewise, we consider the rational beliefs in our model to be designated by the smartphone addiction and the irrational by consumers' pessimism.

3. Research model and hypotheses development

The conceptual framework proposed for the current study is presented in Fig. 1 below. Covid-19 phobia and news exposure are posited as drivers of smartphone addiction and consumer pessimism in the model, consequently affecting mobile shopping frequency. Social influence plays the role of moderator in the study.

3.1. Hypotheses development

3.1.1. Covid-19 phobia

It has been confirmed that individuals' cognitive processes are identified by life events and their reaction to these happenings coming from the environment (Gonzalez-Prendes and Resko, 2012). Precisely, when these circumstances are related to some illness, individuals tend to

feel worried, anxious, and troubled with the consequences of the illness (Liu, 2020). Equally, when facing danger or emergency provoked by an epidemic, people experience different negative psychological conditions, such as might be fear, phobia, or panic (Kim and Song, 2017).

The persistent and excessive fear of the Covid-19 virus that individuals are experiencing has been classified as a specific phobia (Corona phobia) and is contemplated as a special form of anxiety disorders (American Psychiatric Association, 2013; Arpaci et al., 2020). However, as stated, individuals not necessarily have to experience a high level of anxiety and fear; it is sufficient for these sensations just to be unbalanced, so that it can be considered as a phobia triggered by the environmental conditions, such as the Covid-19 pandemic impact. Correspondingly, individuals recognize negative cognitive, affective, and behavioural responses to the Covid-19 pandemic, described by physical, mental, and emotional dysfunction that disrupts their usual activities and increasingly incite phobic reactions (Arpaci et al., 2020; Duan and Zhu, 2020; Li et al., 2020; Liu, 2020; Wang et al., 2020).

As a result, individuals are expected to progressively report problems with physiological, social, and economic effects (Rothan and Byrareddy, 2020). Given that, individuals presenting higher anxiety, fear, or concerns, due to the Covid-19 pandemic, are considered prone to develop a more intense attachment to and uncontrollable use of new technologies' devices and tools, and more precisely, problematic smartphone use (Drouin et al., 2020; Elhai et al., 2020). Besides, the same phobic sensations and states are expected to mark more pessimistic patterns and negative thoughts regarding people's weakness and vulnerability provoked by the current crisis (Hougaard et al., 2020). Finally, following the premise of the ABC model, asserting the influence of the internal activating event on individuals' rational and irrational beliefs related to the situation, we propose the following hypothesis:

H1. Individuals' Covid-19 related phobia will increase their (a) addiction to smartphones and (b) pessimism.

3.1.2. Covid-19 news exposure

When individuals encounter themselves in a risky health situation, with the aim to protect themselves as much as possible, it heightens their necessity to stay informed about the evolution of the disease, so that correct protection could be employed (Wiederhold, 2020). Accordingly, given the lack of face-to-face communication imposed by the Covid-19 isolation, consumption of digital media and tools has increased because of individuals' need for information and communication (Drouin et al., 2020).

But, precisely this exposure to new technological devices and content during the Covid-19 pandemic has shown to provoke stress, anxiety, and addictive behaviours amongst the public (Arpaci et al., 2020; Dai et al., 2020). Similar behavioural responses have been determined in previous critical situations and now, during the ongoing Covid-19 pandemic. In fact, individuals who are exposed to more information related to the disease, especially when delivered digitally, report higher level of negative sensations, including health-related concern, nervousness and even distrust (Norr et al., 2014; Wiederhold, 2020). All media, but mostly the digital forms, since the pandemic, have developed into particularly significant sources of information, communication and news related to Covid-19 (Liu, 2020). Especially, smartphones have been used regularly and intensely for Covid-19 information exchange and communication amongst networks of families, friends, and colleagues, sharing personal experiences, feelings, and opinions regarding the pandemic, forming an essential part of people's daily activities (Basu and Dutta, 2008; Liu, 2020).

But this practice to use smartphones for accessing the information and for satisfying the need for a constant communication makes individuals use their smartphones more heavily and create certain dependence on these devices (Drouin et al., 2020). Individuals exposed to more intensified Covid-19 news are expected to display more negative reactions associated with risk, distraction, and tension (Liu, 2020; Markman, 2020). Moreover, the excess of information makes people feel

helpless, powerless, and pessimistic, while perceiving the situation as catastrophic (Wiederhold, 2020). Therefore, in accordance with the aforementioned and attending the ABC model describing the external event as an activator of rational and irrational beliefs, it is assumed that:

H2. Individuals' exposure to Covid-19 news will increase their (a) addiction to smartphones and (b) pessimism.

3.1.3. Smartphone addiction during covid-19

Due to Covid-19 pandemic and the intensified necessity for information and communication, the perception of smartphones as indispensable devices in people's lives have expanded the already noteworthy attachment and consumption people showcase with their gadgets (Drouin et al., 2020; Rodríguez-Torrico et al., 2020). The use of new technologies has been, similarly, encouraged by health specialist as the means to improve individuals' psychological condition, by sharing sensations and relieving tension (American Psychological Association, 2020; Wiederhold, 2020).

However, the line between habit and dependence can be a thin one, converting smartphone use into an uncontrollable practice. Smartphone addiction describes the repetitive use of smartphones, provoked by individuals' need to handle their smartphones in their everyday activities, and the discomfort related to the impossibility to use it (Abouzahra et al., 2014; Rodríguez-Torrico et al., 2020). Previous literature treating smartphone addiction had set that the higher the addiction, the higher the smartphone usage frequency (Konok et al., 2016; Rodríguez-Torrico et al., 2020), a fact that has been confirmed as a growing tendency during the Covid-19 isolation (Drouin et al., 2020; Wiederhold, 2020).

Regarding m-shopping frequency specifically, it has been found to be highly determined by previous information regarding the product, service, supplier, channel, or associated needs expected to be satisfied with the purchase (Ha and Stoel, 2004; Natarajan et al., 2017). Moreover, m-shopping frequency is influenced by smartphone-related attitudes and behaviours (Chen, 2013). Hence, this could result in making the more dependant users, who are assumed to demand more interaction with the device, to be more prone to increase their m-shopping frequency (Kang and Kurtzberg, 2019). In fact, it has been confirmed that customers who adopt m-shopping have an increased order size and m-shopping frequency (Wang et al., 2015). Lastly, in agreement with the ABC model assuming that individuals' behaviours are directly influenced by their rational beliefs, the next hypothesis is proposed:

H3. Individuals' addiction to smartphones during Covid-19 will increase their m-shopping frequency.

3.1.4. Pessimism during covid-19

Consumers' pessimism is referred to as a lack of confidence in general economic market conditions and their financial conditions; it has been found as an important factor in purchasing behaviour, because the unfavourable purchasing situation (product/service, channel, conditions) has great importance in critical economic circumstances (Lymperopoulos et al., 2010). Consequently, consumers' intention to purchase is affected by the economic situation (Chaniotakis et al., 2009), meaning that if customers perceive the economic situation as negative, it could lead them to search for ways to purchase products and services at lower prices and greater convenience in terms of health protection. Such changes in customer purchase behaviour are especially important for the Covid-19 crisis, which is progressively damaging the global economy (Albu et al., 2020). Consistent with this and having in mind the characteristics of the mobile channels which offer no physical contact, no commute, less waiting time, faster shopping, lower prices etc., it is understandable why it became to be the most preferred channel in India since the Covid-19 pandemic was proclaimed (Comscore, 2020).

Subsequently, when individuals experience health crisis provoked by diseases outbreaks, such as this one, they adopt coping behaviours, which sometimes are preventive, but often they become excessive and convert into compulsive behaviours, like compulsive shopping as a reaction to Covid-19 (Lopes et al., 2020). Related to paranoid, sceptical,

and negative thinking, increased shopping activities can be found in times of pandemic, when people fear for their health (Jaspal and Nerlich, 2020). In line with the ABC model proposition, it could be expected that individuals' irrational beliefs will determine their actual behaviours. Therefore, it could be anticipated that consumers with a higher level of pessimism would more frequently purchase by smartphone since the beginning of the Covid-19 pending, as summarized in the resulting hypothesis:

H4. Individuals' pessimism because of Covid-19 Pandemic will increase their m-shopping frequency.

3.1.5. Social influence

Social influence, also denoted as subjective norms and social norms, in the context of m-shopping is "the degree to which users perceive that others (e.g., family and friends) believe they should use mobile shopping apps" (Venkatesh et al., 2003, p. 451). Social influence has been often studied as the impact of individuals' interaction with their social network (Rogers, 2010), especially important in influencing smartphone adoption and m-shopping behaviours (Chopdar et al., 2018; Chopdar and Sivakumar, 2019; Lu et al., 2017; Wei et al., 2009; Yang et al., 2012). Additionally, research during this pandemic has emphasized the influence that social relations have on people's feelings, perceptions, attitudes, and behaviours (Reeves et al., 2020a, 2020b). While social distancing has put a limit to face-to-face interaction, individuals have reached for their families, friends, and colleagues, not just for information, but likewise for communication and companionship, all through new technologies, devices, and tools (Drouin et al., 2020). Subjective norms have been found to correlate strongly with heavy use of social media mobile apps, and mobile phone attachment amongst users (Chen, 2020; Rodríguez-Torrico et al., 2020). Furthermore, social influence has been noted to be a strong predictor of repeated use of m-payments and m-shopping in past research (Chopdar and Sivakumar, 2019; Lu et al., 2017). It has been observed that, consumers perceive mobile shopping not only as an individual activity, but also to connect and interact with other people as a form of social shopping (Fuentes and Svingstedt, 2017). Similarly, prior literature has recommended observing the influence of individuals' smartphone addiction through the perspective of the social influence, given their capacity to influence m-purchasing behaviours (Rodríguez-Torrico et al., 2020). Based on the previous findings, the authors argue that under the condition of high social influence, smartphone addiction will have a stronger effect on m-shopping frequency.

Besides, social influence has made people get closer together in moments of complete isolation (Larson et al., 2020). Hence, social communication can be very helpful for individuals manifesting higher levels of stress and anxiety in times of crisis inhibiting physical contacts. Social influence through a diverse set of new technologies has proven to be of crucial importance for individuals' psychological states during the current Covid-19 pandemic (Drouin et al., 2020). It can act as a support system and produce favourable results like increasing individual resistance to deal with stressful situations and improve physical and mental health (Thoits, 2011). Moreover, information sharing over social mediums has been noted to positively influence consumers intention to buy (Bugshan and Attar, 2020). Consequently, social influence is expected to reduce individual's pessimism and its subsequent impact on m-shopping frequency during the ongoing Covid-19 pandemic. Thus, the following hypotheses are proposed:

H5. Social influence will (a) strengthen the relationship between individuals' addiction to smartphones and their m-shopping frequency, and (b) weaken the relationship between individuals' pessimism and their m-shopping frequency.

Table 1
Sample demographics and app usage characteristics (N = 302).

Characteristics	Value	Frequency	Percentage
Gender	Female	128	42.4
	Male	174	57.6
Age	18–24 years	52	17.2
	25–34 years	88	29.1
	35–44 years	101	33.4
	45–54 years	41	13.6
	55–64 years	20	6.6
Education	Completed school	1	3.0
	Diploma	46	15.2
	Graduate	120	39.7
	Post-graduate	121	40.1
	Others	14	4.6
Employment status	Employed	226	74.8
	Unemployed before Covid-19	68	22.5
	Unemployed due to Covid-19	8	2.6
Profession	Freelancer	6	2.0
	Government employee	70	23.2
	Homemaker	7	2.3
	Private jobs	110	36.4
	Self-employed	40	13.2
	Student	61	20.2
	Unemployed	8	2.6
Marital status	Single	47	15.6
	In a relationship	81	26.8
	Married	160	53.0
	Separated	2	0.7
	Divorced	7	2.3
	Widow/widower	5	1.6
Smartphone ownership	Yes	302	100
	No	-	-
Shopping apps use	Yes	302	100
	No	-	-

4. Research methodology

4.1. Sample participants and data collection

The target population for this study was active mobile shoppers from India who use various m-shopping applications to purchase goods and services online. To fit the objectives of our study, we restricted our sample to those users who have prior experience of using shopping applications on their smartphones and/or tablets. We did not consider online shopping made over the desktop, mobile websites, and social commerce platforms. An online questionnaire survey was designed to collect data for empirical validation of our proposed conceptual framework. A list of e-mails of verified mobile shoppers was collected from a service provider in India. The gathered database was divided based on demographic variables like gender, age, education, and occupation to match the sample with the digital shoppers' population in India. Around 3000 emails were sent during the last quarter of 2020 with the online survey link. We employed a screening question at the start of the questionnaire to restrict the sample to experienced users of shopping apps. Those failing to meet the criterion were straightaway taken to the "Thank You" page of the survey. At the end of the survey period of ten days, we received a total of 370 responses. The response rate of 12.3% is much better than online surveys in previous studies (Aldás-Manzano et al., 2009; Ha and Stoel, 2004). Out of the total cases, 25 were non-users of m-shopping applications, resulting in invalid for our study. Additionally, 43 responses were removed due to incomplete responses and non-engagement, thereby 302 cases were considered for further analysis. Table 1 shows the detailed demographic information about the sample participants of this study. As can be inferred from it, our sample is quite representative in terms of various demographics like gender, age, education, and profession of users and covers enough variance to predict the endogenous construct in our study. Moreover,

G*power analysis was conducted to ratify the sample size requirements for this study, as recommended by (Hair et al., 2016). The results indicated a minimum sample of 129 for our research model, at a 95% confidence interval and 0.15 effect size. The validity of the current sample N = 302 was confirmed, showing a power level of 99.9% with the previous parameters for four predictors, thus exceeding the recommended 80% (Cohen, 1988; Faul et al., 2007). We also included multiple scale formats in the survey questionnaire to minimize common method bias in this study. As well, items in the survey were segregated based on the constructs measured to eliminate proximity bias (Podsakoff et al., 2012).

4.2. Scales

The online questionnaire was divided into two sections. The first part consisted of various questions about the demographic details and app usage related information. In the second part, 33 items were used to measure 9 key constructs present in our study. Seven-point Likert type scales were used with scores varying from 1 = Strongly disagree to 7 = Strongly agree as anchor points to measure all the latent variables, excluding for Covid-19 news exposure and m-shopping frequency constructs. A single item measure from (Elhai et al., 2020) was used to assess Covid-19 news exposure on a scale ranging from 1 = not at all to 7 = quite a lot. A five-point scale ranging from "much less than before" to "much more than before" was developed to measure the m-shopping frequency of users during Covid-19 isolation. The Covid-19 phobia scale is a second-order construct, composed of four sub-constructs. The items were adapted from previous literature to improve the reliability as well as the validity of measures. A pilot study was not considered as most of the items have been applied and validated in a multifarious context in prior studies. But expert opinions were taken from two domain experts prior to the start of data collection to check the relevance and enhance the content validity of all items. Appendix A exhibits all the constructs along with their respective literature sources.

5. Data analysis and results

We employed the Partial Least Square Structural Equation Modelling (PLS-SEM) approach to test and validate the proposed hypotheses in the current study. SmartPLS software tool (Version 3.2.3) was employed to perform path modelling analysis (Ringle et al., 2015). PLS-SEM is chosen due to its fewer limiting assumptions on the normality of data distribution. Moreover, it emphasizes predicting the endogenous variables in the model (Hair et al., 2012). Furthermore, compared to the covariance-based approach, it can easily handle formatively measured variables and higher-order models (Hair et al., 2017). Yoon (2009) has stated that the PLS method is appropriate while checking the moderating effect, as well, concurrently with the main paths in the model. The above advantages substantiate the application of this method in the context of this study. In line with the suggestion by experts (Anderson and Gerbing, 1988; Dash and Paul, 2021), we examined the measurement model, followed by the structural relationships proposed in our framework. Statistical analyses were conducted to discern the probable occurrence of common method bias in this research. Based on the recommendations by (Podsakoff et al., 2003), Harman's one-factor test was performed, which revealed that 21.53% of the variance is explained by one single factor extracted from an exploratory factor analysis involving all the variables. We also checked the inter-construct correlations to find whether they exceed the threshold limit of 0.90 (Bagozzi et al., 1991). As the highest inter-construct correlation value was found to be 0.602, we concluded that common method bias is not a critical issue in this data set.

Table 2
Measurement model analysis for multi-item reflective constructs (first-order).

Construct	Items	Mean (SD)	Loadings	Average variance extracted	Composite reliability	Cronbach's alpha
Covid-19 news exposure* (CNE)	CNE	5.74 (0.84)	1.000	1.000	1.000	1.000
Consumer pessimism (CP)	CP1	4.89 (1.37)	0.846	0.749	0.899	0.833
	CP2	4.94 (1.14)	0.891			
	CP3	4.80 (1.47)	0.858			
Smartphone addiction (SA)	SA1	4.93 (1.18)	0.811	0.680	0.914	0.882
	SA2	5.00 (1.37)	0.830			
	SA3	5.12 (1.46)	0.844			
	SA4	4.98 (1.42)	0.822			
	SA5	4.89 (1.51)	0.816			
Covid-19 Phobia: Psychological (PSY)	PSY1	5.04 (1.01)	0.717	0.522	0.867	0.817
	PSY2	5.03 (1.08)	0.712			
	PSY3	4.97 (1.11)	0.788			
	PSY4	4.81 (1.08)	0.777			
	PSY5	4.91 (1.04)	0.720			
	PSY6	4.33 (1.19)	0.609			
Covid-19 Phobia: Psycho-somatic (SOM)	SOM1	2.83 (1.41)	0.802	0.665	0.908	0.874
	SOM2	3.09 (1.39)	0.808			
	SOM3	2.98 (1.41)	0.816			
	SOM4	3.65 (1.65)	0.851			
	SOM5	3.08 (1.49)	0.798			
Covid-19 Phobia: Economic (ECO)	ECO1	4.87 (1.39)	0.806	0.690	0.899	0.849
	ECO2	4.68 (1.37)	0.887			
	ECO3	4.62 (1.37)	0.877			
	ECO4	4.26 (1.55)	0.745			
Covid-19 Phobia: Social (SOC)	SOC1	5.12 (1.29)	0.742	0.557	0.863	0.802
	SOC2	5.30 (1.30)	0.789			
	SOC3	4.62 (1.22)	0.764			
	SOC4	4.81 (1.36)	0.744			
	SOC5	4.39 (1.31)	0.690			
Social influence (SI)	SI1	4.07 (1.46)	0.888	0.777	0.913	0.867
	SI2	4.23 (1.32)	0.865			
	SI3	4.26 (1.34)	0.891			
Mobile shopping frequency* (MSF)	MSF	2.77 (1.35)	1.000	1.000	1.000	1.000

Note: SD denotes standard deviation; *The estimation of the loadings, AVE, CR and Cronbach's alpha is not applicable for single-item constructs (Hair et al., 2014).

Table 3
Construct correlation matrix vs Heterotrait-Monotrait ratio.

Correlations	<i>Heterotrait-Monotrait ratio</i>									
	ECO	CNE	SA	CP	PSY	SI	SOC	SOM	MSF	
ECO	0.831	<i>0.108</i>	<i>0.116</i>	<i>0.469</i>	<i>0.185</i>	<i>0.119</i>	<i>0.721</i>	<i>0.284</i>	<i>0.430</i>	
CNE	-0.104	1.000	<i>0.418</i>	<i>0.067</i>	<i>0.249</i>	<i>0.024</i>	<i>0.163</i>	<i>0.089</i>	<i>0.055</i>	
SA	0.022	0.397	0.824	<i>0.154</i>	<i>0.171</i>	<i>0.139</i>	<i>0.175</i>	<i>0.258</i>	<i>0.496</i>	
CP	0.406	-0.059	0.129	0.865	<i>0.385</i>	<i>0.041</i>	<i>0.591</i>	<i>0.306</i>	<i>0.447</i>	
PSY	0.157	0.197	0.121	0.329	0.723	<i>0.073</i>	<i>0.232</i>	<i>0.268</i>	<i>0.313</i>	
SI	0.084	0.004	0.127	0.022	0.011	0.881	<i>0.164</i>	<i>0.112</i>	<i>0.078</i>	
SOC	0.602	-0.117	0.144	0.493	0.178	0.073	0.747	<i>0.288</i>	<i>0.473</i>	
SOM	0.245	-0.042	0.223	0.266	0.225	0.094	0.248	0.815	<i>0.501</i>	
MSF	0.395	0.055	0.467	0.410	0.293	0.086	0.427	0.468	1.000	

Notes: Top diagonal values (Italic) refer to the Heterotrait-Monotrait Ratio between the variables; bottom diagonal values present the values of the correlation matrix; square root of AVE is presented in the diagonal (bold).

ECO = economic; CNE = Covid-19 news exposure; SA = smartphone addiction; CP = consumer pessimism; PSY = psychological; SI = social influence; SOC = social; SOM = psycho-somatic; MSF = m-shopping frequency.

5.1. Measurement model evaluation: first-order constructs

First, the reliability and validity of all the first-order reflective¹ measures employed in our study were examined. The results are presented in Table 2 below. The Cronbach's alpha and the composite reliability (CR) values were all above the threshold limit of 0.70, thereby indicating excellent indicator reliability for all the constructs. All the factor loadings were greater than 0.70, except the PSY6 item from the psychological indicator of the phobia second-order construct and the

SOC5 item from the social indicator of the same construct. But, following the recommendations by (Hair et al., 2016), they were kept for further analysis as both the loadings were found to be statistically significant and their deletion did not increase the CR of the respective constructs. Then, the average variance extracted (AVE) estimates were observed to be more than the minimal requirement of 0.50. The above outcomes confirmed the convergent validity of all the constructs.

Next, to empirically demonstrate that all the constructs are distinct from each other, discriminant validity was assessed. Table 3 shows the square root of the AVEs more than the inter-construct correlations (Fornell and Larcker, 1981). Next, the Heterotrait-Monotrait ratio of the correlations was checked, as suggested by (Henseler et al., 2015). The results shown uphold discriminant validity of all the reflective constructs, as all the scores were less than 0.85. The cross-loadings table in Appendix B likewise supports the above findings.

¹ The decision on the designation of reflective and formative constructs was made following the recommended procedure to correctly interpret variables, observing their theoretical conceptualization (Diamantopoulos, 2010; Diamantopoulos & Siguaw, 2006).

Table 4
Measurement model evaluation for second-order construct.

Constructs	Items	Scale	Convergent validity	VIF	Weights	t-value	Sig.
Covid-19 phobia scale (C19P-S)	Psychological	Formative	0.733	1.073	0.389	4.311***	0.000
	Psycho-somatic						
	Economic						
	Social						
				1.120	0.262	2.870**	0.004
				1.596	0.143	1.115ns	0.265
				1.606	0.631	6.521***	0.000

Notes: ns = not significant; ** $p < 0.01$; *** $p < 0.001$.

Table 5
Results of hypotheses testing.

Hypotheses and paths	Standardized path coefficient (β)	t-value	Confidence interval	Results
<i>Main effects</i>				
H1a: C19P-S → SA	0.209***	3.668	[0.098, 0.320]	Supported
H1b: C19P-S → CP	0.566***	11.958	[0.474, 0.655]	Supported
H2a: CNE → SA	0.402***	7.546	[0.296, 0.502]	Supported
H2b: CNE → CP	-0.046ns	1.118	[-0.128, 0.033]	Unsupported
H3: SA → MSF	0.400***	9.459	[0.316, 0.484]	Supported
H4: CP → MSF	0.385***	9.001	[0.300, 0.470]	Supported
<i>Moderating effects</i>				
H5a: SI x SA → MSF	0.176***	3.598	[0.086, 0.278]	Supported
H5b: SI x CP → MSF	-0.007ns	0.150	[-0.097, 0.090]	Unsupported

Notes: C19P-S = covid-19 phobia scale; SA = smartphone addiction; CP = consumer pessimism; CNE = Covid-19 news exposure; MSF = *m*-shopping frequency; SI = social influence; ns = not significant; *** $p < 0.001$ (2-tailed).

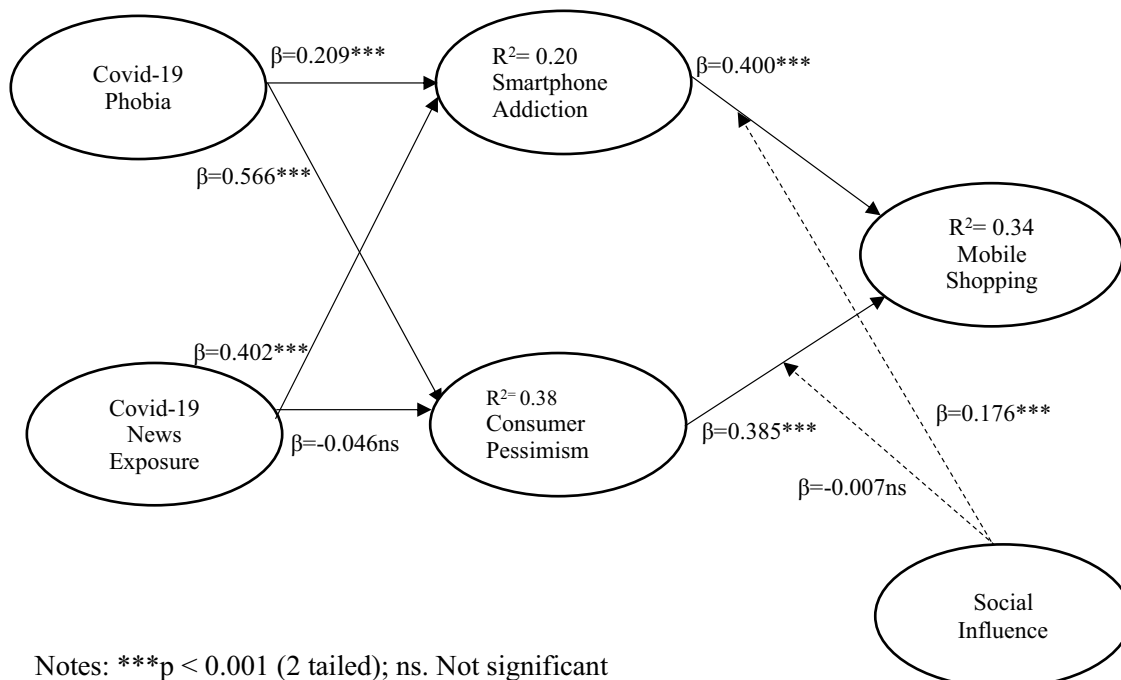
5.2. Measurement model evaluation: second-order constructs

Covid-19 phobia scale was modelled as a second-order formative construct involving four first-order reflective constructs. A two-stage approach was carried out to assess the psychometric properties of the higher-order construct, as recommended by (Ringle et al., 2012). First,

the convergent validity of the formative constructs was assessed by conducting a redundancy analysis (Chin, 1998). It yielded a path coefficient of 0.733 for the formatively measured construct of the phobia scale which is higher than the specified value of 0.7 indicating convergent validity (Hair et al., 2017). Next, the variance inflation factor (VIF) values for all the lower-order dimensions were much below the threshold mark of 3.30 (Diamantopoulos and Sigauw, 2006), allowing to discard multicollinearity issues in this research. Finally, we ran a bootstrapping procedure with 5000 subsamples to check the relevance and significance of the outer weights. All the weights were statistically significant except for the economic indicator, but in accordance with suggestions by (Hair et al., 2017), it was retained, as its outer loading was greater than 0.50 and statistically significant. Table 4 illustrates the above results.

5.3. Structural model assessment

Prior to the structural model assessment, we checked for multicollinearity amongst the latent variables by examining the inner VIF values. As per the recommendations of (Hair et al., 2011), a VIF value below 5 indicates no multicollinearity. The maximum VIF value amongst all was observed to be 1.606, indicating a lack of multicollinearity. Next, the bootstrapping procedure was performed with 5000 subsamples and 302 cases to find out the significance of the relationships between various constructs in our model (Henseler et al., 2009). The results from the hypotheses test are presented in Table 5. Covid-19 phobia was observed to have a strong positive correlation with both smartphone addiction and pessimism of mobile shoppers, thereby supporting hypothesis H1a and H1b. Next, Covid-19 related news



Notes: *** $p < 0.001$ (2 tailed); ns. Not significant

Fig. 2. Structural model results. Notes: *** $p < 0.001$ (2 tailed); ns. Not significant.

exposure had a strong correlation with smartphone addiction, thus validating H2a. But contrary to the proposed relationship, the effect of Covid-19 news exposure on consumer pessimism was observed to be insignificant. Hence, hypothesis H2b was rejected. Smartphone addiction and consumer pessimism were noted to be significant drivers of m-shopping frequency of app users. Consequently, the empirical results substantiated both the hypothesis H3 and H4.

Next, we evaluated the moderating impact of social influence on the association between smartphone addiction and m-shopping frequency, and consumer pessimism and m-shopping frequency. The two-stage approach of moderation was applied, as it is the preferred method when the path model has formative constructs and yields a higher level of statistical power compared to alternate approaches (Hair et al., 2016). The interacting effect of social influence and smartphone addiction on m-shopping frequency was found to be significant, thereby confirming hypothesis H5a. Whereas, social influence did not have a robust moderating effect on the path between consumer pessimism and m-shopping frequency, so hypothesis H5b was not supported. The coefficient of determination (R^2 values) for smartphone addiction, consumer pessimism and m-shopping frequency were noted to be 0.200, 0.386 and 0.342 respectively, which indicates low to moderate predictive power for the model, but quite substantive with regard to studies on consumer behaviour (Hair et al., 2016). The f^2 statistic is further calculated as $[R^2_{included}-R^2_{excluded}]/[1-R^2_{included}]$ to examine the strength of the relationship between an exogenous and endogenous construct specified in the model. An f^2 value of 0.02, 0.15, and 0.35 shows small, medium, and large effect sizes, respectively (Cohen, 1988). The effect size of smartphone addiction and consumer pessimism on mobile shopping frequency was noted to be 0.26 and 0.19, respectively, thereby indicating a moderate impact. Moreover, Covid-19 news exposure was found to be the strongest driver of smartphone addiction with an effect size of 0.21, whereas the effect size of Covid-19 phobia on consumer pessimism was observed to be the largest with 0.62. We had also taken gender, age, and education of respondents as control variables in this study. The impacts of gender ($\beta = 0.042$; $p > 0.1$) and education ($\beta = 0.058$; $p > 0.1$) on shopping frequency were insignificant, whereas effect of age ($\beta = 0.225$; $p < 0.001$) was significant. Overall, we achieved a reasonably good model fit for our proposed framework, as evident from the standardised root mean square residual (SRMR) value of 0.09 (Henseler et al., 2014). The structural model results are depicted in Fig. 2.

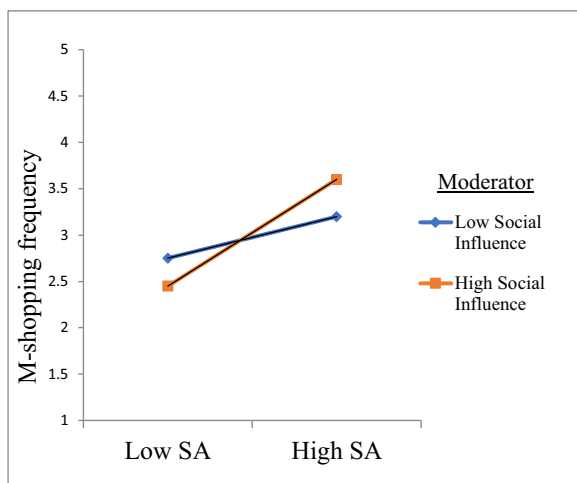


Fig. 3. Interaction effect of SI and SA on m-shopping frequency.

6. Discussion

6.1. Discussion of findings

Based on the ABC model, this study attempts to ascertain the role of the Covid-19 pandemic on consumers' psychological states and beliefs and their consequent impacts in shaping their m-shopping behaviour. An online questionnaire survey was designed to collect data for empirically validating the conceptual framework that includes direct and moderating relations amongst the constructs. Out of the total 8 hypotheses proposed, all were empirically validated except for 2.

Strong support was found for hypothesis H1a, which posited that Covid-19 induced phobia would heighten smartphone addiction amongst users during the isolation period. When users suffer more anxiety, stress, and fear due to the ongoing event of Covid-19, they display a greater tendency towards compulsive dependence and use of their smartphones. It is similar to the findings by (Kong et al., 2020), who have observed a strong correlation between Covid-19 induced social anxiety on smartphone dependence. As people have been confined to their homes for months due to the lockdown restrictions imposed by the government, they have become more addicted to the usage of smartphones for performing various activities. Next, in support of hypothesis H1b, Covid-19 phobia was found to exert a robust positive effect on consumer pessimism. It suggests that consumers with a higher degree of Covid-19 phobia are expecting negative outcomes like price increase in future and are more pessimistic about meeting their financial needs. Our findings are akin to (Huebner and Arya, 2020), who have noted that Covid-19 has resulted in a pessimistic outlook amongst young people, amplifying their uncertainties and worries about the future.

Additionally, it was observed that Covid-19 news exposure is positively associated with smartphone addiction amongst mobile shoppers, hence confirming H2a. It shows that increased exposure to Covid-19 news has magnified user's intensity of addiction towards smartphones as they indulge in sharing and acquiring supplemental information on the pandemic on online and social media platforms. It is analogous to the recent findings by (Hodes and Thomas, 2021), which indicate that the Covid-19 pandemic has significantly increased screen time and mobile attachment amongst iPhone users. But counter to the proposed hypothesis H2b, the effect of the Covid-19 news exposure on consumer pessimism was found to be insignificant. Our observations are dissimilar to the findings by (Binder, 2020), who noted that consumers following Coronavirus news more closely are likely to have higher inflation expectations and a pessimistic view of the economic conditions. One plausible explanation for this could be the fact that consumers' pessimism was limited to the perception of the economic situation, where the Covid-19 news have a wider range, including health, political, economic, environmental, social issues.

Next, the empirical findings reveal a strong, favourable effect of smartphone addiction on the frequency of shopping on mobile app platforms, supporting H3. It signifies that mobile users who are highly dependant on their smartphones and use them excessively are more prone to shop frequently over m-shopping applications. Similar findings by (Rodríguez-Torrico et al., 2020) have highlighted the positive impact of mobile phone attachment on the user's intention to purchase travel services over mobile devices. The ubiquitous nature of mobile devices, along with the fast and convenient mode of shopping on mobile applications, makes it a logical consequence for users who are addicted to their smartphone use.

Further, an interesting finding gleaned from the current study is the strong positive correlation between consumer pessimism and m-shopping frequency to ratify hypothesis H4. As per the reports from a global survey, consumer sentiments have taken a dip amidst the turbulent times of the Covid-19 pandemic, which has made them more mindful about their spending (Charm et al., 2020). But based on the information from our sample participants, we observe that even though consumers are pessimistic about the economy and worried about their future

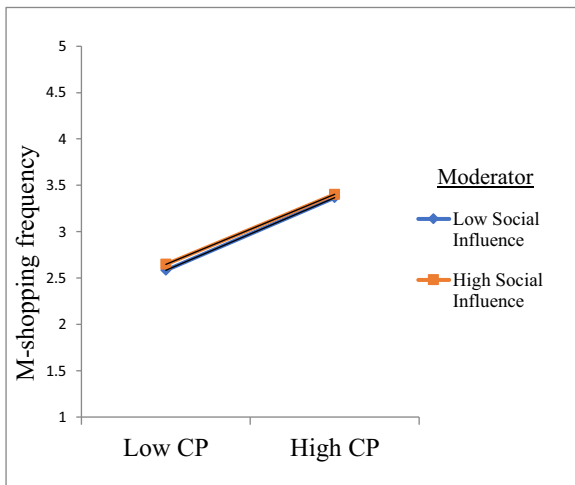


Fig. 4. Interaction effect of SI and CP on m-shopping frequency.

financial health, they are engaged in a greater frequency of m-shopping during the Covid-19 isolation period. The probable reasons for this may be because they perceive m-shopping as a safer and more convenient alternative to the physical or online modes of purchase, for instance (Rodríguez-Torrío et al., 2020). Moreover, various in-app promotions, deals and discounts offered, make the mobile apps a good value for money proposition for m-shoppers. There is also the likelihood that consumers indulge in more frequent m-shopping as a form of retail therapy to cope with the ongoing Covid-19 crisis (Jaspal and Nerlich, 2020).

One more major finding of this research is the significant role of social influence as a moderator on the relationship between smartphone addiction and m-shopping frequency. Empirical evidence indicates that social influence strengthens the positive effect of smartphone addiction on m-shopping frequency. Notwithstanding that prior studies have evinced the role of social influence on mobile purchase behaviour, none have examined its moderating effect on the association between smartphone addiction and m-shopping frequency to the best of authors' knowledge. As presented in Fig. 3, high smartphone addiction results in a greater frequency of m-shopping when such behaviour is endorsed by friends, peers, and other members of society. Lastly, Fig. 4 shows a lack of moderation over the path between consumer pessimism and m-shopping frequency. It can be noted that social influence slightly dampens the relationship between consumer pessimism and m-shopping frequency. This could be happening as a result of the consumer pessimism inciting concern about unemployment and personal finances (Binder, 2020), possibly leading consumers to limit their spending.

6.2. Theoretical and practical implications

This study makes four significant contributions to the extant literature. First and foremost, despite the tremendous growth of m-shopping across the globe, there is a minimal understanding of the impact of the novel Covid-19 virus on individuals' beliefs and their ensuing effect on their m-shopping behaviour. Thus, addressing the above research gap, this study disseminates a clearer understanding of consumer's use behaviour of m-shopping applications in the aftermath of Covid-19. Secondly, we have utilised the ABC model of the Cognitive-Behaviour Theory and Rational-Emotive Therapy as the theoretical lens for a finer cognisance of continuous use of m-shopping apps during Covid-19 pandemic. Owing to its sparse use in prior studies, our findings have yielded a new perspective on shopping app usage behaviour, therefore contributing uniquely, not just to the m-shopping literature, but also to consumer behaviour in general. Thirdly, in line with the dichotomous conceptualisation of human beliefs as rational and irrational beliefs in

Rational-Emotive Therapy, we have integrated both smartphone addiction (rational belief) and consumer pessimism (irrational belief) constructs into our model. As prior research has mostly dealt with the consequences of irrational beliefs (Soflau and David, 2019), the current study contributes immensely to theoretical advancement of m-shopping literature by proffering empirical evidence on the influence of both types of beliefs on the frequency of m-shopping behaviour. Fourthly, our study explores and validates the moderating effect of social influence on purchase frequency of mobile shoppers. Though previous findings on m-shopping have shown the role of social influence unambiguously (Chopdar and Sivakumar, 2019; Olivier and Terblanche, 2018), the current study confirmed that social influence can augment the relationship between individuals smartphone addiction and m-shopping frequency. Lastly, it makes notable contributions by enhancing the limited understanding of researchers and managers on the impact of the novel Covid-19 on mobile shoppers psychological states and purchase behaviour.

Apart from the above-mentioned contributions to theory, few managerial insights can be derived from the study findings. Despite the adverse impact of Covid-19 on various industries, shopping apps installation has grown by 250% in India, fuelling an impressive growth of m-shopping in the year 2020 (Rakheja, 2020). Rather than simply riding on this upswing, it is highly imperative for mobile retailers (M-retailers), and marketers to comprehend the impact of the pandemic and the underlying psychological mechanisms involved with such outcomes. Empirical results from this study have indicated the role of Covid-19 phobia and Covid-19 news on the over-dependence and addiction towards smartphones amongst users, which has resulted in a higher frequency of m-shopping during the isolation. Thus, it is an opportunity for online marketers to further intensify customer engagements through m-devices, like smartphones and tablets, by offering personalised notifications about pending orders, price changes, promotions and product recommendations. Frequently asked questions (FAQs) and other important information, guidelines, and videos pertaining to Covid-19 may help in keeping m-shoppers attention on their mobile devices. However, companies should be mindful of the probable negative consequences of mobile addiction like withdrawal and technology stress, as advised by (Rodríguez-Torrío et al., 2020), and make every effort to deliver a safe, convenient, and customised shopping experience overall to retain their user base. Another interesting aspect of our study is the increased usage of m-shopping, in spite of the low consumer sentiments and pessimism due to the pandemic. Data collected from our survey pointed towards the spending pattern of mobile shoppers with food and groceries, beauty and personal care and health and the household being the top three product categories purchased during the pandemic. Consumer confidence is likely to rise in due time, but new shopping patterns and consumer behaviour may change significantly in the long run. Hence, to succeed in the current and post-Covid scenario, m-retailers should reinforce their marketing strategies with a focus on safety, convenience, and value-for-money, along with an enjoyable digital shopping experience on their shopping app platforms. Besides, on account of the significant moderating influence of social influence in our study, firms should boost up their social media strategies, as m-shoppers are increasingly looking to engage with family and friends over the virtual platforms in the current pandemic.

6.3. Limitations and future research directions

Although our findings strengthen the understanding of m-shopping practices in times of crises, it also reveals few limitations. First, given the mixed results on social influence moderation, future studies may opt for a higher sample size and alternate variables for a clearer picture to emerge. Second, given the possible indirect route that the Covid-19 news exposure could exert to consumer pessimism by engendering Covid-19 phobia, possible mediating effects could be explored in future research for a clearer understanding of the underlying phenomenon. Moreover,

Table. A 1
Constructs, indicators and sources.

Construct	Items	Sources
Consumer pessimism (CP)	CP1: I think that the prices of most products/services have increased continuously during COVID-19. CP2: I believe that it is difficult for a household to deal with its current financial needs today. CP3: I think that households will face problems in meeting their financial needs during the coming years.	(Chaniotakis et al., 2009)
Smartphone addiction (SA)	SA1: Using my mobile phone is one of my daily activities. SA2: If my mobile phone does not work, I really miss it. SA3: My mobile phone is important in my life. SA4: I cannot go for several days without using my mobile phone. SA5: I would be lost without my mobile phone.	(Rodríguez-Torrico et al., 2020; Ruiz Mafé and Sanz Blas, 2006)
Psychological (PSY)	PSY1: The fear of coming down with COVID-19 makes me very anxious. PSY2: I am extremely afraid that someone in my family might become infected by the COVID-19. PSY3: News about COVID-19-related deaths cause me great anxiety. PSY4: Uncertainties surrounding COVID-19 cause me enormous anxiety. PSY5: The pace that COVID-19 has spread causes me great panic. PSY6: I argue passionately (or want to argue) with people I consider to be behaving irresponsibly in the face of COVID-19.	(Arpaci et al., 2020)
Psycho-somatic (SOM)	SOM1: I experience serious stomach aches out of the fear of COVID-19. SOM2: I experience serious chest pain out of the fear of COVID-19. SOM3: I experience tremors due to the fear of COVID-19. SOM4: I experience sleep problems out of the fear of COVID-19. SOM5: COVID-19 makes me so tense that I find myself unable to do the things I previously had no problem doing.	(Arpaci et al., 2020)
Economic (ECO)	ECO1: The possibility of a food supply shortage due to the COVID-19 pandemic causes me anxiety. ECO2: The possibility of shortages in cleaning supplies due to the COVID-19 pandemic causes me anxiety. ECO3: I stock food with the fear of COVID-19. ECO4: Since the COVID-19 pandemic, I do not feel relaxed unless I constantly check on my supplies at home.	(Arpaci et al., 2020)

bearing in mind that the most frequently purchased products in India since the beginning of the Covid-19 isolation were groceries, media services, gaming, education, and banking services (Jakhiya et al., 2020), a more extensive exploration could be made to compare m-shopping tendencies in different sectors to determine the role of product category. Also, the Indian market is considered to be highly price-sensitive (Natarajan et al., 2017), demanding the need for a more thorough investigation of m-shopping frequency integrated into the wider purchasing context, not conditioned by setting-specific weaknesses. Lastly, due to the cross-sectional nature of this research, it is implausible to capture the effects of variables on mobile shopper's behaviour change over time. Therefore, a longitudinal research design with a panel of mobile shoppers may help figure out the role of Covid-19 phobia and consumer pessimism on m-shopping behaviour, as the current scenario is expected to improve in the future. Future studies can also be undertaken in the context of emerging countries along the lines of (Zhang et al., 2020).

7. Conclusions

This research study addresses the m-shopping tendency from the lens of the challenging situation provoked worldwide by the Covid-19 crisis. The pandemic's role was observed as an event that stimulates individuals' psychological states, leading towards shifting mobile shopping practices. The study is built on the ABC model of the Cognitive-

Table. A 1 (continued)

Construct	Items	Sources
Social (SOC)	SOC1: Since the COVID-19 pandemic, I feel extremely anxious when I see people coughing. SOC2: Since the COVID-19 pandemic, I actively avoid people I see sneezing. SOC3: Following the COVID-19 pandemic, I have noticed that I spend extensive periods of time cleaning my hands. SOC4: The fear of coming down with COVID-19 seriously impedes my social relationships. SOC5: I am unable to curb my anxiety of catching COVID-19 from others.	(Arpaci et al., 2020)
Social influence (SI)	SI1: When I shop by this m-shopping app, most of the people important to me, regard me as clever. SI2: When I shop by this m-shopping app, most of the people important to me, regard m-shopping as useful. SI3: When I shop by this m-shopping app, most of the people important to me, regard m-shopping as valuable.	(Bauer et al., 2005; Prodanova et al., 2018)
Covid-19 news exposure (CNE)	CNE: How much have you heard or learned about COVID-19 in the news? (By news we mean national, international, regional/local news and other topical events accessed via radio, TV, newspaper or online)?	(Elhai et al., 2020)
Mobile shopping frequency (MSF)	MSF: How would you describe the frequency of your m-shopping during the recommended isolation due to COVID-19?	Self-developed

Table. B 1
Cross-loadings table.

	CNE	CP	ECO	PSY	SOC	SOM	SA	SI	MSF
CNE	1.000	-0.059	-0.104	0.197	-0.117	-0.042	0.397	0.004	0.055
CP1	-0.008	0.846	0.380	0.318	0.493	0.244	0.188	0.062	0.385
CP2	-0.104	0.891	0.369	0.282	0.390	0.240	0.043	-0.005	0.327
CP3	-0.047	0.858	0.297	0.245	0.383	0.203	0.094	-0.008	0.347
ECO1	-0.086	0.295	0.806	0.110	0.450	0.306	-0.047	0.041	0.278
ECO2	-0.174	0.429	0.887	0.165	0.547	0.252	-0.057	0.097	0.350
ECO3	-0.039	0.381	0.877	0.137	0.517	0.217	0.103	0.117	0.366
ECO4	-0.030	0.217	0.745	0.102	0.490	-0.001	0.092	0.008	0.320
PSY1	0.138	0.196	0.088	0.717	0.103	0.170	0.148	-0.038	0.269
PSY2	0.165	0.218	0.073	0.712	0.136	-0.012	0.005	0.074	0.097
PSY3	0.154	0.302	0.031	0.788	0.035	0.283	0.047	-0.011	0.249
PSY4	0.253	0.241	0.205	0.777	0.156	0.177	0.149	0.004	0.244
PSY5	-0.031	0.293	0.211	0.720	0.235	0.177	0.048	0.027	0.227
PSY6	0.235	0.137	-0.008	0.609	0.067	0.137	0.130	-0.005	0.140
SOC1	-0.217	0.308	0.564	0.082	0.742	0.207	0.047	0.240	0.326
SOC2	-0.134	0.485	0.527	0.174	0.789	0.236	0.076	-0.036	0.397
SOC3	-0.013	0.339	0.326	0.132	0.764	0.111	0.091	0.093	0.268
SOC4	-0.110	0.355	0.417	0.144	0.744	0.164	0.088	-0.021	0.262
SOC5	0.070	0.335	0.380	0.132	0.690	0.192	0.253	-0.002	0.326
SOM1	-0.023	0.107	0.183	0.255	0.163	0.802	0.182	0.094	0.378
SOM2	-0.111	0.218	0.190	0.068	0.182	0.808	0.168	0.099	0.379
SOM3	-0.043	0.193	0.131	0.183	0.167	0.816	0.307	0.129	0.379
SOM4	-0.080	0.300	0.242	0.256	0.255	0.851	0.142	0.047	0.376
SOM5	0.082	0.255	0.243	0.136	0.230	0.798	0.126	0.025	0.398
SA1	0.388	0.117	0.022	0.108	0.136	0.204	0.811	0.178	0.357
SA2	0.408	0.034	0.004	0.087	0.130	0.192	0.830	0.173	0.335
SA3	0.256	0.137	0.030	0.160	0.168	0.228	0.844	0.070	0.411
SA4	0.255	0.071	-0.070	0.054	0.067	0.112	0.822	0.082	0.367
SA5	0.314	0.166	0.083	0.085	0.085	0.172	0.816	0.016	0.448
SI1	-0.012	0.015	0.017	-0.031	0.031	0.080	0.151	0.888	0.082
SI2	-0.021	-0.011	-0.019	-0.006	-0.004	0.090	0.086	0.865	0.026
SI3	0.027	0.032	0.157	0.053	0.118	0.084	0.083	0.891	0.086
MSF	0.055	0.410	0.395	0.293	0.427	0.468	0.467	0.086	1.000

Notes: CNE = Covid-19 news exposure; C = consumer pessimism; ECO = economic; PSY = psychological; SOC = social; SOM = psycho-somatic; SA = smartphone addiction; SI = social influence; MS = m-shopping frequency.

Behaviour Theory, integrating knowledge from psychology for research in marketing, to more comprehensively explore individual behavioural responses to the newly introduced Covid-19 restricted living.

The findings reveal Covid-19 phobia and news exposure as the pivotal point for the emotional cope with the pandemic. They have evidenced the consequences of the crisis on consumers' beliefs and behaviours, demonstrated through the instigating smartphone addictive practices and customers' pessimistic views, on the path to impact m-shopping frequency. Therefore, the recognition of the strong position of Covid-19 phobia and news exposure enhances the understanding of the m-shopping habits altered since the pandemic. Moreover, realising those enticements is helpful for retailers to trace the generation of emotions that determine changes in m-shopping behaviour. Furthermore, the results have exposed the additional responsibility of reference groups for customers' behaviours. Namely, it was found that social influence as a moderator strengthens the relationship between smartphone addiction and m-shopping frequency, indicating, in this way, its significant impact on consumers addicted to smartphones.

Conclusively, estimating app shoppers' beliefs as antecedents of their m-shopping behaviours, considering the intensification of the latter through the power of social interaction, the contribution of this research outlines vital implications for m-retailers to develop effective strategies for promoting customer retention during Covid-19 and beyond.

8. Author statement

We authors declare that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out,

and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder.

Appendix A

Table. A 1.

Appendix B

Table. B 1

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