

## RESEARCH ARTICLE

# Using Theory Integration to Explain Online Impulse Buying Behavior in Social Commerce

SAMAH ABDELSALAM<sup>1,2</sup>, NAOMIE SALIM<sup>3</sup>, (Member, IEEE), ROSE ALINDA ALIAS<sup>4</sup>, OMAHYA HUSAIN<sup>2,10</sup>, SAYEED HAIDER SALIH<sup>5</sup>, RAMAYAH THURASAMY<sup>6</sup>, MUZAFFAR HAMZAH<sup>7</sup>, (Senior Member, IEEE), MOSAB HAMDAN<sup>8</sup>, (Senior Member, IEEE), AND HAFIZ MUHAMMED FAISAL SHEHZAD<sup>9</sup>

<sup>1</sup>Department of Management Information System, College of Business Administration, University of Hail, Hail 55476, Saudi Arabia

<sup>2</sup>Department of Information Technology, University of Khartoum, Khartoum 11111, Sudan

<sup>3</sup>Department of Information Systems, Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru 81310, Malaysia

<sup>4</sup>Department of Information Systems, Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor Bahru 81310, Malaysia

<sup>5</sup>Department of Information Technology, College of Computer and Information Sciences, King Saud University, Riyadh 11461, Saudi Arabia

<sup>6</sup>School of Management, Universiti Sains Malaysia, Minden, Penang 11800, Malaysia

<sup>7</sup>Faculty of Computing and Informatics, Universiti Malaysia Sabah, Kota Kinabalu 88400, Malaysia

<sup>8</sup>Interdisciplinary Research Center for Intelligent Secure Systems, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

<sup>9</sup>Department of Computer Sciences and IT, University of Sargodha, Sargodha 40162, Pakistan

<sup>10</sup>Department of Information Technology, Ajman University, Ajman, United Arab Emirates

Corresponding authors: Samah Abdelsalam (samah.abdelsalam@uofk.edu), Mosab Hamdan (mosab.hamdan@ieee.org), and Muzaffar Hamzah (muzaffar@ums.edu.my)

**ABSTRACT** Online Impulse Buying Behavior (IBB) significantly increases and contributes to the total S-commerce revenue. Hence, understanding such behavior is critical for an online business to strengthen competitiveness, enhance revenue, and ensure business sustainability. The majority of the prior research used urge-to-buy (UBI) to examine online IBB instead of the actual IBB. Hence, the studies that differentiate between UBI and IBB are limited. Moreover, these studies have concentrated on the impact of consumer characteristics, website, and marketing factors, but they neglected the role of social factors. This study integrated Social Influence and Uses and Gratifications Theories to explore the social factors affecting online IBB. The findings indicate that social influences, entertainment, purposive value, and maintaining interpersonal connectivity influence IBB significantly. UBI also mediates the relationships between social influences and IBB. Impulsiveness moderates the indirect relationships between compliance, internalization, and IBB through UBI. This study has practical implications for social commerce designers, marketers, and managers.

**INDEX TERMS** Impulse buying behavior, social commerce, social interaction, social influence, uses and gratifications.

## I. INTRODUCTION

The rapid development of Web 2.0 and social media's popularity altered how individuals connect, collaborate, live, and conduct business [1]. These developments led to the rise of social commerce websites (S-commerce) which have created a massive revolution in electronic commerce (E-commerce).

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This new paradigm has switched E-commerce business from a product-centered model to a social and consumer-oriented model [2], [3]. S-commerce emphasizes the social aspect to attract consumers and influence their behavior [4], [5]. Moreover, it is considered as a new shift in E-commerce that enables social interaction between individuals using social media [6], [7], [8], [9]. The experience of the consumers of S-commerce is different compared to other online contexts as the consumers have social interactions with others [7], [10].

In this interactive environment, individuals can interconnect, rate products, review people's opinions, join forums, share their experiences and recommend products [11], [12].

Consequently, this distinctive characteristic of S-commerce influences consumer behavior. Online impulse buying behavior (IBB) is one of the vital aspects of consumer commerce owing to the social interaction between the consumers [13], [14]. This behavior is described as stimuli [15]. When individuals browse S-commerce websites, they are received too much information from E-retailers, friends, and others, which encourages them to buy products impulsively [16]. Thus, most of their purchases on S-commerce have been viewed as IBB [10], and a substantial amount of S-commerce profits is related to such purchases [17], [18]. Therefore, E-retailers need to understand such behavior to improve their competitiveness and to enhance their revenues [19]. Even though the significant economic value of the consumers' online IBB to S-commerce business is well recognized, most of the previous works concentrated on traditional buying behavior (i.e. planned buying) and few studies paid attention to IBB [1], [10].

The systematic literature review conducted by [13] and [31] to assess the status of the online IBB research revealed that there are two different response types of impulse buying, including an urge to buy impulsively (UBI) and online impulse behavior. UBI is recognized as an individual's desire state that an individual experiences when s/he is exposed to environmental stimuli. At the same time, IBB is the actual purchase that fulfils the strong desire preceding it [32]. Therefore, when individuals experience a sudden UBI, they may or may not act according to this strong feeling and purchase impulsively, which is the central aspect of IBB that distinguishes it from other types of buying behaviors, such as planned and unplanned buying [33], [34], [35], [36], [37], [38]. Even though IBB and UBI are distinct concepts, most of the previous studies used UBI as a proxy to study the actual IBB [10], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30] as shown in Table 1. Furthermore, as S-commerce leverages social media to enable social interaction between individuals and influence their behavior, the social aspect is the backbone of S-commerce that differentiates it from other contexts [2], [39]. As shown in Table 1, despite the significant role of the social aspect, the previous works that addressed both UBI and IBB concentrated on the impact of consumer characteristics, website cues, and marketing cues on IBB. However, they neglected the impact of social factors [31]. Additionally, the theoretical foundation of IBB studies is limited; most of the previous works adopted stimulus-organism-response (S-O-R) as their underlying theory [10], [16], [20], [22], [26], [28], [29], [32], [40], [41].

Moreover, prior works consistently showed the significant role of individual characteristics in influencing their behavior and solely considering environmental stimulus provides a limited understating of IBB [18], [25]. Individuals with high impulsiveness levels are more sensitive and responsive to impulsive behaviors [2], [18]. Thus, this study also

**TABLE 1. Research gap.**

UBI	IBB	UBI and IBB	Social Aspect	Consumer Characteristics	Website Cues	Marketing Cues
[10, 21-31]	[35, 42, 43, 104, 147-150]	[16, 34, 110, 151]	[16]	[16, 34, 110, 151]	[16, 110]	[34,151]

examines the role of individual impulsiveness. Accordingly, the study empirically investigates the effect of social factors in inducing the online IBB in S-commerce and theoretically considers both types of impulse buying responses; UBI as a mediator that precedes the actual impulse buying (dependent variable). Therefore, the study's aim is subdivided into four objectives:

- 1) To study the effect of the social cues on the online IBB in S-commerce.
- 2) To investigate the mediating role of UBI in triggering online IBB in S-commerce (UBI is a strong desire that precedes IBB).
- 3) To investigate the moderated mediation effect of impulsiveness.
- 4) To prioritize the influential factors of the online IBB in S-commerce.

By accomplishing these objectives, the present study extends and enriches the knowledge on online IBB and its understanding. It provides guidelines for S-commerce designers to integrate the identified influential factors of IBB into their websites to trigger IBB. It also provides insights into IBB that help S-commerce marketers and managers formulate good marketing and business strategies to trigger IBB in consumers, successfully achieve their marketing values and establish a sustainable business model. Moreover, it is also helpful for practitioners.

This study offers valuable insights for S-commerce professionals. Its findings provide actionable guidelines for designers, marketers, and managers aiming to harness online IBB. Key factors like compliance, identification, internalization, entertainment, purposive value, and interpersonal maintenance were identified as strong influencers of online IBB. It's crucial for these professionals to integrate these elements into their platforms. For optimal results, strategies should focus on enhancing consumer impulsiveness and UBI, potentially segmenting users based on impulsiveness traits for targeted marketing. These insights pave the way for effective marketing strategies and sustainable business models in the realm of S-commerce.

## II. THEORETICAL FOUNDATION

The present study's proposed model is developed based on two theories: social influence theory (SIT) and uses and gratifications theory (UGT). The following subsections explain the theoretical foundation and hypotheses of the study.

### A. SOCIAL INFLUENCE THEORY (SIT)

SIT has been recognized as a vital force determining the behavior of individuals. SIT is a social theory that explains that an individual's opinions and behavior change as a result of social interaction [42]. It was developed by Kelman [43], who proposed that individual attitudes, beliefs, and behavior are affected by others through three social factors, namely compliance, identification, and internalization.

The process concerning an individual being influenced by other important individuals for gaining approval or avoiding disapproval is called compliance [44]. Individuals face immense social pressure to engage or avoid specific behaviors irrespective of their beliefs and attitudes toward such behaviors. Hence, such situations drive them to comply with others' expectations [45]. In contrast, identification happens when an individual accepts influence from another individual to develop or keep a favorable self-defining relationship with others. Individuals facing the pressure of identification-influence adopt a specific behavior to identify with or improve their image/social status and comply with others' expectations [46], [47]. However, internalization occurs when individuals accept influence from other people due to the similarity of their actions, beliefs, and values with those of others [44], [47]. In internalization influence, individuals view the information given by others as evidence of truth. It implies that individuals accept the influence because the content is intrinsically worthy [48]. SIT was widely used and applied to explain different individual or group behaviors. SIT has been used by several researchers to study the influence of social interaction enabled by social features on an individual's planned buying behavior [49], [50], [51], [52].

Moreover, Tsai and Bagozzi [53], [54], [55] used the SIT to study how the individual's participation behavior in the virtual community is affected by interaction with others. SIT also has been used by [45], Ifined [56], [57], [58] to study the individual's adoption behavior. It was also used by Cheng et al. [59], [60] to study how social interaction among consumers affects their impulse buying behavior in offline environments.

As the study's main aim is to examine the impact of social-related factors on the consumer's online impulse buying behavior in S-commerce, SIT is a useful theory to achieve this aim. Additionally, SIT explains how individuals adopt certain behavior without considering their needs to conduct that behavior, which is similar to what happens in impulse buying behavior when consumers buy products impulsively without any plan and without considering needs. On the other hand, S-commerce uses social media to influence their users' behaviors. Thus, SIT is beneficial to this study because it explains how an individual's socially induced opinion formation and behavior change due to social interaction with others.

### B. USES AND GRATIFICATIONS THEORY (UGT)

It is a paradigm of media use developed by [61] from the research of mass communications focused on individual use and media preferences. It supposes that individuals are

goal-oriented in their behaviors and know their desires. They utilize specific media to fulfil their social and psychological needs [58]. It postulates that individual needs and the desire for social gratification lead one to choose specific media to gratify those needs; in this process of achieving gratification, individual behavior is influenced [62]. The gratifications provided by different media types vary. However, UGT identifies four dimensions, namely, hedonic gratifications, utilitarian gratifications, social gratifications, and content gratifications [63]. UGT has been considered suitable for new media applications such as the internet, online communities, social networking, and blogs [64]. It was adopted to explore the implications of virtual communities and social media by marketers and information systems researchers [65]. Many researchers used UGT to study individual consumption behavior on social networks [56], [57], [58], [66], [67], [68], [69], [70], [71], [72], [73], [74]. It has also been used to explore consumer IBB triggered by television [75].

As S-commerce enables social interaction among consumers by adding social features (such as reviews, comments, and share), this research used the gratifications of social media use. The gratifications of social media by researchers include purposive value, entertainment value, self-discovery value, social enhancement, and maintaining interpersonal connectivity [56], [57], [58], [76]. Using UGT helps investigate social gratifications pertaining to S-commerce as a computer-mediated social environment and its influence on IBB. To investigate the impact of social factors on the consumer's online IBB in S-commerce, SIT theory was seen as a useful and suitable theory because it clearly illustrates how the social factors change individual attitudes and behaviors [52], [58]. On the other hand, social and individual needs, which vary from one person to another, are the main reasons for the behavioral intention and the actual behavior [56], which are not considered in SIT theory. These social and individual needs are addressed by UGT. Thus, to consider the influence of both social needs and gratifications, UGT has been integrated with SIT. Furthermore, by integrating both SIT and UGT, a comprehensive understanding of the impact of social factors on consumer's impulse buying behavior is obtained because both theories complement each other given the commonality of socialization factors in both paradigms. The theoretical research model has been presented in the next section.

## III. THEORETICAL MODEL AND HYPOTHESES

The relationships between the factors that are crucial for the present study are developed in the subsequent subsections. The proposed model presented in Figure 1, contains eleven variables, which include eight independent variables, one moderator (impulsiveness), one mediator (UBI), and one dependent variable (IBB).

### A. COMPLIANCE, UBI, AND IBB

Compliance reflects that individuals act to comply with important others' opinions in the S-commerce context to

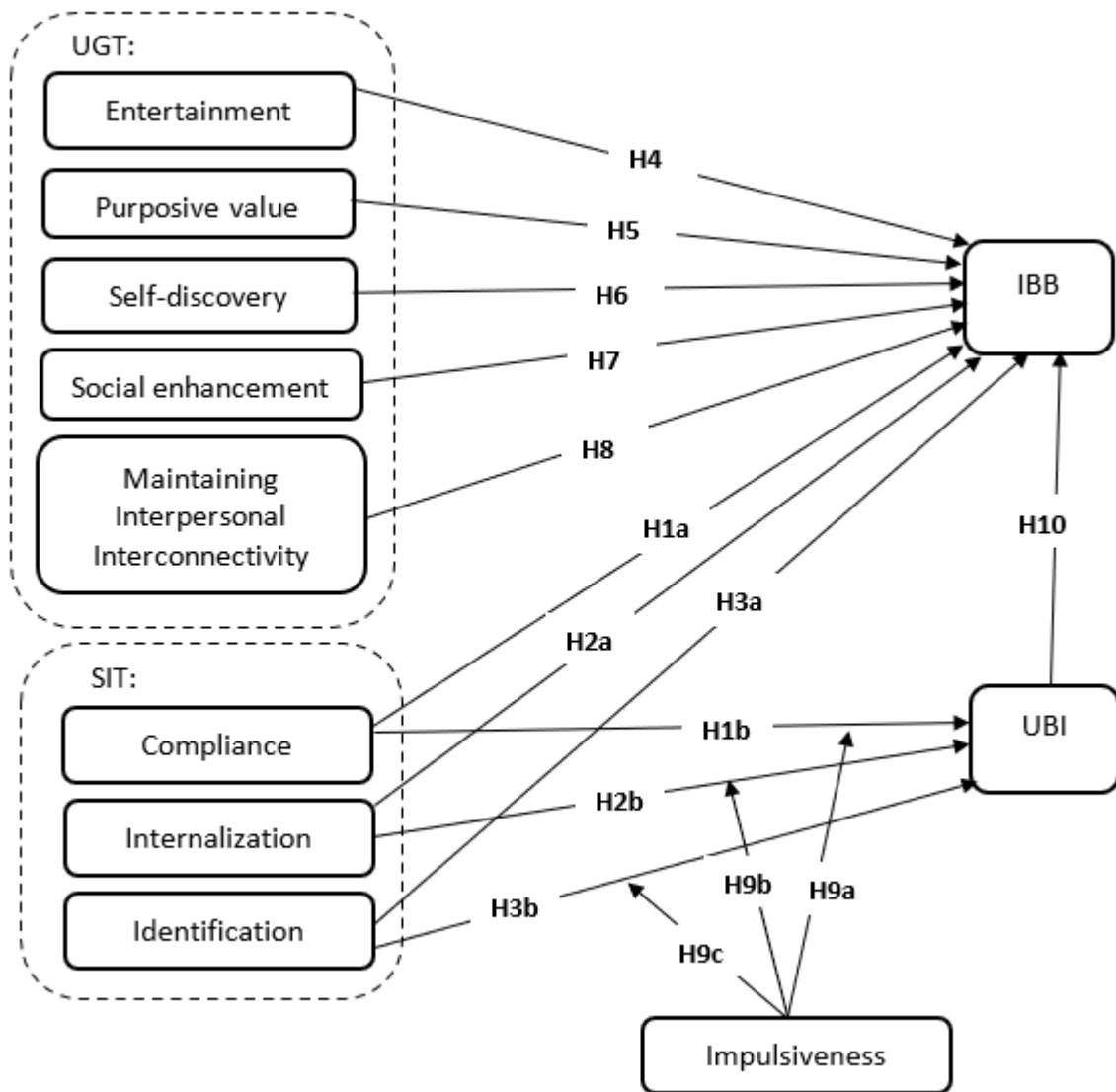


FIGURE 1. The proposed theoretical model.

gain social acceptance or avoid disapproval [52], [77], [78]. Previous researchers pointed out that adolescents are likely to purchase more products when they shop with others [79]. Previous works also showed that compliance positively influenced consumer desire [80] and consumer behavior [50], [55], [56], [58], [81], [82].

With the emergence of Web 2.0, the consumer’s decisions, perceptions, and preferences are not only based on the information provided by S-commerce websites. However, they are also affected by the content created by others [83]. Consequently, S-commerce creates a sense of being with another [84]. S-commerce offers individuals a shared platform to interact with others, exchange their shopping experiences, and receive product recommendations from friends [85]. In this setting, people face social pressure from other individuals like friends, when deciding to do a particular behavior [86]. Furthermore, social consensus reduces

the risk perception concerning the product and enhances the perception that associates the products with benefits [87]. Consequently, individuals in S-commerce may feel urge to purchase a product posted/ recommended/ reviewed by important people to comply with them. It also increases the likelihood of consumers’ IBB. Thus, the following hypotheses are proposed:

H1a: Compliance positively influences IBB in S-commerce.

H1b: Compliance positively influences UBI in S-commerce.

**B. INTERNALIZATION, UBI, AND IBB**

Internalization reflects that individuals accept the influence due to the similarity of their values, preferences, and tastes with those of others such as friends, family or group members [47], [55], [88]. Individuals are involved in particular



behaviors because of the similarity of their values and preferences with friends, family and others [52], [55]. Hence, they consider the information provided by friends or other people as proof of the truth and make a decision based on it [48]. Previous research indicates that individual attitude, intention, and behavior change because of interacting with others. It has been found that when individuals realize the similarity of their preferences and values with others in S-commerce context, they tend to adopt similar behavior [58]. S-commerce websites comprise communities of consumers with similar interests, passions or goals, which ultimately influence their behavior [89]. Perceived similarity with other members on S-commerce websites affects trust in others and induces an individual to adopt their recommendations [90]. Therefore, when individuals are exposed to numerous product recommendations from others who share similar values and preferences, they view those products as more attractive and feel compelled to buy those and consequently buy such products impulsively. Thus, the following hypotheses are proposed:

H2a: Internalization positively influences IBB in S-commerce.

H2b: Internalization positively influences UBI in S-commerce.

### C. IDENTIFICATION, UBI, AND IBB

Identification reflects that individuals accept influence to develop or keep a favorable self-defining relationship with others [47], [53]. Individuals having high-cohesion friendships or relationships make decisions that comply to others' opinions and behave against their needs [59]. In offline retail, it has been found that the intention to purchase affected physical contact with the item because that attracted other individuals [91]. On S-commerce websites, when an admired/attractive individual recommends a product to other individuals, they are emotionally affected and feel are eager to buy the product. Consequently, they may buy it impulsively to identify with these people. Thus, the two below hypotheses are introduced:

H3a: Identification positively influences IBB in S-commerce.

H3b: Identification positively influences UBI in S-commerce.

### D. ENTERTAINMENT AND IMPULSE BUYING BEHAVIOR

Entertainment is defined as the pleasure and relaxation gained by surfing or contacting with other individuals, for example, friends/family/group members in S-commerce [57]. The motivations of online shoppers include seeking benefits such as uniqueness, fun, and entertainment [92]. By browsing exciting content shared by others, sharing others' life experiences, and spreading e-WOM, individuals can escape from problems and feel entertained [68]. Previous studies have found that entertainment significantly affected consumer planned buying behavior [93] and IBB in traditional

shops [60]. Thus, in S-commerce settings, individuals obtain fun and entertainment when reading and interacting with other individuals' recommendations/product reviews. Consequently, they become emotional and more interested in the recommended products, and the likelihood of IBB increases. Thus, the below-mentioned hypothesis is proposed:

H4: Entertainment positively influences IBB in S-commerce.

### E. PURPOSIVE VALUE AND IMPULSE BUYING BEHAVIOR

Purposive value is the value that individuals derive from accomplishing pre-defined informational and instrumental purpose through social interaction in the S-commerce. It consists of informational and instrumental values [55]. Previous research proved that instrumental value influenced individual behavioral intention [94] and the willingness to purchase [95]. It also confirmed that the informational value generated when consumers seek information during a purchase process affected the purchase behavior for new products or brands, and also the amount spent [96]. In line with previous studies, when consumers browse S-commerce websites to obtain purposive value such as information about the latest products, they exposed to a lot of information about products. As a result, an unplanned impulsive purchase may happen. Accordingly, the subsequent hypothesis is introduced:

H5: Purposive value positively influences IBB in S-commerce.

### F. SELF-DISCOVERY AND IMPULSE BUYING BEHAVIOR

It is defined as the understanding and deepening of the salient aspects of oneself through social interactions [55]. [97] found that self-discovery positively affected consumer purchase intention in the collaborative shopping group. Social media powers S-commerce to allow individuals to observe others' recommendations, ratings, and product reviews. Thus, they can learn about others' preferences, tastes, values, and they also understand their product preferences and interests [62]. Moreover, during this self-discovery process, individuals discover new products [97] and may indulge in impulsive buying. Therefore, the below hypothesis is suggested:

H6: Self-discovery positively influences IBB in S-commerce.

### G. SOCIAL ENHANCEMENT AND IMPULSE BUYING BEHAVIOR

Social enhancement is recognized as the value that an individual's derive from being accepted and approved by friends or family/group members and, therefore, enhances individual social status [82]. The evaluation of the product by individuals is based not only on utilitarian (e.g., functional performance) and hedonic values (e.g., Enjoyment) but also on social values such as social enhancement. Social value is recognized as an improvement in status and self-esteem. A great social value level enhances the satisfaction

of individual towards S-commerce and influences buying intention [98]. Furthermore, previous studies revealed that social enhancement significantly influenced both individual satisfaction [99] and purchase intention [100]. Thus, based on the previous findings, individuals using S-commerce tend to buy products impulsively to obtain social approval and acceptance, impress others and enhance personal social status. Consequently, the subsequent hypothesis is suggested:

H7: Social enhancement positively influences IBB in S-commerce.

#### **H. MAINTAINING INTERPERSONAL INTERCONNECTIVITY AND IMPULSE BUYING BEHAVIOR**

It refers to the social values gained through the establishment and keeping connection with others. For example, friends/family or group members provide social support, intimacy, and strong friendship [82]. Previous research revealed that social enhancement and maintaining interpersonal interconnectivity were essential social gratifications from social media [56]. Most people join online virtual communities to address loneliness, meet like-minded individuals, and gain company and social support. [101] found that maintaining interpersonal connectivity positively influenced individual purchase intention, purchase cost and frequency. During social interactions, individuals develop their online identities and build networks to gain social values like friendship, social support, and intimacy. Thus, S-commerce creates intense affection feelings, belongingness, trust, and warmth between the consumers [102]. Therefore, individuals tend to impulsively buy products recommended by others to develop or preserve favorable relationships with other individuals in their networks. Therefore, the following hypothesis is proposed:

H8: Maintaining interpersonal interconnectivity positively influences IBB in S-commerce.

#### **I. IMPULSIVENESS**

Individual traits play a significant role in influencing behavior and considering only environmental stimuli provides a limited understating of IBB [18], [25]. Thus, individual traits like impulsiveness are important factors that should be considered in the IBB context. Impulsiveness is recognized as a tendency to experience a sudden desire to make spontaneous purchases and to behave on such desire with a few thought or assessment of purchase consequences [21], [103]. Individuals have different impulsiveness levels. Consumers with higher impulsiveness levels are probably experienced an urge to buy a product impulsively [18], [21], [104]. Furthermore, impulsiveness has a positive moderating effects on the relationship between individual attitudes and behavior [105]. Reference [30] figured out that the association between reviews and IBB is moderated by impulsiveness. Reference [21] also supported that, for individuals with high impulsiveness the relationship between completeness and UBI is stronger than for individuals with low

impulsiveness. In line with previous studies, this study examines the moderating effects of impulsiveness on the relationships between social influences, particularly, compliance, internalization, and identification and UBI in S-commerce. Thus, the subsequences hypotheses are introduced:

H9a: Impulsiveness significantly moderates the relationship between compliance and UBI, so that the positive effect of compliance on UBI is greater for individuals with high impulsiveness.

H9b: Impulsiveness significantly moderates the relationship between internalization and UBI, so that the positive effect of internalization on UBI is greater for individuals with high impulsiveness.

H9c: Impulsiveness significantly moderates the relationship between identification and UBI, so that the positive effect of identification on UBI is greater for individuals with high impulsiveness.

#### **J. UBI AND IBB**

UBI is a state of desire an individual feels to buy something immediately when exposed to an object on S-commerce platforms. Reference [5] demonstrated the significance of emotion in IBB. Previous studies [30], [32], [106], [107], [108] provide evidence regarding the positive and significant impact of UBI on IBB. Consistent with prior research discriminating UBI and true IBB, the present study also notes their differences and suggests a significant relationship between them, i.e., when shoppers experience a sudden UBI on S-commerce, they are more prone to IBB. Accordingly, the subsequent hypothesis is suggested:

H10: UBI has a positive influence on IBB in S-commerce.

#### **K. MEDIATION EFFECTS OF UBI**

The strong urge is one of the distinct characteristics of impulse buying. Thus, previous studies highlighted the importance of strong feelings that precede the actual impulse buying behavior and the mediation effects of the UBI [109]. Reference [32] found that UBI significantly influenced the relationship between browsing and IBB; consumers' online IBB is influenced by browsing through UBI. UBI also positively mediated the relationship between urgency and IBB [107]. Moreover, previous studies supported that there were positive relationships between social influence (compliance, internalization, and identification), IBB, and individual desire. In an offline environment, it has been found that compliance significantly influences IBB [48] and an individual's desire [80]. Reference [60] found that internalization and identification significantly influenced IBB in the offline environment. It has also been found that internalization and identification positively affect an individual's desire [53]. Accordingly, the current study also investigates the mediation effects of UBI on the relationships between social influence (compliance, internalization, and identification) and online IBB in S-commerce. Therefore, the below hypotheses are suggested:

H11a: The relationship between compliance and IBB in S-commerce is positively mediated by UBI.

H11b: The relationship between internalization and IBB in S-commerce is positively mediated by UBI.

H11c: The relationship between identification and IBB in S-commerce is positively mediated by UBI.

#### IV. RESEARCH METHODOLOGY

The study aims to develop a model for triggering the online IBB in S-commerce by identifying the factors that affect the consumers and induce them to buy impulsively. Therefore, the positivism paradigm has been chosen since it is a useful research paradigm that can help test the hypotheses between endogenous and exogenous variables (Swanson and Holton, 2005) by gathering quantitative data using a survey and then performing statistical analysis.

##### A. SELECTION OF S-COMMERCE WEBSITES AND TARGET POPULATION

The researchers investigated seven popular E-commerce websites in Malaysia to decide on the websites that will be used for data collection. Based on the social commerce market share digital report of [110], the Asia Pacific region accounted for the largest revenue share of 68.47% in 2020. Malaysia was ranked the third country in the Asia Pacific region by clocking 3 hours and 24 minutes spent daily on social media [111], and 94% of Malaysians buy products using S-commerce websites and 62% buy products impulsively.

These E-commerce websites include Shopee, Lazada, Lelong.my, Carousell, Zalora, 11street, and hermo, as per the suggestions of [112]. Subsequently, the researchers adopted the S-commerce website design model developed by [3] to investigate these websites. They suggested that the S-commerce model contains four layers, namely, individual, conversation, community and commerce. Each layer has a set of design features. Thus, for any S-commerce platform, it is essential to achieve a basic set of S-commerce design features [3]. After the investigation, the researchers selected four websites which include Zalora, Shopee, Carousell and Lazada because they fulfilled most of the design features proposed by [3]. Additionally, these websites are well-established and well-known in Malaysia. Therefore, the suitable population for this study comprises the individuals who use the selected S-commerce websites and have experienced online IBB with regard to these websites. After that, the researcher used three control questions in the first section of the research questionnaire to select the target respondents. These control questions are: 1) Which one of the following S-commerce websites do you use?; The answer to this question confirms that the respondent uses at least one of the selected websites. 2) Which one of the following S-commerce websites do you follow/Like on Facebook?; The answer to this question confirms that the respondent follows at least one of the selected websites and is familiar with the social aspect of it. 3) Did you make online impulse buying

at least once over those S-commerce sites?; The answer to this question confirms that the respondent has experienced online impulse buying at least once in one of the selected S-commerce websites. These questions help the researcher to discard any respondents who do not use at least one of the selected S-commerce websites and do not experience impulse buying on it.

Therefore, choosing respondents using the selected S-commerce websites and encountering impulse buying will provide relatively reliable and accurate responses to the research survey. Furthermore, the purposive sampling was used to choose a representative sample. Purposive sampling was chosen because it enables the investigators to choose the elements based on specific criteria (Husain et al., 2019). The researchers used two selection criteria (1) the participants are using at least one of the specified S-commerce websites (i.e., Shopee, Lazada, Zalora, and Carousell; (2) the participants have experienced online IBB at least on one of these S-commerce websites. If a participant satisfied both criteria, s/he would be chosen for the sample. The second reason for using this sampling technique is that purposive sampling is beneficial if the researcher wants to investigate the phenomenon or develop new insights where little is known [113]. Therefore, using this sampling technique allows researchers to question only those individuals who are likely to have reliable information necessary for research. It should be noted that this research considers the individual as the element of analysis.

References [114] and [115] believed that the 10-times rule of thumb roughly determines the required minimum sample size. Hence, they recommend using power analyses to specify the sample size based on that part of the model, which has the largest number of independent variables. Thus, this study used G\*Power to perform power analysis particular to model setups. The results of G\*power analysis indicated that the required sample size is 172. Therefore, the sample comprising 365 records was adequate for the study.

##### B. SURVEY DEVELOPMENT AND VALIDATION

To develop a valid instrument, the researchers generated a pool of items for each variable/construct in the proposed model from previously existing and validated measures. This step is concerned with developing a set of measurement items or indicators that capture the construct's conceptual domain and all latent aspects. Using the previously existing and validated measures improves the validity of the developed questionnaire [116]. The researchers then revised the generated items to suit the context of S-commerce. The constructs and their generated measures are presented in Appendix A. The survey contained four sections. Section A briefly introduces the aims of the study and defines concepts specific to S-commerce and impulse buying behavior. It also consists of demographic information of participants (gender, highest education level, age, and employment status) and the control questions to exclude the respondents who do not use S-commerce websites or encounter IBB. Multiple-choice

questions were used to allow the respondents to tick the appropriate box for answering the questions of this section. Sections B, C, and D contain questions about constructs. Furthermore, Scales of five-point Likert were used to allow the participants to indicate their agreement level for every statement (strongly disagree =1, disagree =2, neutral =3, agree =4, and strongly agree =5). The five-point Likert scale has been chosen because Adelson and McCoach [117] proposed that the five-point Likert scale is the preferred type of Likert scale because it provides less model misfit.

According to Hair Jr et al. [118], Hair et al. [119], all constructs were considered as reflective measures because the arrows are from construct to its items, items represent the effects of their construct, construct trait explains the indicator and individual items for each construct are interchangeable, and any single item can be removed without changing the meaning of the construct as long as the construct has sufficient reliability.

To ensure instrument reliability and validity, the researchers conducted three procedures: face validity, content validity, and pilot study. During the face validity phase, a panel of three experts with substantial knowledge about Information Systems (IS) methodologies was selected to validate whether the developed questionnaire was sensible. The experts provided valuable feedback on the design of the questionnaire and the measurement scales. Accordingly, the researchers improved on the instrument design and the wording of the questions. Content validity is the most important type of validation when developing the research instrument.

Content validity is the second procedure conducted to validate the instrument. It is described as the extent to which a sample of measures constitutes a suitable operational definition of a construct [120]. The researchers prepared a content validity form, attached it with a summary of the study, and sent it to seven experts in the S-commerce and impulse buying fields to rate the items listed on the instrument. After the content validity forms were collected from the experts, the researchers computed both the content validity of each item (I-CVI) and that of the overall scale (S-CVI) as per the suggestions by [120]. The results of content validity revealed that all the items exceeded the threshold of item acceptability (0.78) except four items which were, therefore, removed from the instrument. Furthermore, according to the experts' feedback, some improvements were made in the instrument design. The last procedure to validate the instrument was the pilot study. A sample size of 10-40 is considered sufficient for conducting a pilot study [121]. Therefore, the researchers conducted a pilot study using a small sample size of 60 participants. Subsequently, they applied the PLS-SEM analysis method using SmartPLS V.3 software to assess the measurement model. This process is concerned with determining the questionnaire reliability and validity.

Concerning the internal consistency reliability analysis, the results of both Cronbach's alpha and composite reliability showed that all the indicators/items satisfy the required value of reliability. For the evaluation of the measurement

models, two validity tests, namely, convergent and discriminant validities were examined. The indicators' outer loadings and the average variance extracted (AVE) should be examined to evaluate the convergent validity [115]. The results indicated that all indicators passed for both measures since they met or exceeded the threshold values, except two indicators related to internalization, which were removed. Discriminant validity was evaluated through three approaches, specifically, cross-loading, Fornell-Larcker, and heterotrait-monotrait ratio (HTMT), as described by [118]. The results of all three approaches indicated that the instrument measures passed the discriminant validity test.

### C. DATA COLLECTION AND ANALYSIS

Data collection took place between June 2019 and August 2019. Online and paper-based questionnaires were distributed to the target respondents. The Survey Monkey online software was used to design and host the online survey for the research. Subsequently, the link to the online survey was spread through email and WhatsApp to students and employees in certain Malaysian universities, namely, UTM, UPM, UM, UKM, and USM. Furthermore, a paper-based survey was distributed among the Malaysian people using places like restaurants, shops, malls, and conferences. The researchers collected 365 valid questionnaires out of the 400 distributed questionnaires. The collected data were then analyzed by applying the partial least squares-structural equation modelling (PLS-SEM) method using SmartPLS. V3 software. PLS-SEM is more suitable when the model is complex (contains ten or more constructs and 50 or more items). Also, when researchers need more analysis such as IPMA, moderating, and mediating analysis PLS-SEM is the best choice [114], [118], [122]. In addition to that, PLS-SEM has user-friendly software packages that normally do not need deep technical knowledge of the method.

### V. RESULTS

The data analysis was performed according to the two-stages suggested by [118]. Firstly, the measurement model was tested according to specific criteria to evaluate its reliability and validity using the PLS-SEM algorithm. Secondly, the structural model was assessed to examine the relationships between the constructs. Before beginning the assessment, the researchers conducted a preliminary investigation of the data to detect any missing values, outliers, and suspicious patterns [118]. In this step, the researchers excluded three questionnaires that had missing values. All the model constructs were measured reflectively using 45 measurement items.

The analysis of the respondents' profiles provides insight into the online shoppers of Malaysian S-commerce websites who participated in the primary survey. As shown in Table 2, 48% of the participants were males, while the remaining 52% were females. The analysis further indicates that most of the impulsive online buyers were in the age category between 20 and 29 years (44%) followed by the 30-39 years.



A majority of the participants were students (62%). Additionally, Lazada was the most used S-commerce website, and forty-nine per cent (49%) of respondents used it; Carousel was the least used S-commerce website with about 5% of the respondents reported having used the website. A majority of the S-commerce shoppers impulsively buy products in the fashion and fashion accessories category (32%) followed by electronic devices (30%).

**A. ASSESSMENT OF THE MEASUREMENT MODELS**

A measurement model examines the relationship between the indicators and their associated variables. The assessment of the measurement model comprises internal consistency reliability, convergent, and discriminant validities. The researchers used the assessment criteria proposed by [118]. The criteria for evaluating internal consistency reliability include Cronbach’s alpha and composite reliability. As shown in Table 3 all the measurement models’ indicators fulfilled the recommended threshold values for both Cronbach’s alpha (0.60-0.90) and composite reliability (0.60-0.90). Hence, the results indicate that all the constructs have established internal consistency reliability.

The outer loading of the indicators and the AVE should be examined to assess the convergent validity [114], [115]. The findings in Table 3 reveal that all the indicators’ outer loadings exceeded the threshold value (> 0.70); thus, the convergent reliability has been established at the indicator level. The finding also show that all the constructs’ values of AVE were above 0.50. Thus, convergent validity has been established at the construct level.

Discriminant validity is evaluated through three methods, including, Cross-loading, Fornell-Larcker, and Heterotrait-Monotrait Ratio (HTMT) [114], [115]. The cross-loading findings confirm that each indicator has a higher correlation with its construct as compared to other variables. The Fornell-Larcker results also indicate that the AVE’s square roots for all the variables are more significant than the correlations with other constructs. Furthermore, HTMT results in Table 4 confirm that all model constructs are unique; HTMT values for all the combinations of constructs are less than 0.85. Additionally, Table 2 also indicates that HTMT confidence intervals for all constructs do not include (1). Thus, the results of all tests indicate that discriminant validity is achieved.

**B. THE STRUCTURAL MODEL EVALUATION**

In this stage the hypothesized relationships and the model’s predictive capability are assessed. To evaluate the structural model, the steps described by [118] were followed, which include assessment of collinearity, path relationships, determination coefficient (R<sup>2</sup>), and effect size(f<sup>2</sup>). Collinearity issue was assessed using the variance inflation factor (VIF) and tolerance. All constructs values of VIF in Table were less than five (5), and tolerance values were greater than 0.20 [118]. Table confirms the absence of Collinearity in the proposed model.

**TABLE 2. Demographic profile.**

	Frequency	Percentage
Gender		
Male	175	48
Female	190	52
Age		
< 20 Years	5	1
20-29 Years	160	44
30-39 Years	130	36
40 years and over	70	19
Level of education		
High school	11	3
University	78	21
Postgraduate	276	76
Employment Status		
Student	227	62
Employed	126	35
Unemployed	12	3
S-commerce site used		
Lazada.com	49	
Shopee.com	37	
Zalora.com	9	
Carousel	5	
Frequency of purchase		
Once a week	43	6.9
Once a Month	162	26
Every 3 months	177	28.4
Every 6 months	242	38.8
Impulsive Product category		
Groceries and pets	7	
Fashion and fashion accessories	32	
Electronic devices	30	
Health and beauty	19	
Sport and travel	12	

The path coefficients were estimated to examine the significance of the hypothesized relationships. As proposed by Hair Jr et al. [118], a bootstrap procedure was used to evaluate the significance of each path coefficient (β) statistically. An estimated path close to +1 indicates a strong positive relationship, which is typically statistically significant. Nevertheless, if the assessed coefficients are near (zero); the relationships are weak. The results in Table and Table reveal that the β values for hypotheses H1a, H1b,H2a, H2b, H3a, H3b, H4, H5, H8, H9a, H9b, H10 are greater than zero, which indicates theses hypotheses are positively significant. Moreover, the assessment of the significance of the path coefficient includes the investigation of t-value, p-value, and confidence interval (CI). The critical t-value that is commonly used for the two-tail test at 5% significance level is 1.96. Thus, if t-value exceeds the threshold value, the coefficient is significant [118]. The findings in Table and Table support that all the hypotheses are significant except H6, H7, and H9c; all the t-values are above the critical value (1.96) except for H6, H7, and H9c. The P-value is the likelihood of wrongly

rejecting a correct null hypothesis. The P-value should be less than 0.05 at a significant level of 5%. The findings in Table and Table indicate that all hypotheses are supported except for three relationships (H6, H7, and H9c). Moreover, the bootstrap confidence intervals presented in Table and Table also confirm that all the relationships significantly differ from zero except H6, H7, and H9c.

The values of R<sup>2</sup> are assessed to measure the proposed model’s predictive power (in-sample). R<sup>2</sup> measures the degree of variance in the dependent construct, as explained by all the predictors’ variables connected to it [118]. R<sup>2</sup> values near 0.670 are regarded as substantial, values near 0.333 are regarded as moderate, and values around 0.190 are weak [123], [124]. The results show that R<sup>2</sup> is substantial for IBB (0.614), which means that 61% of the variance in consumer IBB is explained by the set of exogenous variables (COM, IDE, INT, ETV, PUV, MIC and UBI). Meanwhile, 40% of the variance in UBI is explained by COM, IDE, INT, and IPN. Furthermore, the contribution of each construct to the R<sup>2</sup> of a specific dependent variable is measured by effect size (f<sup>2</sup>) [114]. F<sup>2</sup> values around 0.02 are regarded as small, values about 0.15 are considered medium, and value of 0.35 is large [125]. Table, displays the f<sup>2</sup> values of the independent variables.

**C. MEDIATION ASSESSMENT OF UBI**

Mediation happens if a third mediator construct interferes between two connected variables. A series of analyses are needed to examine mediation type. Initially, the indirect relationship is assessed using the mediator construct. If the result is insignificant, it indicates that the construct does not serve as a mediator. In the second step, an additional analysis of the direct effect is conducted; if the direct relationship is significant, it indicates that an omitted mediator may explain the relationship between the two related constructs (direct only-no mediation). If the direct relationship is insignificant, it suggests no effect-non-mediation. However, if the indirect relationship is significant, but the other is not, it can be considered that there is an indirect effect (full mediation). If both indirect and direct relationships are significant, it can be concluded that partial mediation exists (complementary or competitive) [118].

The researchers used the bootstrapping method to apply the mediation analysis to assess the mediating effect of UBI on the relationships between social influence factors (i.e., COM, IDE and INT) and IBB. Based on the findings in Table, there are positive direct relationships between compliance and IBB ( $\beta = 0.140$ , t-value = 3.628, p-value <.001), internalization and IBB ( $\beta = 0.115$ , t-value = 2.696, p-value = 0.007), identification and IBB ( $\beta = 0.157$ , t-value = 3.177, p-value = 0.001). Additionally, the relationships between compliance ( $\beta = 0.283$ , t-value = 5.237, p-value <.001), internalization ( $\beta = 0.181$ , t-value = 3.978, p-value <.001), identification ( $\beta = 0.261$ , t-value = 4.975, p-value <.001) and UBI are significant as well as the relationship between UBI and IBB ( $\beta = 0.112$ , t-value = 2.634, p-value = 0.008). The results

**TABLE 3. Measurement model.**

Indicators	Convergent validity		Internal Consistency Reliability		Discriminant Validity
	Loadings	AVE	Cronbach’s Alpha	Composite Reliability	
	>0.70	>0.50	0.60-0.90	0.60-0.90	HTMT confidence interval Does not include 1
COM-1	0.781	0.6			
COM-2	0.781	14	0.843	0.888	Yes
COM-3	0.801				
COM-4	0.769				
COM-5	0.785				
IDE-1	0.866	0.7			
IDE-2	0.884	37	0.881	0.898	Yes
IDE-3	0.854				
IDE-4	0.827				
INT-1	0.831	0.7			
INT-2	0.870	09	0.795	0.880	Yes
INT-3	0.824				
ETV-1	0.706	0.5			
ETV-2	0.797	31	0.705	0.819	Yes
ETV-3	0.730				
ETV-4	0.776				
PUV-1	0.820	0.6			
PUV-2	0.819	91	0.888	0.818	Yes
PUV-3	0.823				
PUV-4	0.829				
PUV-5	0.864				
SEV-1	0.798	0.6			
SEV-2	0.907	42	0.857	0.839	Yes
SEV-3	0.863				
MIC-1	0.794	0.6	0.783	0.874	Yes
MIC-2	0.865	98			
MIC-3	0.846				
SEV-1	0.878	0.6			Yes
SEV-2	0.745	98	0.806	0.874	
SEV-3	0.877				
IPN-1	0.741	0.6			
IPN-2	0.843	54	0.870	0.804	Yes
IPN-3	0.812				
IPN-4	0.829				
IPN-5	0.815				
UBI-1	0.762	0.6			
UBI-2	0.844	75	0.839	0.892	Yes
UBI-3	0.826				
UBI-4	0.851				
IBB-1	0.780	0.5			
IBB-2	0.727	81	0.855	0.893	Yes
IBB-3	0.781				
IBB-4	0.769				
IBB-5	0.741				
IBB-6	0.773				

in Table also support that there are positive indirect relationships between compliance and IBB ( $\beta = 0.032$ , t-value = 2.365, p-value < 0.05), internalization and IBB ( $\beta = 0.020$ , t-value = 2.149, p-value < 0.05), identification and IBB ( $\beta = 0.029$ , t-value = 2.250, p-value < 0.05). Thus, it can be concluded that UBI serves as a complementary mediator.

**D. ASSESSMENT OF MODERATED MEDIATION ROLE OF IMPULSIVENESS**

Moderated mediation happens if a moderator construct interrelates with a mediator construct, indicating that the indirect

TABLE 4. Discriminant validity (HTMT).

	C O M	E T V	ID F	IP N	IN T	M IC	P U V	S F D	S E V	U BI	I B B
C O M											
E T V	0.5 34										
ID F	0.6 92	0. 58									
			1								
IP N	0.3 84	0. 46	0. 41								
				7 4							
IN T	0.2 79	0. 15	0. 21	0. 16							
					6 8						
M IC	0.3 17	0. 32	0. 29	0. 41	0. 47						
						2 0					
P U V	0.1 11	0. 04	0. 08	0. 13	0. 34	0. 23					
							8 3				
SF D	0.2 32	0. 20	0. 15	0. 23	0. 46	0. 69	0. 35				
								7 4			
SE V	0.3 48	0. 24	0. 30	0. 37	0. 55	0. 69	0. 29	0. 57			
									2 2		
U BI	0.8 06	0. 49	0. 75	0. 41	0. 21	0. 24	0. 09	0. 11	0. 30		
										4 8	
IB B	0.6 30	0. 84	0. 67	0. 68	0. 15	0. 35	0. 09	0. 15	0. 26	0. 62	
											9 1

relationship values are changed based on the moderator’s value [118]. In present study, impulsiveness is a moderator that influences the indirect relationship between social influence factors (compliance, identification, and internalization) and IBB through UBI. The two-stage method is recommended when the objective is to test if the moderator is significant [118]. During the first stage, the main effects of the structural model (without interaction) are assessed to ascertain construct scores. During the second stage, the scores generated for the independent constructs and the moderator construct are multiplied to generate a single-indicator that is used to assess the interaction term. The results in Table confirm that IPN has interaction moderating effects on the relationship between COM and UBI (0.182) along with INT and UBI (0.112). However, it does not moderate the relationship between IDE and UBI. Reference [126] provided the general guidelines for evaluating  $f^2$  and suggested that values 0.025, 0.021, and 0.005 correspond to large, medium, and small effects, respectively. The results also show the significant effect of IPN as a moderator on the relationship between COM and UBI. At the same time, its effect on the relationship between INT and UBI is medium.

To examine the moderated mediation effects of IPN, the specific indirect effects were examined. As shown in Table 7, the specific indirect effects of COM\* IPN-> UBI->IBB, and INT\* IPN-> UBI->IBB are positively significant concluding that the indirect relationships between social influence

variables (compliance, and internalization) and IBB through UBI is moderated by IPN. Moreover, the results in Table 6 indicate that UBI mediates the relationships between (compliance, internalization, and identification) and UBI.

E. IMPORTANCE-PERFORMANCE MAP ANALYSIS (IPMA)

To priorities the influential factors of IBB based on their importance, the researchers used importance-performance map analysis (IPMA). IPMA uses the latent construct scores’ average values. The factors’ importance in forming the endogenous construct is represented by the total effect, while the average latent construct scores indicate performance. The primary goal of performing IPMA is to specify the constructs that have relatively great importance, but their performance is low concerning the dependent variable. These constructs represent possible improvement areas that might receive substantial attention [118]. Figure 2 shows five predecessors, namely entertainment, purposive value, maintaining interpersonal connectivity, compliance, and identification, which had high importance for IBB. Entertainment has the highest importance in this model. The entertainment’s total effect on IBB was around 0.27. Specifically, a one-point rise in entertainment value raises the IBB performance by the total effect size corresponding to the construct (0.27). Purposive value had an effect comparable to that of entertainment; however, the total effect of purposive value was 0.239. Compliance affected IBB by a factor of 0.166, with a performance of approximately 0.51. The total effect of maintaining interpersonal connectivity was 0.183, while that for identification was 0.166, with low -performance values of 41.55 and 40.12, respectively. Although the other variables achieved high performance, their importance was small compared to the five variables explained above.

VI. DISCUSSION

The theoretical model proposed for this study was based on the integration of SIT and UGT theories and consumer characteristics to induce the consumer’s online IBB on S-commerce platforms. The findings of the study revealed that compliance significantly affects IBB, which means that individuals can buy a product impulsively to conform to the expectations of others they consider important. Compliance has been recognized as a significant force in forming the behavior of consumers. It is understood that individuals comply with others’ expectations to obtain social acceptance [58]. This result is consistent with [60], who proved that consumer IBB in traditional shopping is influenced by compliance. The results also revealed that internalization and identification positively affect online IBB. This indicates that individuals may impulsively buy products recommended/purchased by popular or similar individuals. Individuals trust others who share similar interests. Thus, when an individual obtains product information from a trustworthy source, s/he will evaluate the information emotionally and decide faster without much thought, leading to IBB [23]. Furthermore, an individual aspires to be similar to other attractive or popular

individuals and create a positive relationship with them; therefore, individuals tend to identify with influential individuals through the purchase and use of products bought or recommended by them [59]. The study by. Yani et al. [60] supported that internalization and identification significantly influenced IBB in the offline environment.

Furthermore, this study supports that UBI serves as a complementary mediator in three relationships, namely, H1a, H2a, and H3a. Compliance influences UBI, which, in turn, increases IBB. Therefore, some of the effects of compliance on IBB are explained by UBI. Furthermore, identification influences UBI, which consequently increases IBB. Thus, some of the influence of the identification aspect on IBB is elucidated by UBI. Similarly, internalization influences UBI, which results in higher IBB. Therefore, some part of the influence of internalization on IBB is elucidated by UBI. The reason is that UBI provides the motivational impetus for the actual purchase behavior. Once an object in the environment triggers the urge to buy, an impulse encourages instant behavior, and the desire may be strong and persistent, leading to actual impulse buying behavior [127]. These results are consistent with those of [80] and [128], who discovered that individual desire is positively influenced by compliance. Kim and Kim [52] also found that internalization positively affects consumer desire. A study by [53] supported that identification significantly influences individual desire.

However, the findings of the study disclose that consumer needs and the social gratification obtained by using S-commerce websites influence online IBB. The study supports that entertainment significantly affects online IBB, which means that when individuals experience positive feelings (i.e., feel entertained) due to the interaction with others or with the website itself, they tend to buy more products out of their shopping list. Furthermore, consumers lose self-control when they are in a highly emotional state, which leads them to purchase more products [82]. Song and Yoo [93] vely influences individual buying behavior. Additionally, the present study also shows a significant relationship between purposive value and IBB. When individuals browse S-commerce websites for informational and instrumental value, they may face IBB. Receiving high levels of a product’s purposive value leads to a greater level of perceived quality. It reduces the feelings of risk associated with the product, thereby making individuals more interested in the product [102]. This finding is consistent with [96], who figured out that purposive value and purchase behavior are positively associated. Furthermore, it has been found that the consumer’s online IBB is affected by maintaining interpersonal connectivity, which is an observation consistent with the findings of. Ho and Wu [129]. Among the most basic needs are social needs; thus, an individual buys the products recommended by others to maintain satisfying relationships with them [130].

Unexpectedly, this study has found that social enhancement and self-discovery do not influence IBB. These unexpected results might be attributed to another factor, such as product type. Individuals are likely to buy symbolic

TABLE 5. Hypotheses testing.

Hypothesis	$\beta$	t-value	p-value	95% CI	VIF(< 5)	f <sup>2</sup>	Decision
H1a	0.283	5.237	p<.001	[0.176, 0.390]	1.422	0.102	Supported
H1b	0.140	3.628	p<.001	[0.064, 0.214]	1.444	0.035	Supported
H2a	0.181	3.978	p<.001	[0.092, 0.271]	1.387	0.073	Supported
H2b	0.115	2.696	0.007	[0.037, 0.205]	1.285	0.027	Supported
H3a	0.261	4.975	p<.001	[0.157, 0.362]	1.581	0.073	Supported
H3b	0.157	3.177	0.001	[0.055, 0.251]	1.721	0.037	Supported
H4	0.231	3.750	p<.001	[0.116, 0.358]	1.954	0.101	Supported
H5	0.194	4.425	p<.001	[0.103, 0.274]	1.578	0.062	Supported
H6	0.003	0.070	0.945	[-0.066, 0.105]	1.277	0.000	Not Supported
H7	0.086	1.655	0.098	[-0.052, 0.153]	1.232	0.016	Not Supported
H8	0.203	3.933	p<.001	[0.101, 0.303]	1.905	0.056	Supported
H10	0.112	2.634	0.008	[0.026, 0.194]	1.619	0.102	Supported

products rather than utilitarian to express and enhance their image [131]. As it can be noticed in the respondents’ profile, most of the shoppers(32%) bought symbolic products such as fashion and accessories impulsively rather than utilitarian products (groceries and pets, 7%). Bei et al. [132] pointed out that social enhancement had an insignificant influence on the intention of buying utilitarian products but positively influenced the purchase intention concerning symbolic products. These results are consistent with those of [133], who found that the relationship between social enhancement and IBB in offline shops was insignificant. Oliveira et al. [82] also showed an insignificant relationship between self-discovery and individual behavior on S-commerce sites.

Furthermore, the moderated mediating role of impulsiveness has been supported in this study. Higher levels of impulsiveness cause a stronger relationship between compliance



TABLE 6. Results of mediation analysis.

Path	Direct Effect	95% CI of the direct effect	T-value	(P<0.05)	Indirect Effect	95% CI indirect effect	T-value	P<0.05	Mediation effect
H1a	0.140	[0.064, 0.214]	3.628	Yes	0.032	[0.007, 0.061]	2.365	Yes	Complementary (partial mediation)
H1b	0.115	[0.037, 0.205]	2.696	Yes	0.020	[0.004, 0.04]	2.149	Yes	Complementary (partial mediation)
H1c	0.157	[0.055, 0.251]	3.177	Yes	0.029	[0.007, 0.058]	2.250	Yes	Complementary (partial mediation)

TABLE 7. Results of moderated mediation analysis.

Hypothesis	Path	$\beta$	t-value	p-value	95% CI	VIF(<5)	f <sup>2</sup>	Decision
Moderator	IPN -> UBI	0.212	5.259	p<.001	[0.135, 0.294]	1.037	0.073	Supported
Hypothesis	Interaction Term	$\beta$	t-value	p-value	95% CI	VIF(<5)	f <sup>2</sup>	Decision
H9a	COM * IPN -> UBI	0.182	3.444	0.001	[0.072, 0.280]	0.040	0.040	Supported
H9b	INT * IPN -> UBI	0.112	2.144	0.032	[0.013, 0.217]	0.002	0.020	Supported
H9c	IDE * IPN -> UBI	-0.084	1.695	0.090	[-0.176, 0.019]	0.016	0.002	Not Supported
Specific Indirect Effects:								
Indirect Effects	COM * IPN -> UBI -> IBB	0.020	2.354	0.019	[0.007, 0.044]	-	-	Supported
Indirect Effects	INT * IPN -> UBI -> IBB	0.022	2.100	0.030	[0.011, 0.037]	-	-	Supported

and UBI. In contrast, lower levels of impulsiveness cause a weaker relationship between compliance and UBI. Similarly, higher levels of impulsiveness cause a stronger relationship between internalization and UBI, while lower impulsiveness causes a weaker relationship between internalization and UBI. Surprisingly, it has been found that the relationship between identification and UBI is not moderated by

impulsiveness. This is because individuals with high impulsiveness levels are more sensitive and responsive to environmental cues in addition to the lack of self-control [30].

Interestingly, this study prioritizes the influential factors of the consumers' online IBB based on their importance using an advanced analysis method, namely, IPMA, whose results help in identifying the areas of improvement, which include entertainment value, purposive value, maintaining interpersonal connectivity, compliance, and identification. These factors have high importance in inducing the consumer's online IBB.

VII. RESEARCH CONTRIBUTIONS AND IMPLICATIONS

The present study contributes to the body of knowledge about the behavior of consumer concerning impulse buying in the S-commerce context. It also has implications for academia and S-commerce website designers, marketers, and managers.

A. THEORETICAL IMPLICATIONS

Considering the theoretical aspect, this study extends and enriches the S-commerce and impulse buying behavior body of knowledge in several ways. Most of the previous studies used UBI as a proxy to study consumer IBB. This study highlights the importance of UBI and real IBB to study the consumer's online IBB by examining both UBI and real IBB. Thus, considering both UBI and IBB provided valid and accurate conclusions regarding the influential factors of IBB. Furthermore, as consumer characteristics play a vital role in individual behavior, the study also investigated the moderated mediation effect of impulsiveness traits in IBB.

Furthermore, while previous research focused on the impact of websites-related factors, consumer characteristics, and marketing factors, this study pays attention to the significant impact of social factors in triggering the consumer's online IBB. Additionally, since the majority of IBB studies used the S-O-R framework, the study contributes to the theoretical foundation of IBB studies by integrating two theories, namely, social influence theory (SIT) and uses and gratifications theory (UGT) to study the influential factors of IBB empirically and theoretically. Integration of these two theories has not been applied and used in the previous studies of consumers' online IBB in the S-commerce field. Besides, the study prioritizes the identified factors based on their importance in triggering IBB. The research also provides opportunities for IS researchers to expand this area by suggesting directions for future work.

B. PRACTICAL IMPLICATIONS

The present study can be beneficial for practitioners. The present study's findings serve as guidelines for S-commerce designers, marketers, and managers who are adopting S-commerce or have planned to adopt it to induce online IBB in S-commerce. S-commerce designers can use the study's findings to integrate the identified influential factors of IBB in S-commerce to induce consumers to buy impulsively. The results showed that compliance, identification,

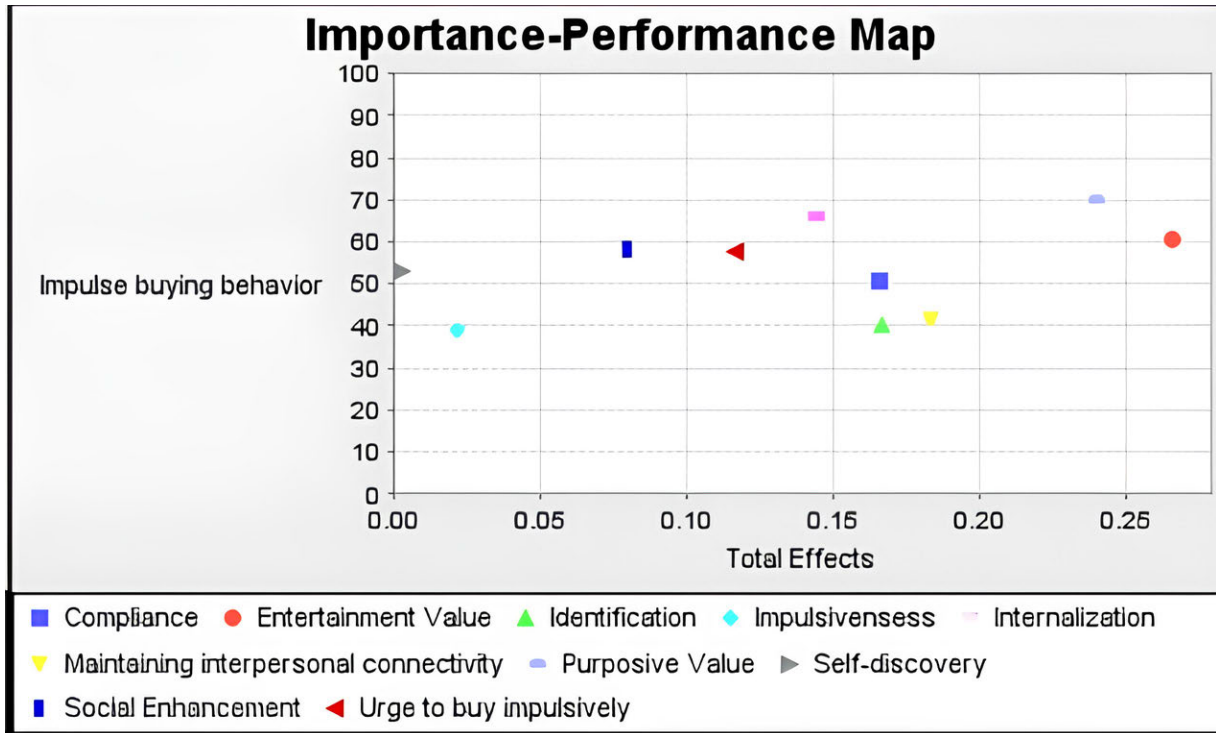


FIGURE 2. Importance-performance map analysis (IPMA) results.

internalization, entertainment, purposive value, and maintaining interpersonal were strongly associated with the consumer’s online IBB. Thus, S-commerce designers need to pay attention to these factors and implement them on websites. It is also essential for designers, marketers, and managers to concentrate on inducing consumers’ UBI and increasing their impulsiveness levels, which will subsequently trigger their IBB. For instance, marketers and managers can segment online impulsive shoppers into groups based on their impulsiveness traits and then formulate suitable marketing and business strategies to stimulate each group.

The results also give some insights into the markets and management of S-commerce websites to formulate good marketing and business strategies for triggering the consumers’ online IBB and subsequently lead to profitable marketing and sustainable business models.

**VIII. LIMITATIONS AND FUTURE RESEARCH**

As the analysis unit of the study emphasizes the individual level, the findings of the present study might not be applicable for groups buying behavior concerning S-commerce websites. Thus, further research works are expected to examine the role of social factors that trigger the consumer’s online IBB on group buying S-commerce websites. Furthermore, the present study used quantitative and survey methods for data collection. Therefore, future studies can overcome the shortages of the survey technique by using other research methods like mixed and neurophysiological methods to get more accurate results, rigorous and objective measurements

of online IBB and help extract new factors that influence IBB from the consumer’s perspective. Additionally, future works can replicate this study using other sampling techniques, such as the stratified sampling technique.

The scope of this study was Malaysia. The participants targeted in this research were individuals with experience with Malaysian S-commerce websites and who have encountered impulse buying behavior. Hence, this factor should be considered when generalizing the study’s results to other contexts. The influential factors of consumer online IBB in other contexts may differ due to cultural factors. Thus, future works can examine the model’s applicability to different contexts and provide more insight into the influential factors of IBB for S-commerce websites. Additionally, since it is challenging to include all social factors of the S-commerce environment in one model, additional efforts are needed to identify other social factors that influence IBB. For example, social power was found to strongly influence compliance [134]; thus, future research can consider the indirect effect of social power on online IBB through compliance.

**IX. CONCLUSION**

The rapid developments in Web 2.0 and social media gave rise to S-commerce, which influences online shoppers’ behavior. Due to the social interaction between consumers on these interactive platforms, online impulse buying has increased significantly. A majority of S-commerce websites are associated with IBB. Thus, this study explored the influence of social factors in the consumer’s online IBB on such

TABLE 8. Constructs and measures.

	Code	Measuring items	Ref
COM	COM-1	It is important that other people who important to me like the products that I buy.	[52, 83, 84, 90, 139]
	COM-2	I like to buy products that impress my friends, family, and others.	[52, 83, 84, 90]
	COM-3	I purchase products that I think other people will approve.	[52, 83, 84, 90]
	COM-4	I generally buy the product important people expect me to buy.	[47, 52, 80, 83]
	COM-5	My buying decisions are often influenced by the opinions of other people who important to me.	[47, 52, 83, 139]
IDE	IDE-1	I feel a sense of belonging when I buy the same products that bought by others in S-commerce.	[90]
	IDE-2	I buy products similar to those by an admired individual in S-commerce to be like them.	[52, 90]
	IDE-3	I buy the same products that bought by others to have strong links with them.	[61]
	IDE-4	I tend to buy products that improve my image in front of other people.	[52, 61]
INT	INT-1	I seek advice from others who use S-commerce sites to help me choosing the best products.	[52, 82, 140]
	INT-2	To make sure I buy the right product, I observe what other people recommend in S-commerce sites	[52, 82, 140]
	INT-3	I ask other people on S-commerce sites regarding products when I have little knowledge about them.	[52, 82, 140]
ETV	ETV-1	Shopping online over social commerce sites is entertaining.	[59]
	ETV-2	I feel relaxed when I browse social commerce sites.	[59, 100]
	ETV-3	I browse S-commerce sites to kill time.	[59, 100]
	ETV-4	I have fun when I go shopping over S-commerce sites.	[85, 96]
PUV	PUV-1	I browse S-commerce sites to get information about products.	[59]
	PUV-2	I refer S-commerce sites to provide others with information about products.	[59]
	PUV-3	Using S-commerce sites enables me to make better decisions about my purchases.	[57]
	PUV-4	S-commerce sites enable me to discuss products with friends, family, and others.	[57]

TABLE 8. (Continued.) Constructs and measures.

SFD	PUV-5	I browse S-commerce sites to learn about the latest products.	[59]
	SFD-1	S-commerce websites help me to learn about my own and others tastes or preferences.	[85, 100]
	SFD-2	S-commerce sites enable me to obtain insights into myself.	[85, 100]
MIC	SFD-3	S-commerce sites allow me to understand the tastes and preferences of myself, friends, family, and others.	[57, 58]
	MIC-1	When I go shopping over S-commerce sites, I contact my friends and family or others to support me in my purchases.	[141]
	MIC-2	S-commerce sites enable me to keep in touch with friends and family.	[59, 133, 141]
SEV	MIC-3	S-commerce sites provide me with an opportunity to make friendships with others whom I had never met.	[133, 141]
	SEV-1	To make a good impression on other people, I buy the products that they recommend in S-commerce sites.	[133, 141]
	SEV-2	I feel important when other people buy a product I recommended to them.	[133, 141]
IPN	SEV-3	I share information about products with others over S-commerce sites to improve my social life.	[133, 141]
	IPN-1	“Just do it” describes the way I buy things in S-commerce.	[29, 31, 106, 142]
	IPN-2	I buy things from S-commerce without much thought.	[29, 106, 142]
UBI	IPN-3	“I see it, and I buy it” describes me	[31, 142]
	IPN-4	“Buy immediately, think about it later” describes me.	[29, 107, 142]
	IPN-5	Buying things spontaneously in S-commerce is fun.	[10, 29, 31, 107]
IBB	UBI-1	I felt a sudden urge to purchase things while I was browsing S-commerce sites.	[31, 34, 107]
	UBI-2	I saw numbers of attractive things in S-commerce websites I wanted to buy even though they were not on my shopping list.	[16, 34, 107, 143]
	UBI-3	I had the inclination to purchase something when I was browsing in S-commerce sites.	[29, 142, 144]
	UBI-4	I felt a desire to buy items other than or in addition to my specified needs when I browsed S-commerce sites.	[29, 31, 142, 143]
	IBB-1	My purchase was unplanned in S-commerce sites.	[16, 34]

TABLE 8. (Continued.) Constructs and measures.

IBB	IBB-2	My purchase was immediate and without thinking.	[16]
	IBB-3	I ended up spending more money than I originally set out to spend in S-commerce sites.	[34, 145]
	IBB-4	I spent lots of money on unplanned items in S-commerce sites	[34, 109]
	IBB-5	When I browsed S-commerce sites, I purchased items I did not intend to buy.	[16, 34]
	IBB-6	I bought more than I had planned to buy in S-commerce	[146]

platforms. The present study is also considered the first among the limited studies that differentiate between IBB and UBI. It investigated the mediating role of UBI in triggering the consumer’s online IBB. Furthermore, it also emphasized the significant role of individual characteristics. It examined the meditation role of individual impulsiveness.

The study’s findings are consistent with prior works. The results support that compliance, identification, internalization, entertainment, purposive value, and maintaining interpersonal connectivity significantly influenced the consumer’s online IBB. Additionally, it is supported that UBI serves as a complementary partial mediator to the relationships between compliance, identification, internalization, and IBB. Impulsiveness also played a significant role as moderated mediation on the relationships between compliance, internalization, and UBI.

Furthermore, this study accomplished its objectives, contributing to the advancement of knowledge on IBB. The model and hypotheses of the study were based on the integration of SIT and UGT theories to extend the knowledge concerning S-commerce and IBB. This study also provided opportunities and avenues for future research. Concerning practitioners, it provided guidelines for S-commerce designers, marketers, and managers that should be incorporated in S-commerce websites to trigger IBB. They can thus enhance their profits and formulate good marketing and business strategies based on the guidelines suggested to induce IBB.

**APPENDIX  
CONSTRUCTS AND MEASUREMENT ITEMS**

Table presents the constructs and their corresponding measures that have been used in the proposed research model.

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**SAMAH ABDELSALAM** received the B.Sc. and M.Sc. degrees in information technology from the Faculty of Mathematical Sciences, University of Khartoum, Sudan, and the Ph.D. degree in information systems from the School of Computing, Faculty of Engineering, Universiti Teknologi Malaysia, in 2021. From 2021 to 2024, she was an Assistant Professor with the Information Technology Department, Faculty of Mathematical Sciences and Informatics, University of Khartoum. She is currently an Assistant Professor with the Department of Management Information Systems, University of Hail, Saudi Arabia. Her current research interests include information systems, social commerce, e-commerce, and computer networks.



**NAOMIE SALIM** (Member, IEEE) received the B.Sc. degree in computer science from Universiti Teknologi Malaysia, the M.Sc. degree in computer science from Western Michigan University, and the Ph.D. degree in information studies from The University of Sheffield. She is currently a Professor with the Faculty of Engineering, School of Computing, Universiti Teknologi Malaysia, where she is also the Deputy Dean (research and innovation) of the Faculty of Engineering. She has authored more than 100 journal articles and conference papers since the inception of her research career. Her main research interests include text mining, machine learning, information retrieval, cheminformatics, and natural language processing.





**ROSE ALINDA ALIAS** received the B.Sc. degree in computer science and the M.Sc. degree in computer information systems from the University of Miami, Coral Gables, FL, USA, and the Ph.D. degree in information systems from the University of Salford, U.K. She is currently a Professor with the Azman Hashim International Business School (AHIBS), Universiti Teknologi Malaysia. Her main research interests include knowledge management, information systems strategy and planning, and information systems quality.



Her current research interests include information systems, information retrieval, research collaboration, and expert finding systems.

**OMAYMA HUSAIN** received the B.Sc. and M.Sc. degrees in information technology from the Faculty of Mathematical Sciences, University of Khartoum, Sudan, and the Ph.D. degree in information systems from the School of Computing, Faculty of Engineering, Universiti Teknologi Malaysia. She is currently an Assistant Professor with the Information Technology Department, Faculty of Mathematical Sciences and Informatics, University of Khartoum. Her current research



Technology, College of Computer and Information Sciences, King Saud University. His research interests include enterprise information systems, software engineering, and cloud computing.

**SAYEED HAIDER SALIH** received the B.Sc. degree in software engineering from Infrastructure University Kuala Lumpur, Malaysia, in 2011, the M.Sc. degree (Hons.) in IT-management from Universiti Teknologi Malaysia (UTM), Malaysia, in 2013, and the Ph.D. degree (Hons.) from Omdurman Islamic University, Sudan, in 2020. He is currently a member of the Software Engineering Research Group (SERG), UTM. He is also an IT-Lecturer with the Department of Information



*Tourism Management, Journal of Travel Research, International Journal of Contemporary Hospitality Management, Journal of Environmental Management, Technovation, International Journal of Information Management, Safety Science, Industrial Management and Data Systems, Social Indicators Research, Quantity & Quality, Service Business, Knowledge Management Research and Practice, Journal of Medical Systems, International Journal of Production Economics, Personnel Review, and Telematics and Informatics.*

**RAMAYAH THURASAMY** is currently a Professor in technology management with the School of Management, Universiti Sains Malaysia, a Visiting Professor with Minjiang University, China, and an Adjunct Professor with Sunway University, Multimedia University (MMU), and Universiti Tenaga Nasional (UNITEN), Malaysia. His publications have appeared in *Information and Management, Journal of Cleaner Production, International Journal of Operations & Production Management,*



Malaysia Sabah, Malaysia. He actively involved in research about HCI and information visualization. He is also interested in research related to information theory, visual analytics, and formal methods. He has also led several research grants at national level as a Principal Investigator and recently recognized by IBIMA for the Best Paper Award.

**MUZAFFAR HAMZAH** (Senior Member, IEEE) received the B.Sc. and M.Sc. degrees in computer science from the University of Malaya, and the Ph.D. degree in information technology from the University of South Australia. He has also completed his postdoctoral research in geovisualization with the University of Nottingham. He is currently the Deputy Dean (Graduate and Internationalization) and a Senior Lecturer with the Faculty of Computing and Informatics, Universiti



From 2010 to 2015, he was a Teaching Assistant and a Lecturer with the Department of Computer and Electronics System Engineering, UST. Subsequently, he was a Postdoctoral Researcher, conducting research at esteemed institutions, such as UTM; Universiti Malaysia Sabah (UMS), Malaysia; and the University of São Paulo (USP), Brazil. He is currently a Postdoctoral Researcher with the Interdisciplinary Research Center for Intelligent Secure Systems, King Fahd University of Petroleum and Minerals. His main research interests include computer networks, network security, software-defined networking, Internet of Things, smart cities, and future networks.

**MOSAB HAMDAN** (Senior Member, IEEE) received the B.Sc. degree in computer and electronic system engineering from the University of Science and Technology (UST), Sudan, in 2010, the M.Sc. degree in computer architecture and networking from the University of Khartoum, Sudan, in 2014, and the Ph.D. degree in electrical engineering (computer networks) from Universiti Teknologi Malaysia (UTM), Malaysia, in 2021.



information modeling, technology adoption and implementation, information systems, and database systems.

**HAFIZ MUHAMMED FAISAL SHEHZAD** received the M.S. degree in CS from the University of Sargodha, Sargodha, Pakistan, in 2013. He is currently pursuing the Ph.D. degree with the School of Computing, Universiti Teknologi Malaysia. He is an Assistant Professor with the Department of Computer Science and IT, University of Sargodha. His area of research is building information modeling adoption and implementation. His research interests include building

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