

# The Social Media Break-Up: Psycho-Behavioral Measures and Implications

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**ABSTRACT** In the ever-changing global context, the need to understand why users discontinue using social media platforms is rapidly rising. Comprehending the backdrop of such decisions and factors governing the effects, as mentioned earlier, may help users to make such decisions and help service providers to mitigate them. There is a need to enrich the theoretical account of the phenomenon of social media discontinuation. Other authors focused on different social media platforms, but we have mainly used Facebook with sound justification to select its users as participants. We applied a quantitative study to survey 384 Facebook users, selecting the convenience sampling method. We integrated the ‘Stimulus-Organism-Response’ (S-O-R) framework and applied the *Smart-PLS* technique and software. The results support this framework and indicate that information overload, communication overload, social media self-efficacy, privacy concern, social media helpfulness, and annoyance (as stimuli). Results demonstrate that increase the fatigue feelings integrated with perceived relevance (i.e., organism) of social media users, which in turn, increases their social media discontinuance intentions and ad avoidance behavior (i.e., response). This research sheds light on the antecedents of social networking services (SNS) fatigue that influences overall Facebook fatigue and suggests practical implications for the ever-expanding SNS market. Our findings offer valuable insights to marketers, entrepreneurs, and organizations in every sector regarding the social media usage and break-up issues of individual users.

**INDEX TERMS** Social media, information overload, communication overload, discontinuous intention, ad avoidance.

## I. INTRODUCTION

Even the inexperienced eye can see mass media consumption in excess when taking a brief look at today’s world. Consumers are glued to their mobile phones in a typical consumption pattern that provides instant exposure to news, social networks, popular culture, location-based knowledge, and much more [1]. The pandemic COVID-19 has further fostered the increased use of social media [2]. Intensive use of social media (S.M.) has created mental health issues in adolescents [3]. With users investing more and more time in

social networking, a growing share of interaction takes place within these new social networking settings. Concerning advertising communication, this implies that brand-related experiences and brand program exposure are rapidly happening within the social networking context. Thus, the emerging communication setup turned users from passive collaborators in promotions to active promoters and opinion leaders [4].

Social media has many definitions. Many of these definitions come from bloggers and pundits – self-described experts in the field [5]. A variety of social networking sites (SNS) providers, such as Facebook, Twitter, Instagram, and WeChat, provide users with easily accessible approaches to communicating with each other. In recent years, the rapid

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advancements in mobile internet have further promoted this trend. Many SNS applications (Apps), specially designed for mobile devices, are continuously emerging [6]. As social media sites load consumers with information, they will undoubtedly have to make stricter choices about spending their cognitive energy and attention. Research shows that individuals pay less attention to messages when facing distractions and retain less information overall. Other studies have shown that recall of information can be inhibited by information overload [7]. This new reality of marketing communication presents new challenges and opportunities for companies as purchase decisions are increasingly influenced by social media interactions. People rely more on their social networks when making those decisions [4]. Furthermore, the findings of Husnain and Toor [8] indicate that marketers in Pakistan must consider the strategic role of customer engagement in promoting consumer intentions. Also, they must strategically improve their engagement on social media so that consumers can enjoy the full benefits.

While social media platforms are common worldwide as an engagement area, connecting billions of people, their exposures affect the psychological well-being of social media users, often contradictory [9]. Issues like reputation, trust in privacy, avoidance of ads, and interactivity highlighted many previous studies on online advertisement. These problems are significant because they can serve as barriers or stimuli to communicating successful messages to audiences and increasing awareness of the business's offerings [10]. The findings of one probe also suggest that the leakage of consumer data and the privacy of Facebook users is an ethical issue, which marketers should take care of while planning their strategy [11]. There is growing evidence that millennials, the largest user group between 18 and 34 years old, are showing signs of 'social media fatigue' – the propensity to resist consumption if too much information is shown in Facebook feeds [1].

In a constantly developing technology world, Pakistan has also seen a rapid increase in the use of Facebook over the last few years, resulting in a specific study to be conducted within the context of the country. Many Pakistanis are very closely involved with social media sites like Facebook. Understanding the different dynamics of social media usage [8]. As of January 2019, the total number of social media users was 37 million, while active social media users accounted for 18% of the population, and this number is growing by almost 6% each year [12]. However, as Facebook's success has grown over the years, it may have hit a new height in terms of usage. Facebook users and other social networking sites appear to be a use-related phenomenon, claiming that users are less likely to visit social media sites. It was coined "social media fatigue" [5].

Keeping in view the exponential increase in usage of social media networks worldwide, there is a severe need to examine why users discontinue using social media platforms or develop such intentions [2], [13]; it is the main research question of this study. To address this research gap, this

study employs the Stimulus-Organism-Response (SOR) theory and model and flow theory proposed by Lin *et al.* [13] to ascertain the antecedents of users' discontinued use of social media and Facebook in particular. The flow theory suggests that enjoyment occurs not by relaxing but when people get absorbed in performing intense activities or experiences that challenge one's skills. Amid the Coronavirus pandemic, social media further rose, including Facebook usage. Hence, this inquiry is conducted to cover the gap in the context of Facebook usage. It aims to add knowledge to the theoretical contexts of social media marketing strategy for engaging with customers because managers, marketers, entrepreneurs, and various organizations also develop their Facebook pages, and many sell their brands through it. This probe contributes to enriching flow theory, cognitive dissonance theory, stress-coping theory, and rational choice theory in the context of social media by adding fresh insights from their practical implications. The findings have practical implications that assist organizations in developing a sustainable social media strategy.

Additionally, a comparison was made between the Facebook usage patterns of Generation X and Generation Z to gauge their fatigue level and discontinuous intention. This research is also helpful for organizations, businesses, marketers, and entrepreneurs who use social media, particularly Facebook, to sell products, engage with customers, and provide various products and services. Moreover, this probe tests and validates a conceptual framework that diffuses four pertinent scales and models by Liu *et al.* [2]; Bright *et al.* [5]; Lin *et al.* [13]; Kelly *et al.* [14]; and employs Stimulus-Organism-Response (SOR) theory and its framework [13].

## II. REVIEW OF LITERATURE AND HYPOTHESES DEVELOPMENT

According to a global media report by Nielsen, there is a 5% decline in Facebook globally [15], while we can see an increase in the social media users in Pakistan [12]. This percentage includes different apps and devices that do not count one user across different devices. The continued use of these platforms is vital to the sustainability of social media content providers as the benefit of any company and social advocacy on social media will only be attained when the network maintains its target market and expands it. The first step in retaining users is to understand the background of social media users' fatigue, discontinuation intentions [2], perception of the brand, and avoidance of paid communication on digital media [13].

### A. INFORMATION OVERLOAD

According to the Limited Capacity Model of Motivated Mediated Message Processing (LC4MP), people have limited capabilities to encrypt, archive, and retrieve information. When subjected to controlled stimuli, individuals appear to use as much brain capacity as is required to attain the objective of communication. People will actively channel resources in this phase to different stimuli, based on their

relevance, in the sense of mobile SNS use; the LC4MP gives two theoretical explanations on why mobile SNS usage induces information overload. In the first place, the sheer amount of information and experience faced on mobile SNS usage will lead to an overload. The second reason is that many SNS operations are simultaneously carried out, and other tasks are disrupted. Digital multitasking refers to mutual access to various media content types [16]. The phenomenon of information overload includes mental and emotional stress and feelings of anxiety, distress, and frustration, analogous to the idea of information fatigue syndrome to explain mental distress or even physical illness induced by unnecessary information [17]. The findings show that information overload causes social media fatigue and social media stress. Information overload is the axiom of a user's mental fatigue (which can affect physical and mental performance), lethargy, and contribute to social media fatigue [18]. Social media usage provides many benefits to the users, including fun and information, but it also has negative consequences, such as stress [19]. Social media overload (including information and communication overloads) and social media fatigue are causing boredom and stress and negatively affect people's well-being and productivity [20], [21].

The perceived relevance of Facebook content differs between different age groups, as the interest level of every individual differs, and therefore, the amount of overload can also be different [22]. The findings of Guo *et al.* [23] reveal the significant role of the lack of relevance to information dissemination in the use of SNSs. Although previous studies have recognized some factors that contribute to discontinuous intent, such as fatigue and overload. After reviewing the literature, we have arrived at the following hypotheses:

**H1.** Information overload has a significant & positive relationship with fatigue.

**H2.** Information overload has a significant & positive relationship with perceived relevance.

## B. COMMUNICATION OVERLOAD

Communication overload is an unavoidable problem that occurs when connectivity requirements from I.T. networks, such as social media, outweigh the processing power of users [21]. High information uncertainty may require further interaction between SNS users and can create an inconsistency between the communication requirements of the SNS and the communication capacities of the user. This condition will lead to an overload of communication in an all-connected communication environment [24]. In a study, Whelan *et al.* [25] found that fear of missing out, cognitive Internet diminution, and inadequate self-regulation are all positively linked to communication overload. Fear of missing out could provoke learners to use multiple channels of communication. By multi-use, the user's feeling that this fear could be placated by believing that if something were to happen, the more channels involved would lead to a greater chance of learning about it. The feelings matter: consumers are efficaciously connected to branded relationships with

particular brands. There are two aspects to the nature of a relationship between the consumer and the brand: the emotional connection and communication [26].

Islam *et al.* [20] found that both information overload and communication overload have a significant effect on social media fatigue; however, the findings of their study indicate that communication overload is more critical to generating social media fatigue than information overload. The results show that the users would eventually be overwhelmed and exhausted if they cannot handle the number of contents or communication generated by Facebook effectively since such interactions are expected yet contradict other life considerations [24]. Since it is difficult for users to recentralize their attention after being interrupted, they can make significant cognitive efforts to try and manage online communication and other tasks, especially when they perceive it relevant [13]. Therefore, we hypothesize that:

**H3.** Communication overload has a significant & positive relationship with fatigue.

**H4.** Communication overload has a significant & positive relationship with perceived relevance.

## C. SOCIAL MEDIA SELF-EFFICACY

Self-efficacy refers to the confidence in one's ability to execute certain activities. In the sense of SNS, one assumes that s/he can use social media platforms [20]. Self-efficacy is especially important for new users who have not mastered the skills required to use social media platforms like Facebook. Self-efficacy suggests that, as people on Facebook become more self-efficient, their expectations of achieving specific outcomes will also increase [5]. Individuals make self-effective decisions from four sources of information: enactive mastery, vicarious experiences, social influence, physiological and emotional state [27].

In addition to helpfulness and trust, self-efficacy is critical if consumers are interested in certain media types. For instance, if customers feel more confident about their Facebook skills, they are more willing to share information about this platform than on other social networking sites [7]. While finding no significant effect of self-efficacy on Facebook usage and multitasking, Brooks [28] reported that no matter how much someone claims that they are effective multitaskers on electronic devices or how reasonable their attention control is, it does not alter the negative effect of Facebook use on their performance. This result confirms the popular argument that people are not as multitasking as they think. Bright *et al.* [5] found a significant relationship between the self-efficacy of Facebook and social media fatigue. This relationship might be the product of burnout because of Facebook. They can thus face extreme fatigue levels in social media due to increased use.

Moreover, self-efficacy can also prove to be effective in creating a perception (i.e., perceived relevance) about the Facebook content and that users might feel confident around such content and use this social media quite often. However, a burnout effect is also inevitable as this can also lead to a

boring attitude towards such a website [29], [30]. Therefore, we hypothesize that:

**H5.** Social media self-efficacy has a significant & negative relationship with fatigue.

**H6.** Social media self-efficacy has a significant & positive perceived relevance.

#### D. PRIVACY CONCERN

Researchers have looked at many facets of privacy on social media platforms, including content analysis shared on such sites [31]. The frameworks used to interpret users' privacy are primarily 'Concern for Information Protection Concerns' (CFIP) or 'Internet Users' Information Privacy Concerns' (IUIPC). Users consider the costs and benefits of exposure when they decide to reveal their information on social media sites, and this has been studied in the literature using the Privacy Calculus System lenses [32]. We would expect those with deeper privacy concerns to also have social media fatigue due to the "threshold beyond which all parties irritate social contact" [33]. It suggests that people may encounter being too available or getting too much information from several people [5]. When asked why they were tired of Facebook, the respondents indicated that online privacy was their most significant concern. However, teenagers and those in their twenties were significantly more likely to report increased usage of Facebook. 37% of those in younger age groups and more tech-savvy segments said they used their favorite social media site more. This paradox faced by millennials (feeling fatigued yet increasing usage) could be driven by fear of excessive time usage of social media on current and breaking content from friends, family, brands, and news outlets [7], [8].

Some authors investigated the dark side of social media and identified factors such as attacking people's privacy, organizations, and society, spreading fake news, hate speeches, information overload, technostress, and depression [34]. Online privacy is a significant concern for many users, the ever-increasing prevalence of media and the Internet of Things (IoT) has also intensified concerns about privacy and protection. These growing concerns could eventually trigger a great deal of mental stress and lead to negative perceptions and distrust towards the use of Facebook. Similar to fatigue, privacy concerns could lead to decreased usage of social media platforms [35]. As a result, privacy concerns give rise to risks and vulnerabilities for social networking users. It was observed that the higher the people consider the social relevance of the social network as significant, and the more they rely on using particular social media apps, the more details they share. Social web users prefer to self-disclose more personal and confidential details as their peers and colleagues use them [36]. As a result, users continue to feel anxious and confused about privacy due to a plethora of data on social media sites [37]. Reviewing the literature, we arrive at the following hypotheses:

**H7.** Privacy concern has a significant & positive relationship with fatigue.

**H8.** Privacy concern has a significant & negative relationship with perceived relevance.

#### E. SOCIAL MEDIA HELPFULNESS

Social media helpfulness is defined as how people obtain support and valuable information from social networking sites [7]. When users are involved on Facebook, they are motivated to systematically process content information by reading individual posts and evaluating their helpfulness [38]. Individual helpfulness perception of social media platforms or other innovations is relative and highly subjective. However, acceptance and the subsequent adoption of any SNS platform will be in doubt where users' perceived helpfulness is questionable. In other words, the higher the perceived helpfulness of a social media platform, the more likely it will be adopted and used due to its relevance to the online content on such platform [39].

Contrary to a joint research finding, if users experience high levels of helpfulness on Facebook, they also experience high social media fatigue. It could be possible that the respondents who consider social media beneficial use it to a greater extent and experience higher levels of social media fatigue [2], [5]. Therefore, we hypothesize that:

**H9.** Social media helpfulness has a significant & positive relationship with fatigue.

**H10.** Social media helpfulness has a significant & positive relationship with perceived relevance.

#### F. ANNOYANCE

When the engagement of customers and the consumption of Facebook posts by advertisers or brands is irritating, the user quickly turns away [4]. If a person perceives that an advertisement disrupts his/her purpose, the ad is seen as invasive and annoying, unfavorable, and ad avoidance may occur [40]. In addition, an ad considered intrusive can elicit annoyance and cause emotional reactions to the ad and feelings of discomfort, which may lead to ad avoidance [41].

When consumers are skeptical about the advertisement messages they receive or are suspicious about the media source of the advertisement, they may not be able to analyze the information they receive. As a result, they claimed that they could not do anything about the advertisements except stop them. On the other hand, participants preferred ads they perceived relevant to them or were engaging [14]. Too much animation may minimize the efficacy of advertising due to the consumer's reduced cognitive capacity or adversely affected reactions (e.g., annoyance and discomfort) [42]. While increasing ad messages on SNS, consumers may consider the numerous advertisements in their SNS timelines as intrusive and violate their carefully designed online space [41]. Therefore, we propose the following hypotheses:

**H11.** Annoyance has a significant & positive relationship with fatigue.

**H12.** Annoyance has a significant & negative relationship with perceived relevance.



**H13.** Annoyance has a significant & positive relationship with ad avoidance.

### G. FATIGUE

Fatigue is a complex, subjective, and experiential phenomenon of nature. The perception of fatigue includes mental, physical, behavioral, and cognitive aspects. Momentary and intense fatigue elements were also reported. Therefore, the severity of fatigue experienced varies along with a continuum, starting with a gradual sense of fatigue at one end, progressing towards more persistent experiences, and an end of fatigue or “burnout” at the extreme. ‘Burnout’ is a term that describes a state of cynicism, exhaustion, and stress relief from the environment [43]. Social media fatigue is described as the “social media users’ propensity to get away from Facebook users when they are overwhelmed by too many pages, too many contents, too many friends and contacts, and too much time spent keeping up with those connections” [44]. Social media fatigue may also be related to doubts regarding privacy and annoyance of Facebook users. According to market analyst Gartner, the social media industry is beginning to display signs of saturation, as specific consumers in some segments are showing signs of social media fatigue [5]. Some authors investigated the effects of social media on users’ sleep quality, quantity, and patterns and found that most of the users faced the issues of poor sleep, disturbed sleep, allied physical and mental problems, and degenerated performance [45].

Social media fatigue directly affects the decision to proceed, which will adversely affect the flow of user continuation. It is vital to alleviate social network fatigue to keep existing users and encourage continued usage [6], showing that information overload, communication overload, and social overload increase fatigue. Consumers must “like” or “follow” a brand and actively permit them to send marketing messages to their feed. Users with a high degree of fear of missing out are more likely to follow insufficient approaches to fulfill their psychological needs and are thus more likely to be annoyed by too many social expectations and to feel more social overload and fatigue [46]. Therefore, we hypothesize a mediation relationship that:

**H14.** Fatigue has a positive & significant relationship with discontinuance intention.

**H15.** Fatigue has a significant & positive relationship with ad avoidance.

### H. PERCEIVED RELEVANCE

Perceived relevance has been used to assess whether or not the information retrieved relates to information needs. Since the decision-making information search can serve and satisfy the utilitarian purpose of users, it can be objectively measured from the utilitarian point of view [46]. In this regard, it is a multidimensional cognitive concept, the meaning of which is primarily dependent on the experience of usefulness, value, or utility of a searched content to the problem or task at hand. In many cases where users receive excessive content

of relevant information, they discontinue using social media platforms [47].

Service marketers should, for example, add more interesting and relevant content in SNSs to increase the perceived relevance of information based on clients’ needs and interests. Similarly, the perceived relevance of personalized advertisement is also directly related to the ad avoidance behavior, which is also related to the privacy invasion, and hence, users tend to betray the brand on SNS by avoiding their ads [48]. The study of Guo *et al.* [23] unveils that the irrelevance of information directly contributes to user avoidance behavior. Even though “content is king” in social media, advertisers should concentrate more aggressively on generating relevant content on Facebook sites. Therefore, we hypothesize a mediation relationship that:

**H16.** Perceived relevance has a significant & negative relationship with discontinuance intention.

**H17.** Perceived relevance has a significant & negative relationship with ad avoidance.

### I. DISCONTINUATION INTENTION

Discontinuance happens when reasonable activities to cope with social media become troublesome or are not possible regularly. Therefore, discontinuance is not the state of affairs in linear time, as the diffusion literature indicates. Current understanding of discontinuance as an act of distancing oneself from technology through theoretical disconnection may not serve to explain discontinuance as a permanent rejection of technology previously adopted [49].

Investigating the discontinuity decisions of Facebook users is critical because it is deeply linked with the long-term performance of technologies. Subscribers are particularly reluctant to use social networks when they perceive and feel the adverse effects of technology; this enables them to erase the cause of the problem and reinstate emotional stability [50]. On SNS, at least four types of discontinuance behaviors can be discerned, i.e., reducing usage [51], quitting usage [52], stopping use for temporary discontinuance [53], and replacing the social media network [17]. Integrating these behaviors into the overall aim of changing the status quo, discontinuing intent in Facebook refers to the intention of an individual to change the status quo of his system by reducing either the intensity of his or her Facebook use or permanently discontinuing it [13].

### J. AD AVOIDANCE

Branding and direct sales are why a business pays for online ads. Branding aims to improve a product/company’s perceived value to the customer; a direct sale advertisement attempts to convince the buyers to act immediately by clicking on the advertisement, making a phone call, or carrying out certain activities [42]. The financial success of such online sites depends on marketers’ confidence in the media’s performance. Marketers claim they may intrude into users’ personal spaces or even place their ads next to less-than-desirable content [14]. Mobile users may be detached from advertising

messages after they first enter the mobile app, but for those who ultimately continue, mobile ad content is increasingly used to respond to the conversion action [54]. There is a need to develop advertisements that flawlessly combine customer personality features with SNS ads to prevent SNS ads. It tends to be a potentially tailored way for advertisers to deliver their messages to an audience that is more likely to be open to such material [41].

### K. MEDIATION OF FATIGUE

There were two pathways of mediation, for instance, from exogenous variables to fatigue and endogenous variables (Ad avoidance & discontinuance intention), and second pathway was from exogenous variables to perceived relevance to endogenous variables (Ad avoidance & discontinuance intention). Thus, we have incorporated two constructs as a mediating variable in which the fatigue is considered to be a crucial mediating variable between exogenous variables, for instance, information overload, communication overload, social media self-efficacy, privacy concern, social media helpfulness & annoyance, and endogenous variables (e.g., discontinuance intention & advertisement avoidance). Thus, based on previous literature [5], [6], [43]–[46], we framed the following hypotheses:

**H18.** Fatigue has a significant mediation between a) annoyance, b) information overload, c) communication overload, d) social media self-efficacy, e) privacy concern, f) social media helpfulness and discontinuance intention.

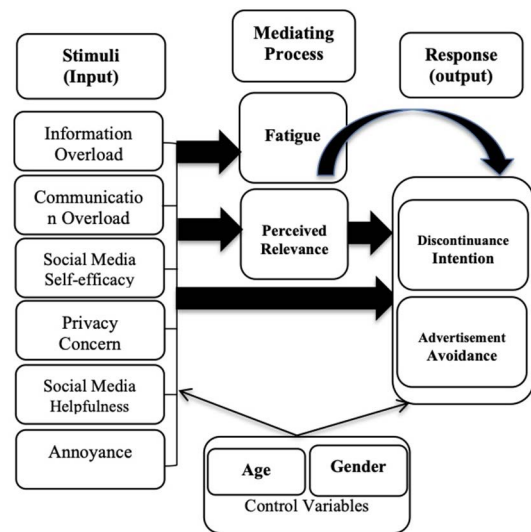
**H19.** Fatigue has a significant mediation between a) annoyance, b) information overload, c) communication overload, d) social media self-efficacy, e) privacy concern, f) social media helpfulness and advertisement avoidance.

### L. MEDIATION OF PERCEIVED RELEVANCE

Similarly, the second pathway of mediation was from exogenous variables to perceived relevance (mediating variable) to endogenous variables (Ad avoidance & discontinuance intention). Therefore, we have also incorporated perceived relevance as a mediating variable. Previous literature also demonstrated that perceived relevance is a potent mediating construct between exogenous variables, for instance, information overload, communication overload, social media self-efficacy, privacy concern, social media helpfulness & annoyance, and endogenous variables (e.g., discontinuance intention & advertisement avoidance). Thus, based on previous literature [23], [46]–[48], we framed the following hypotheses:

**H20.** Perceived relevance has a significant mediation between a) annoyance, b) information overload, c) communication overload, d) social media self-efficacy, e) privacy concern, f) social media helpfulness and discontinuance intention.

**H21.** Perceived relevance has a significant mediation between a) annoyance, b) information overload, c) communication overload, d) social media self-efficacy, e) privacy



**FIGURE 1.** Conceptual framework sources: Adapted from previous literature [2], [5], [13], [14].

concern, f) social media helpfulness and advertisement avoidance.

### M. CONCEPTUAL FRAMEWORK

Our model is adapted from Lin *et al.* [13]; the variables of information overload, fatigue, and social media discontinuance intention are taken from the study of Liu *et al.* [2]. Lin *et al.* [13] have incorporated SOR theory and found that information overload and social media overload cause a level of fatigue that triggers the discontinuous intention among the users. To do a more comprehensive, in-depth analysis of fatigue, the model of Bright *et al.* [5] is also taken to develop a clear understanding of fatigue and its determinants. In addition, to study the impact of perceived relevance on advertising avoidance, we have taken the variables from [14]. Hence, our framework is a diffusion of four pertinent frameworks of these authors.

We conducted this study under the S-O-R theory and its model, where the independent variables become input, the mediating variables become the process, and the dependent variables become the output [13]. Hence, we include information overload, communication overload, social media helpfulness, social media self-efficacy, privacy concerns, annoyance as the stimulus, fatigue and perceived relevance as mediating variables (process). There were two pathways of mediation, for instance, from exogenous variables to fatigue (mediating variable) and endogenous variables (Ad avoidance & discontinuance intention), and second pathway was from exogenous variables to perceived relevance (mediating variable), and endogenous variable or output (discontinuation intention & ad avoidance). At the same time, we have taken age and gender as the control variables between exogenous and endogenous variables. Figure 1 demonstrates the adapted model for the undertaken study:

### III. METHODS

#### A. RESEARCH DESIGN

This study applied post-positive philosophy with a deductive approach to unearth nature's multiple realities and find specific facts that verify or falsify knowledge by testing the hypotheses using deductive logic [55], [56]. We used a self-administered quantitative survey method and a close-ended questionnaire as the research instrument. The respondents were Facebook users. The total number of Facebook users is 2.91 billion worldwide, the highest number of social media users. However, the overall number of social media users is 4.62 billion, including Twitter, LinkedIn, Instagram, YouTube, WhatsApp, and other prominent social media platforms [57], [58]. Hence, Facebook is the most prominent social media platform, with a 62.98% share of total social media users across the globe [59], [60]. Thus, the study's outcomes could be generalizable to all the social media platforms. The sampling frame of this study was the users of Facebook in Karachi, Pakistan. The participants included female and male users, including consumers from age 18 years and above, from all the classes of society, including socio-economic class (SEC) A, B, and C, who have been users of Facebook for at least a year before qualifying for the survey.

#### B. SAMPLING FRAME AND SAMPLING STRATEGY

According to NapoleonCat [57], one of the most sought online data analytics tools, 15% of the Pakistani population are currently using Facebook. It is the largest social media network in the U.S., with almost 72% market share [58], and in Pakistan, it has almost 89% market share [59], [60]. The lack of available population frame and access to participants [61] whereas it restrains generalizability. Hence, based on this information, a sample size of 384, selected through convenient sampling, seemed appropriate [61], [62]. Larger test dimensions usually contribute to enhanced accuracy [62].

#### C. MEASUREMENT SCALES

The relevant scales were adapted from four studies that form the basis of our conceptual framework. We adapted the model of Lin *et al.* [13]. Lin *et al.* [13] demonstrated that information overload and social media overload cause a level of fatigue that activates the discontinuous intention among the users. The variables of information overload, fatigue, and social media discontinuance intention are taken from the study of Liu *et al.* [2], which described the relationship of information overload with fatigue, and demonstrated a direct association. Similarly, Liu *et al.* [2] demonstrated a similar relationship between information overload and discontinuance intention. For an extensive analysis of fatigue, the model of Bright *et al.* [5] is taken to investigate the effect of perceived relevance on advertising avoidance, and we employed the variables from the study of Kelly *et al.* [14]. Bright *et al.* [5] have demonstrated that Fatigue and, ad avoidance & discontinuance intention have a direct relationship.

However, the items of perceived relevance are taken from Kelly *et al.* [14], which concluded that the perceived relevance has a positive relationship with ad avoidance & discontinuance intention.

#### D. VALIDITY AND RELIABILITY OF CONSTRUCTS

We established validity through face and content validity by ensuring that experts have their positive opinion on the constructs that have been adapted and reflect the proper knowledge of the area of the research. A pilot test of the questionnaire was done on twenty participants. Similarly, the content validity was established through the review of the instrument that the scales fully explicate the knowledge area that we are trying to study. Moreover, reliability was established through pilot testing of the questionnaire. It is the measure of score, not people. Hence the score should be reliable if tested repeatedly with different population samples. Construct, convergent and non-convergent validities are also examined. Moreover, factor loadings also enhance the reliability and validity of the scales because the weak and insignificant factors are removed from further analysis. Eventually, external validity is assured by matching the findings with other pertinent studies [63], [64].

### IV. RESULTS

#### A. THE MEASUREMENT MODEL

The undertaken study has employed the PLS-SEM approach, a two-step procedure. The first step is to validate the hypothesized measurement model using Cronbach's alpha, factor loading, composite reliability, and average variance extracted to meet convergent validity criteria. We employed Cross loading, the Fornell-Larcker Criterion test, and the Heterotrait-Monotrait ratio (HTMT) to measure and meet the discriminant validity criterion.

#### B. VALIDITY AND RELIABILITY MEASUREMENTS

The construct validity refers to how much can draw inferences about the test score regarding the researched concepts. Three types of evidence can be checked to measure reliability: homogeneity, convergence, and theoretical evidence. Congruently, reliability refers to the consistency of the measure. A participant completing an instrument to evaluate motivation should have estimated the same responses each time the test is completed [56].

#### C. CRONBACH ALPHA, COMPOSITE RELIABILITY, AND AVERAGE VARIANCE EXTRACTED

Cronbach's alpha is a widely used measure to ensure the construct reliability. Several articles on the acceptability of values ranging from 0.70 to 0.95 (see Table 1). The low value might be attributable to the fact that there are a few questions asked, poor inter-relationship between items, or heterogeneous constructs. If alpha is too high, this could suggest that some items are redundant because they are testing the same question under a different guise [65]. From the table below,

**TABLE 1.** Measurement of AVE and reliability.

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Ad avoidance	0.902	0.923	0.632
Annoyance	0.859	0.914	0.780
Communication Overload	0.851	0.889	0.616
Discontinuance Intention	0.766	0.867	0.686
Fatigue	0.839	0.893	0.675
Information Overload	0.777	0.857	0.599
Perceived Relevance	0.908	0.932	0.731
Privacy Concern	0.784	0.874	0.698
Social Media Self-Efficacy	0.884	0.908	0.586
Social Media helpfulness	0.866	0.902	0.649

we can see that all Cronbach Alpha's are well within the range recommended in the literature. Moreover, reliability can also be tested by employing composite reliability; the estimations of true reliability on average produced by composite reliability are more significant than those produced by the alpha coefficient [64], [66]. The findings of Table 1 demonstrated that the appropriate value would, in most cases, be higher than 0.70; the results fall within the specified range and demonstrate that the constructs are reliable. The AVE estimation is the average variation to be explained in the observed variable to which a latent construct is theoretically related [67]. The acceptable range is above 0.5; therefore, all the constructs are validated above the prescribed range.

#### D. OUTER LOADING & DISCRIMINANT VALIDITY

The high outer loadings on a construct indicate that the related concepts have many interrelations. The outer loading size is also referred to as indicator reliability. At least, all external load values should be significant. The outer loadings, which describe loadings of reflective manifest variables with their corresponding latent variable, help assess the reliability of individual objects (see Appendix A). The Factor loading above 0.7 indicates the reliability of the items [68]. All the factor loading values in the current study (ranging from 0.76 to 0.88) are higher than 0.7 (see Appendix A). Thus, the convergent validity of constructs has been established. The Fornell-Larcker criterion examined the discriminant validities of constructs. Hence, the values of Table 2 exhibited that the square roots of AVE values are higher (in diagonal readings) than the correlation of constructs [69].

#### E. DISCRIMINANT VALIDITY

Discriminant validity measures the degree to which the concept in the route model is empirically segregated from other models, both in terms of how well it correlates to other models and how precisely the metrics represent only that

**TABLE 2.** Fornell-Larcker criterion test of validity.

	Ad avoidance	Annoyance	Com, Overload	Discon. Intention	Fatigue	Info; Overload	Perceived Relev.	Privacy Concern	Social Media S.E.	Social Media Help
Ad avoidance	<b>0.795</b>									
Annoyance	0.536	<b>0.883</b>								
Communication Overload	-0.021	-0.038	<b>0.785</b>							
Discontinuance Intention	0.341	0.266	0.056	<b>0.828</b>						
Fatigue	0.523	0.509	-0.082	0.594	<b>0.822</b>					
Information Overload	0.529	0.424	0.091	0.319	0.538	<b>0.774</b>				
Perceived Relevance	0.283	0.214	0.249	0.016	0.062	0.214	<b>0.855</b>			
Privacy Concern	0.454	0.377	-0.012	0.154	0.426	0.359	0.188	<b>0.836</b>		
Social Media Self - Efficacy	0.051	0.039	0.266	0.392	0.210	0.120	0.359	0.024	<b>0.765</b>	
Social Media Helpfulness	0.167	0.039	0.320	0.295	0.111	0.184	0.531	0.072	0.628	<b>0.806</b>

particular structure [56]. This failure to develop discriminant validity undermines the principle of marketing research and creates the potential for inappropriate interventions, which could lead to inappropriate conclusions from marketing models [70]. We can calculate that by looking at cross-loading (see Appendix B), the factor loading thresholds on the given construct must be higher than all loading on other constructs, such that the factor loading cut-off value is more significant than 0.70 [66], [71] and all the values of the construct are higher than the criteria set in the literature.

#### F. HETERO-TRAIT-MONOTRAIT RATIO (HTMT)

The results of the Heterotrait-Monotrait ratio (HTMT) are less than 0.90 for each HTMT correlation ratio, as depicted in the findings (see Appendix C). Thus, another condition of discriminant validity has been met, and it is finally concluded that the hypothesized measurement model is valid for the adapted model. The graphical analysis of the Heterotrait-Monotrait ratio (HTMT) is presented in Appendix D.

Hence, the hypothesized measurement model is validated because all the conditions, for instance, convergent validity and discriminant validity, have been met. Thus, the first step of PLS-SEM is completed using all the above tests.



### G. THE STRUCTURAL MODEL

The second step of PLS-SEM is to validate the hypothesized structural model. For this purpose, first, we check the multicollinearity amongst the constructs. Secondly, we analyzed R-square (regression analyses), which demonstrates the impact of exogenous or independent variables on their respective endogenous (dependent) variables. Thirdly, we employed direct and indirect relationship or path analyses between the independent and dependent variables and the path analyses of mediation. Finally, we measured the assessment of effect size, goodness of fit tests, and Stone–Geisser ( $Q^2$  Predictive values) to validate the hypothesized structural model.

### H. MULTICOLLINEARITY

Multicollinearity is responsible for redundant information, which means a regressor explains how the response overlaps with what another regressor or a set of other regressors explains [72]. In order to check the variability, the inflation variable values are calculated, which range from 1 upwards. The numerical value for variance inflation factor (VIF) indicates (in decimal form) that the percentage of the variance (i.e., the standard error squared) is inflated for each coefficient. The VIF above 10 indicates a high correlation and is a cause for concern. Several scholars recommend a more conservative standard of 2.5 or higher [73], [74]. The values of VIF of our study demonstrated that there is no issue of collinearity amongst the exogenous variables.

### I. REGRESSION ANALYSIS OR R-SQUARE VALUES

The regression analysis measures the relationship of an independent variable to a dependent variable with the empirical assumption that all other variables remain constant. The relationship calculation results in a theoretical straight line and the correlation coefficient ( $r$ ) measures how close the observed data is to the hypothetical straight line [78]. The adjusted R-Square is the R-Square which has been adjusted after adding the number of variables in the model. Laguna [79] suggested research,  $R^2$  values of 0.75, 0.50, or 0.25 that can be defined as large, medium, or low for latent endogenous variables as a rule of thumb. Thus, the findings of Table 3 suggest that R-square is within the threshold values [69], and endogenous variables experienced 0.418 (Ad avoidance), 0.378 (Discontinuance intention), 0.463 (Fatigue), and 0.366 (Perceived relevance) due to their respective exogenous variables. The graphical analyses of R-square and adjusted R-square are presented in Appendix D.

### J. ASSESSMENT OF EFFECT SIZE (F-SQUARE)

Effect sizes are an important contribution to the significance of hypothesis testing (e.g.,  $p$ -values) since they offer practical significance in impact magnitude and are independent of sample size [80]. The  $F^2$  effect size allows analyzing the relevance of the constructs to explain the selected endogenous constructs. More explicitly, it analyzes how much a

**TABLE 3.** Regression analysis.

Relationship	R	R Square
	Square	Adjusted
Ad avoidance	0.418	0.411
Discontinuance Intention	0.378	0.371
Fatigue	0.463	0.452
Perceived Relevance	0.366	0.353

predictor corresponds to the construct's  $R^2$  contribution in the structural model. The exogenous and endogenous variables' small, medium, and large effects are guidelines for determining the  $f^2$  0.02, 0.15, and 0.35, respectively. The effect size value 0.02 is indicative of no effect [66], [79]. The graphical analysis of effect size is presented in Appendix D.

### K. HYPOTHESIZED DIRECT RELATIONSHIP

Path analysis is much more potent than the standard regression analysis with a single dependent variable. It can give much complicated and complex model results [73], [81]. To illustrate the final findings, the bootstrapping procedure was applied with the help of Smart-PLS [79]. The final results of the hypothesized direct relationship are presented in Table 4. The graphical analyses of path coefficient analysis are presented in Appendix D.

Based on the results we found that twelve hypotheses have been accepted, these include: direct relationship between information overload and fatigue ( $B = 0.342$ ,  $T = 6.536$ ,  $P = 0.00$ ), communication overload and fatigue ( $B = 0.144$ ,  $T = 3.107$ ,  $P = 0.002$ ), social media self-efficacy and fatigue ( $B = 0.229$ ,  $T = 3.569$ ,  $P = 0.00$ ), privacy concern and fatigue ( $B = 0.195$ ,  $T = 4.327$ ,  $P = 0.00$ ), privacy concern and perceived relevance ( $B = 0.160$ ,  $T = 3.333$ ,  $P = 0.001$ ), social media helpfulness and perceived relevance ( $B = 0.499$ ,  $T = 9.072$ ,  $P = 0.00$ ), annoyance and fatigue ( $B = 0.273$ ,  $T = 5.537$ ,  $P = 0.00$ ), annoyance and perceived relevance ( $B = 0.135$ ,  $T = 2.708$ ,  $P = 0.007$ ), annoyance and ad avoidance ( $B = 0.293$ ,  $T = 4.898$ ,  $P = 0.00$ ), fatigue and ad avoidance ( $B = 0.357$ ,  $T = 6.220$ ,  $P = 0.00$ ), fatigue and discontinuous intention ( $B = 0.603$ ,  $T = 16.295$ ,  $P = 0.00$ ), and perceived relevance and ad avoidance ( $B = 0.219$ ,  $T = 5.711$ ,  $P = 0.00$ ). The direct relationship between information overload and perceived relevance was unsupported as it was found insignificant. Similarly, it was the case with communication overload and perceived relevance and social media self-efficacy and perceived relevance as these hypotheses were also unsupported. Moreover, the relationship between perceived relevance and discontinuous intention was found to be insignificant, and social media helpfulness also had an insignificant relationship with fatigue. The individual direct impact of variables demonstrated that fatigue has the highest impact of 0.603 on discontinuance intention, and social media helpfulness has the second highest

**TABLE 4.** Hypothesized direct relationship.

	Path Coefficient	T Statistics	P Values	Decision
Information Overload -> Fatigue	0.342	6.536	0.000	Accepted
Information Overload -> Perceived Relevance	-0.001	0.013	0.990	Rejected
Communication Overload -> Fatigue	-0.144	3.107	0.002	Accepted
Communication Overload -> Perceived Relevance	0.079	1.645	0.101	Rejected
Social Media Self-Efficacy -> Fatigue	0.229	3.569	0.000	Accepted
Social Media Self-Efficacy -> Perceived Relevance	0.000	0.000	1.000	Rejected
Privacy Concern -> Fatigue	0.195	4.327	0.000	Accepted
Privacy Concern -> Perceived Relevance	0.160	3.333	0.001	Accepted
Social Media Helpfulness -> Fatigue	-0.035	0.522	0.602	Rejected
Social Media Helpfulness -> Perceived Relevance	0.499	9.072	0.000	Accepted
Annoyance -> Fatigue	0.273	5.537	0.000	Accepted
Annoyance -> Perceived Relevance	0.135	2.708	0.007	Accepted
Annoyance -> Ad Avoidance	0.293	4.898	0.000	Accepted
Fatigue -> Ad avoidance	0.357	6.220	0.000	Accepted
Fatigue -> Discontinuance Intention	0.603	16.295	0.000	Accepted
Perceived relevance -> Ad Avoidance	0.219	5.711	0.000	Accepted
Perceived relevance -> Discontinuance Intention	-0.045	1.054	0.292	Rejected

impact of 0.499 on perceived relevance, and followed by fatigue with 0.357 on ad avoidance. Thus, it clearly demonstrated that the fatigue is the significant factor for the discontinuance of social media. It also evident the precursor of fatigue is the ad avoidance.

#### L. HYPOTHESIZED MEDIATING RELATIONSHIP

There were two pathways of mediation, for instance, from exogenous variables to fatigue and endogenous variables (Ad avoidance & discontinuance intention), and second pathway was from exogenous variables to perceived relevance to endogenous variables (Ad avoidance & discontinuance intention). The mediation findings have been depicted in Table 5, in which we analyzed the mediation of Fatigue and Perceived relevance between exogenous and endogenous variables (e.g., Discontinuance intention & Ad avoidance). The findings of Table 5 demonstrated that overall, thirteen hypotheses are accepted in which fatigue has an optimal mediation between exogenous and endogenous variables. The findings exhibited that fatigue has a significant mediation between annoyance and discontinuance intention ( $B = 0.164$ ,  $T = 5.190$ ,  $P = 0.000$ ). Similarly, fatigue has a significant

**TABLE 5.** Hypothesized mediating relationship.

	Path Coefficient	T Statistics	P Values	Decision
Ann -> Fatigue -> DI	0.164	5.190	0.000	Accepted
CommO -> Fatigue -> DI	-0.087	3.140	0.002	Accepted
InformO -> Fatigue -> DI	0.206	6.159	0.000	Accepted
PC -> Fatigue -> DI	0.117	3.978	0.000	Accepted
SMSE -> Fatigue -> DI	0.138	3.354	0.001	Accepted
SMH -> Fatigue -> DI	-0.021	0.516	0.606	Rejected
Ann -> Fatigue -> Ad Av	0.097	4.423	0.000	Accepted
CommO -> Fatigue -> Ad Av	-0.051	2.780	0.006	Accepted
InformO -> Fatigue -> Ad Av	0.122	3.865	0.000	Accepted
PC -> Fatigue -> Ad Av	0.069	3.189	0.002	Accepted
SMSE -> Fatigue -> Ad Av	0.082	3.121	0.002	Accepted
SMH -> Fatigue -> Ad Av	-0.012	0.510	0.611	Rejected
Ann -> PR -> DI	-0.006	0.941	0.347	Rejected
CommO -> PR -> DI	-0.004	0.736	0.462	Rejected
InformO -> PR -> DI	0.000	0.010	0.992	Rejected
PC -> PR -> DI	-0.007	0.888	0.375	Rejected
SMSE -> PR -> DI	0.000	0.000	1.000	Rejected
SMH -> PR -> DI	-0.023	1.052	0.293	Rejected
Ann -> PR -> Ad Av	0.030	2.380	0.018	Accepted
CommO -> PR -> Ad Av	0.017	1.597	0.111	Rejected
InformO -> PR -> Ad Av	0.000	0.012	0.990	Rejected
PC -> PR -> Ad Av	0.035	2.675	0.008	Accepted
SMSE -> PR -> Ad Av	0.000	0.000	1.000	Rejected
SMH -> PR -> Ad Av	0.109	4.657	0.000	Accepted

mediation between communication overload and Discontinuance Intention ( $B = -0.087$ ,  $T = 3.140$ ,  $P = 0.002$ ). Other values of fatigue as a mediating variable are depicted in Table 6. However, perceived relevance has a significant mediating impact between annoyance and ad avoidance, social media helpfulness and ad avoidance, and privacy concerns and ad avoidance ( $B = 0.109$ ,  $T = 4.657$ ,  $P = 0.000$ ). The rest of the results are reported in Table 6. The findings demonstrated that fatigue is a significant mediating variable between exogenous and endogenous variables (discontinuance intention & ad avoidance).

**TABLE 6. Model fit indices.**

Fit Summary	Saturated Model	Estimated Model
SRMR	0.073	0.083
d_ULS	6.237	8.099
d_G	1.843	1.926
NFI	0.913	0.902

**TABLE 7. Stone-geisser ( $Q^2$  – predictive values).**

Constructs	$Q^2$ Predictive values
Ad avoidance	0.712
Discontinuance Intention	0.801
Fatigue	0.511
Perceived Relevance	0.491

### M. MODEL FIT

The Model fit is the ability of the statistical model (which is being tested) to comply with the set of observations defined in that particular statistical model by the goodness of fit [75]. Examples of goodness-of-fit tests proposed in the PLS-SEM scope include the standardized root mean square residual (SRMR), the root means square residual covariance (RMSttheta), the standardized fit index (NFI; also referred to as the Bentler-Bonett index), the non-normed fit index (NNFI; also referred to as the Tucker-Lewis index) and the exact model fit test [76]. Table 6 demonstrates the indices used to gauge the goodness of fit.

The Smart-PLS 3.0 calculates three different and widely used model fit indices presented in Table 6, including; Standardized Root Mean Square Residual (SRMR), Euclidean distance (D\_ULS), and geodesic distance (D\_G), and Normed Fit Indices (NFI). The three values for the fitness of the model must meet the following minimum threshold values, SRMR (lower than 0.08), D\_ULS and D\_G ( $P > 0.05$ ), and NFI (0.90) [69], [77]. Thus, it is the goodness of fit of our hypothesized measurement model and structural model.

### N. STONE-GEISSER ( $Q^2$ –PREDICTIVE VALUES)

We finally employed the Stone-Geisser or  $Q^2$  predictive values, which establish an evaluation criterion for the PLS path model's cross-validated predicted relevance. Similarly, predictive values establish the relationship between endogenous and their respective exogenous variables [82]. The findings of Table 7 validated all the  $Q^2$  relevance predictive of endogenous variables such as ad avoidance, discontinuance intention, fatigue, and perceived relevance (0.712, 0.801, 0.511 & 0.491 respectively).

## V. DISCUSSIONS

The premise of this study was to understand and examine factors within the SOR framework that stimulate two distinct emotions in a Facebook user, fatigue and perceived relevance. In response, the user either discontinues such a platform or distances him/her from the advertisement and communication by the brands. The survey found a significant relationship between social media overload (information and communication), social media self-efficacy, privacy concern, and annoyance with fatigue. The results implied that as the flow of information and communication increases, the user feels overwhelmed and tends to develop fatigue, which causes discontinuous intention. These results have been confirmed by Lin *et al.* [13]. The study found that information overload and social media overload cause a level of fatigue that triggers the discontinuous intention among the users. It was also confirmed by Liu *et al.* [2]. There are just many status updates, pictures, and other digital resources presented to the target user by other users. The heavy amount of data produced overwhelming users with high cognitive activity in the users' brains.

Similarly, social media self-efficacy and privacy concerns were also correlated with fatigue significantly. Users with higher self-efficacy with Facebook tend to engage and spend more time on Facebook and experience a burnout effect, leading to fatigue. Users with a higher degree of privacy concern displayed a higher degree of fatigue, confirming the results of Bright *et al.* [5]. Meng *et al.* [83] have studied the healthcare industry and health services in which privacy plays a vital role. They concluded that the SGD-learning-based hybrid model is a refined approach to address privacy concerns and performance. Similarly, Kong *et al.* [84] also demonstrated that the electronic and digital healthcare sector brought a privacy concern for patients' electronic medical records. They concluded that a novel multitype health data privacy-aware approach is an efficient tool for prediction accuracy and privacy preservation. Chi *et al.* [85] have addressed privacy concerns of web services; they also discussed the users' privacy on different online platforms. They finally concluded that extensive experiments were employed on the WS-DREAM dataset method to attain the optimal privacy of online users. However, social media helpfulness was not found to positively impact fatigue as suggested by Bright *et al.* [5] in their findings, where it was found that social media helpfulness was positively related to fatigue. It conforms to the results of Adhikari and Panda [37], who found that the lower the perceived helpfulness of social media, the higher will be the social media fatigue, though our results were not significant to accept the hypothesis.

Secondly, annoyance correlated significantly with perceived (information) relevance. We hypothesized that annoyance negatively affects perceived relevance, but our results showed a positive relationship. We can imply that as the content from a brand or a friend is posted, the user perceives its relevancy if the user perceives the relevance of the content

TABLE 8. Factor loading.

Items	ADA	Age	ANNO	CommO	DI	FAT	GEN	INFO	PR	PC	SMSE	SMH
AdA1	0.763											
AdA2	0.839											
AdA3	0.816											
AdA4	0.772											
AdA5	0.847											
AdA6	0.815											
AdA7	0.703											
Age		1.000										
Anno1			0.874									
Anno2			0.888									
Anno3			0.888									
CommO1				0.810								
CommO3				0.811								
CommO4				0.745								
CommO5				0.757								
CommO6				0.798								
DI1					0.880							
DI2					0.872							
DI3					0.722							
Fat1						0.797						
Fat2						0.865						
Fat4						0.811						
Fat5						0.812						
Gender							1.000					
PC1										0.793		
PC2										0.847		
PC3										0.866		
PR1									0.863			
PR2									0.847			
PR3									0.886			
PR4									0.861			
PR5									0.818			
SMH1												0.738
SMH2												0.816
SMH3												0.814
SMH4												0.826
SMH5												0.831
SMSE1											0.745	
SMSE2											0.760	
SMSE3											0.763	



TABLE 8. (Continued.) Factor loading.

SMSE4											0.806	
SMSE5											0.756	
SMSE6											0.763	
SMSE7											0.762	
infO1								0.795				
infO2								0.768				
infO3								0.779				
infO4								0.753				

and continues to evaluate it. The frequency of such content creates an annoying behavior as users who already had created a perception of such content have enough of it and do not wish to see it further. It is also confirmed by the study of Hutter *et al.* [4], where they found a negative impact between user-generated content (UGC) and brand-generated content. Once the content creator starts to negate the engagement factor, it creates a frequency that annoys the users even though it is relevant.

We found fatigue to significantly impact the discontinuous intention, which is confirmed by past literature [6], [13], [37], [50]. These studies confirmed that social media fatigue creates a response in the user, which is discontinuation. Once the fatigue level reaches a certain level, a user tends to avoid using Facebook further. Similarly, ad avoidance is a direct response to fatigue, which our study has accepted as a hypothesis. There were two pathways of mediation, for instance, from exogenous variables to fatigue and endogenous variables (Ad avoidance & discontinuance intention), and second pathway was from exogenous variables to perceived relevance to endogenous variables (Ad avoidance & discontinuance intention). The mediating effect of fatigue on ad avoidance proves that fatigue can cause the users to avoid any form of communication from the brand, even if it is their favorite brand. This fatigue as an organism caused by the mental stimuli of social media overload (information and communication), self-efficacy, privacy concerns, and helpfulness perception can create a response or action from the users to avoid posts from brands that contain irrelevant communication or advertising [86].

Moreover, perceived relevance also causes a behavioral response from the users; when they perceive irrelevancy, they avoid such advertisements from the brands. The hypothesis was accepted and supported by Guo *et al.* [23], who found perceived irrelevancy of information posted critical in avoidance behavior. If consumers are skeptical about the ads they receive or the media source, they will not be motivated to treat their information. It can lead to customer reactions such as information collected from other sources or the complete avoidance of the advertisement message [10]. Thus, more than just past experiences or word of mouth impact or credibility, the brand's relevance and content on Facebook are

critical in ad avoidance [14]. Moreover, from the perspective of behavioral patterns of Facebook, there was no significant difference in gender, but a significant difference between the Generation X and Generation Z fatigue level and discontinuous intention existed. The participants in Generation Z were found to have a greater tolerance for Facebook overload with lesser discontinuous intention.

## VI. CONCLUSION

Social media usage has produced a revolutionary impact on global business and society. This inquiry aimed to ascertain the determinants of social media break-up, mainly social media users' intention to discontinue and avoid ads, which drastically undermine the social media strategy of various organizations and businesses, including entrepreneurial firms, where it is the primary strategy to engage with the customers. A survey was undertaken from 384 Facebook users. The marketing theory suggests that brands provide customers with social benefits. The current study aimed to understand the psychological stimuli such as social media overloads (information and communication), social media self-efficacy, privacy concerns, social media helpfulness, and annoyance that provoke the organisms in the users, including fatigue and perceived relevance. These organisms create a reactionary behavior resulting in social media discontinuity or advertisement avoidance. The results established that social media overload impacts the fatigue level [5], [43], thus enabling the user to decide to discontinue the use of Facebook [2], [13], [50]. The study did not find any direct impact of social media overload on perceived relevance; this can be because the users, when feeling overload effect, do not perceive any relevancy whatsoever, and thus, there was no effect found. Social media helpfulness and privacy concern were also found to impact fatigue. We see users who value privacy as a matter of concern and experience fatigue if they do not feel safe while using Facebook [35].

Moreover, we found that annoyance is also a stimulus in making the users experience fatigue while searching or browsing social media [46], [87]. While comparing the behavioral patterns of the participants for Facebook usage from a gender perspective, there was no significant difference, which was not the case with age. Eventually, the probe

TABLE 9. Cross loading.

	Ad Avoid.	Age	Annoy.	Comm.O	DI	Fatigue	Gender	Inform. Overload	PR	PC	SMSE	SMH
AdA1	0.763	-0.080	0.400	0.035	0.179	0.441	0.081	0.467	0.241	0.357	-0.027	0.125
AdA2	0.839	-0.130	0.477	0.009	0.210	0.390	0.133	0.454	0.230	0.495	-0.011	0.067
AdA3	0.816	-0.148	0.468	0.004	0.280	0.397	0.132	0.389	0.221	0.305	0.008	0.128
AdA4	0.772	0.001	0.413	-0.020	0.312	0.346	0.026	0.355	0.196	0.254	0.119	0.168
AdA5	0.847	-0.098	0.456	-0.007	0.247	0.404	0.057	0.446	0.273	0.490	-0.001	0.105
AdA6	0.815	-0.060	0.436	-0.052	0.284	0.413	0.008	0.414	0.197	0.382	0.034	0.093
AdA7	0.703	-0.059	0.325	-0.092	0.398	0.511	-0.004	0.407	0.210	0.220	0.177	0.253
Age	-0.106	1.000	-0.115	0.117	0.118	-0.025	0.036	-0.046	0.205	0.079	0.342	0.245
Anno1	0.456	-0.067	0.874	0.002	0.279	0.418	0.124	0.365	0.216	0.279	0.092	0.113
Anno2	0.455	-0.115	0.888	-0.065	0.198	0.458	0.155	0.402	0.195	0.350	-0.021	-0.022
Anno3	0.508	-0.120	0.888	-0.035	0.228	0.471	0.088	0.357	0.159	0.366	0.033	0.017
CommO1	0.044	0.064	0.040	0.810	0.083	0.018	0.074	0.134	0.252	0.058	0.182	0.262
CommO3	-0.056	0.152	-0.110	0.811	0.097	-0.060	0.087	0.087	0.227	-0.019	0.299	0.339
CommO4	-0.024	0.082	-0.039	0.745	0.012	-0.055	0.057	0.007	0.093	0.066	0.188	0.128
CommO5	-0.100	0.092	-0.154	0.757	0.004	-0.067	0.078	0.042	0.098	-0.054	0.160	0.243
CommO6	0.004	0.069	0.042	0.798	-0.009	-0.151	0.140	0.042	0.210	-0.076	0.188	0.225
DI1	0.250	0.095	0.151	0.017	0.880	0.549	-0.069	0.254	-0.009	0.039	0.306	0.304
DI2	0.221	0.109	0.220	0.055	0.872	0.446	-0.071	0.196	0.003	0.063	0.365	0.252
DI3	0.382	0.091	0.303	0.074	0.722	0.469	0.030	0.345	0.049	0.297	0.308	0.165
Fat1	0.469	-0.050	0.411	-0.099	0.360	0.797	-0.054	0.424	0.095	0.368	0.140	0.095
Fat2	0.490	-0.100	0.485	-0.026	0.434	0.865	0.042	0.529	0.036	0.390	0.109	-0.049
Fat4	0.358	0.044	0.364	-0.074	0.637	0.811	0.042	0.429	0.022	0.332	0.209	0.126
Fat5	0.405	0.025	0.412	-0.074	0.511	0.812	0.066	0.379	0.056	0.311	0.233	0.203
Gender	0.080	0.036	0.138	0.118	-0.046	0.031	1.000	0.059	0.094	0.112	-0.126	-0.069
PC1	0.357	0.101	0.302	-0.028	0.131	0.314	0.115	0.304	0.178	0.793	0.019	-0.045
PC2	0.439	0.040	0.369	-0.001	0.075	0.325	0.114	0.322	0.181	0.847	-0.016	-0.075
PC3	0.350	0.059	0.281	-0.003	0.173	0.419	0.059	0.280	0.120	0.866	0.052	-0.060
PR1	0.202	0.207	0.095	0.240	-0.043	-0.025	0.057	0.091	0.863	0.190	0.293	0.438
PR2	0.242	0.113	0.216	0.205	-0.021	0.046	0.062	0.205	0.847	0.172	0.288	0.386
PR3	0.240	0.189	0.187	0.242	-0.003	0.044	0.111	0.196	0.886	0.135	0.327	0.497
PR4	0.195	0.257	0.130	0.209	0.003	0.029	0.082	0.139	0.861	0.172	0.321	0.445
PR5	0.316	0.116	0.271	0.172	0.112	0.154	0.083	0.269	0.818	0.142	0.301	0.489
SMH1	0.016	0.193	-0.014	0.399	0.322	0.058	-0.060	0.090	0.327	-0.159	0.487	0.738
SMH2	0.091	0.174	0.001	0.357	0.196	0.045	-0.010	0.146	0.400	-0.063	0.508	0.816
SMH3	0.234	0.192	0.057	0.162	0.167	0.146	-0.116	0.202	0.480	-0.018	0.426	0.814
SMH4	0.110	0.196	-0.021	0.250	0.297	0.040	-0.066	0.137	0.423	-0.120	0.590	0.826
SMH5	0.172	0.229	0.108	0.192	0.240	0.135	-0.019	0.147	0.478	0.027	0.536	0.831
SMSE1	-0.089	0.224	-0.008	0.254	0.305	0.067	-0.124	0.004	0.263	-0.016	0.745	0.383
SMSE2	-0.042	0.260	-0.032	0.221	0.332	0.117	-0.114	0.012	0.292	0.028	0.760	0.394
SMSE3	-0.146	0.292	-0.090	0.232	0.338	0.032	-0.065	0.002	0.249	-0.094	0.763	0.417

**TABLE 9.** (Continued.) Cross loading.

SMSE4	0.057	0.279	0.094	0.182	0.336	0.207	-0.057	0.055	0.216	0.072	0.806	0.433
SMSE5	0.061	0.236	0.018	0.208	0.263	0.175	-0.146	0.123	0.242	0.001	0.756	0.520
SMSE6	0.139	0.230	0.134	0.158	0.309	0.315	-0.047	0.202	0.277	0.096	0.763	0.545
SMSE7	0.171	0.310	0.029	0.198	0.238	0.128	-0.125	0.162	0.354	-0.006	0.762	0.598
infO1	0.475	-0.106	0.369	-0.040	0.222	0.459	0.074	0.795	0.123	0.301	0.038	0.065
infO2	0.388	-0.112	0.218	0.014	0.321	0.470	0.015	0.768	0.084	0.220	0.086	0.078
infO3	0.403	0.065	0.412	0.158	0.268	0.391	0.059	0.779	0.207	0.315	0.120	0.160
infO4	0.366	0.024	0.317	0.169	0.170	0.334	0.034	0.753	0.266	0.278	0.136	0.287

**TABLE 10.** Heterotrait-Monotrait Ratio (HTMT).

	Ad Av	Age	Ann.	CommO	DI	Fat.	Gen.	InformO	PR	PC	SMSE	SMH
Ad avoidance												
Age	0.109											
Annoyance	0.607	0.123										
Communication Overload	0.086	0.126	0.117									
Discontinuance Intention	0.417	0.136	0.336	0.089								
Fatigue	0.601	0.073	0.598	0.111	0.734							
Gender	0.083	0.036	0.149	0.120	0.078	0.067						
Information Overload	0.628	0.113	0.521	0.162	0.412	0.659	0.067					
Perceived Relevance	0.308	0.217	0.240	0.254	0.065	0.092	0.097	0.256				
Privacy Concern	0.539	0.090	0.461	0.092	0.225	0.520	0.129	0.463	0.228			
Social Media Self – Efficacy	0.162	0.362	0.097	0.302	0.484	0.235	0.134	0.145	0.392	0.088		
Social Media Helpfulness	0.195	0.262	0.107	0.378	0.367	0.172	0.072	0.231	0.585	0.119	0.705	

significantly contributes to adding new knowledge in the flow theory, cognitive dissonance theory, stress-coping theory, and rational choice theory in social media usage adapts four scales and presenting an empirically tested framework by diffusing four pertinent models employing SOR theory and framework.

#### A. POLICY AND PRACTICAL IMPLICATIONS

Social media overload (information and communication) directly affects fatigue, which leads to discontinuous intention and ad avoidance behavior. It implies that digital managers and social media strategists need to understand that the information and communication flow from brands can provoke such adverse outcomes because the content frequency and the amount of information in the communication can significantly affect the users' behavior. Deficiencies in social media self-efficacy, privacy concerns, social media helpfulness, and annoyance (creating contents) also cause fatigue, which leads to discontinuous intention and ad avoidance behavior. The ads or contents of Facebook should be made

attractive and relevant to the users' needs. Frequent and heavy content can also be perceived as boring or irrelevant by the users, which can cause negative consequences for brands, advertisements, and other communication objectives.

Privacy concern is an important area of consideration. An organizational social media strategy to engage with customers or stakeholders should consider the privacy concern for communication on Facebook. If there are many users' information sold to analytic companies, this can have a devastating effect on the usage and ultimately can create negative reviews on the internet from the users. Meng *et al.* [83] have studied the healthcare industry and health services in which privacy plays a vital role. Moreover, policymakers should also consider this matter and address this from the users' perspective of data security and privacy.

Worldwide, marketers, countless organizations, non-government organizations (NGOs), entrepreneurs from startups to micro, small and medium enterprises (MSMEs), and large or corporate sector firms use social media.

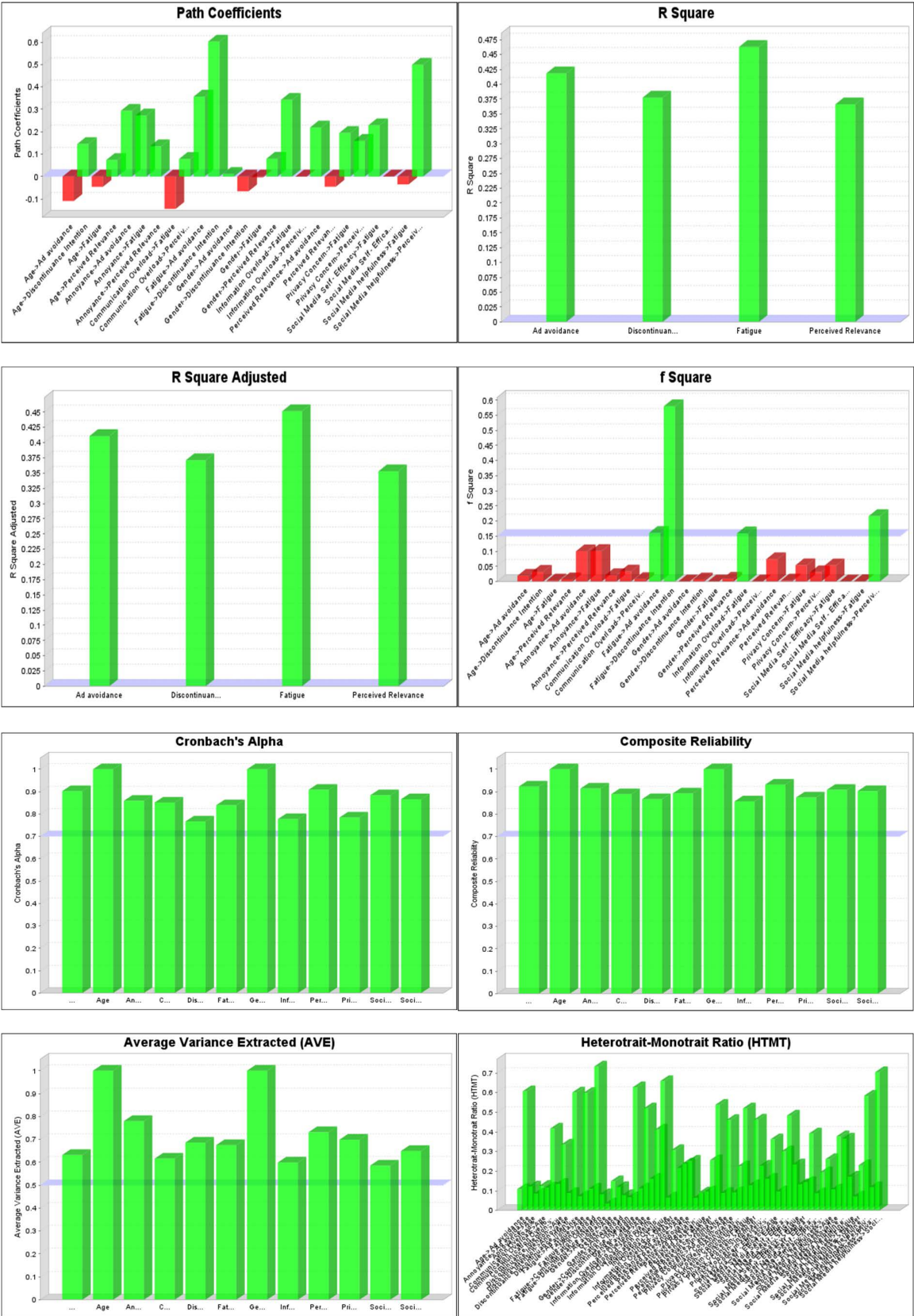


FIGURE 2. Graphical analyses of results.



Many of them heavily rely on social media, including Facebook, to launch and scale their business. Comprehending these dynamics can assist them in crafting effective social strategies. Organizations develop such strategies for creating awareness of their brands/services or selling brands, while NGOs are interested in creating awareness of social causes or raising funds. They also execute such strategies for digital customer-brand engagement or pre-and-post sales and services. They should consider these trends before crafting their social media communication strategies to attract and engage their viewers and customers and cope with social media break-ups by their users.

### B. LIMITATIONS AND AREAS OF FUTURE STUDIES

This inquiry appears to be limited to Facebook usage; thus, the results cannot generalize to all the social media users. Therefore, it is recommended that future researchers take multiple social media platforms for more robust results. We used a survey with 384 samples to undertake this probe. Therefore, this is the limitation of the undertaken study. Thus, for more robust and generalizable results, more social media networks should be taken with a larger sample in future studies. Further investigation should be done into information overload and temporary and permanent discontinuation of social media. It can be an in-depth study without studying the mediating effect of fatigue. Furthermore, this research has a limited attribute on social media, but it is suggested that future researchers consider different communication elements such as imagery, voice, color, and text to understand the fatigue level created by each element. Then marketers can incorporate this information while creating their strategy for social media.

Furthermore, a very close investigation needs to be conducted on the privacy concern area on Facebook; its users now feel over-watched on the internet, and this creates a sense of privacy breach. Meng *et al.* [83] have studied the healthcare industry and health services in which privacy plays a vital role. Finally, perceived relevance is a crucial subject for digital and conventional marketers. Content relevancy needs to be broken down into informational content, persuasive content, and promotional content and their impact on avoidance behavior. Further studies are recommended on various social media networks (SNS) by adding pertinent variables like digital customer-brand engagement. Comparative studies of different SNS can entail exciting knowledge. During the COVID-19 pandemic, qualitative and mixed methods inquiries need to be conducted on social media usage, its engagement, and its break-up because of the sudden surge in its usage during frequent lockdowns worldwide. Moreover, studies on artificial intelligence (A.I.) enabled online behavior analytics can be helpful for social media usage. Thus, it is also a limitation of this study; therefore, it is recommended that future researchers use artificial intelligence neural networks and other artificial intelligence modeling. Another limitation of the current study is to evaluate the cause-and-effect model, and we did not employ cause & effect model.

Therefore, it is recommended that future researchers use cause and effect models for more robust results.

### APPENDIX A

See Table 8.

### APPENDIX B

See Table 9.

### APPENDIX C

See Table 10.

### APPENDIX D

See Figure 2.

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