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Bridging the Gap: Usability's Role in Connecting Simplicity, Interactivity, and Brand Trust

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ABSTRACT

The rapid increase in mobile device usage worldwide presents a significant challenge for brands aiming to attract and retain customers. Building customer trust in a brand is essential for achieving this goal. However, the wide variety of mobile devices and intense competition compel manufacturers to incorporate more features into a single device, often resulting in complexity and reduced interactivity, which adversely affects the device's usability. Moreover, mobile devices have profoundly transformed customers' lifestyles, complicating the task of marketers to measure buying behavior trends accurately. Consequently, a deep understanding of customers is necessary for effective segmentation. This research aims to fill this gap by providing a roadmap for academics and practitioners to build brand trust in mobile devices, thereby enhancing the user experience by improving usability and brand trust. This quantitative, cross-sectional, and explanatory study utilized an adapted scale to collect data from a population of mobile device users. A sample size of 534 respondents was gathered through online sources and self-administered questionnaires. The study hypothesized that simplicity, interactivity, and brand trust impact usability, which in turn leads to increased brand trust. Additionally, the study examined the direct impact of simplicity and usability on brand trust. It also sought to explore the mediating effect of usability between its antecedents (simplicity and interactivity) and the consequent brand trust. All hypotheses were accepted, except for the direct impact of simplicity on brand trust. Unlike most existing marketing studies that focus primarily on the direct relationship between brand trust and loyalty, this study introduced a novel model. This model elucidates the relationships between simplicity, interactivity, and usability, demonstrating how these factors collectively influence brand trust.

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1. Introduction

Mobile devices market is growing constantly all over the world (Newswire, 2013) and according to a fair estimation users of mobile phones have reached to blustering digit of 7 billion. Which is as many mobile phones as are there humans on the planet, and this very development is attained in just 2 decades. An estimation by "eMarketer" depicts tab users will also cross milestone of 1.15 billion users worldwide (Global Tablet Audience to Total 1 Billion This Year - eMarketer. (n.d.)). In a similar fashion, the Kalba (2008) study show that emerging countries are adopting mobile devices at a very fast pace. Pakistani market also followed this

rapidly growing trends of mobile devices for instance mobile phone users have reached more than 114.7 million as declared in latest statistics by Pakistan Telecommunication Authority, (2016). In order to match the pace of this rapidly growing industry competition in mobile devices market is increasing rapidly and brands all over the world are working hard to increase their client base. Swift development in technological field has brought its benefits to modern business. So businesses are adopting modern technology as it is the need of the hour, because it brings them competitive advantage over others. As the complexity of mobile devices is increasing, so is significance of user interference which helps in communicating between user and their devices (Hsiao & Chen, 2015). Hence due to this growing complexity of mobile devices this study suggests that simplicity can have serious impact on usability. Thus simplicity may become a factor to influence purchase of a product by customer. Therefore the mobile devices manufacturers always work to provide an improved user interface which makes good use of small size of screen and display, but it comes with a problem of difficulty to use as simplicity is hindered by limited input and output area.

Manufacturers of devices like mobile phones and tabs love to add more and more features to their application because it helps them to improve and create difference from competitors (Head & Ziolkowski, 2012), consumers also want new features at low cost. But according to Head and Ziolkowski (2012), more features bring complexity and ultimately consumer will have to put more effort which will slow down their decision process. Although more features makes any product irresistible but it may lead to dissatisfaction (Hsiao & Chen, 2015) due to its complexity. So simplicity is important concept for successful user interface design which is also declared by Choi and Lee (2012). Mobile devices need to be interactive and easy to use. There is a necessity of smooth interaction between humans and technology. Interactivity is helpful in bringing excitement and satisfaction to engage and improve the quality of device performance also it saves time. This study takes interactivity as an antecedent for usability of mobile devices. Teo, Oh, Liu, and Wei (2003) describe interactivity as important feature of new media and its effect on user opinion. Whereas during using mobile devices it is anticipated that users perceived interactivity produces results and it effect usability. On the basis of previous literature this research takes brand trust as consequence of the usability and provides a research model for usability studies, which is suggested by Lee, Moon, Kim, and Mun (2015) in their recommendation for future research. Brands try to build and maintain long term relations with customers as it is important for triumph in modern world extremely competitive market. The presence of brand trust guarantee that it will provide positive results to its customers hence brand trust remains as a factor of dominant position when a customer decides to purchase a product. Previous studies have proved that users brand trust affects its belief, choice, commitment and loyalty (Chiou & Droge, 2006; Tyler & Stanley, 2007). Brand trust becomes more important in high tech products as they are more complex to use and there may be information irregularity, which may require external signals such as brand name and trust to make purchase decision. Moreover, according to Srivastava, Dash, and Mookerjee (2015) "brand trust is discussed often as key value in customers choice making, mainly in link with consumers brand and relationship choices" . Also the brand trust work as precautionary measure taken by consumers to minimize risks that are linked to product and its choice. Motivated by this need to investigate further, the study observes the antecedents (Simplicity, Interactivity) and consequences of usability (Brand trust). And the research findings will throw light on the impact of simplicity and interactivity on designing a user-friendly user interface and building brand trust.

1.1. Problem Statement and Research Gap

Recently there has been a reasonable growth in use of mobile platform these years. The most common reason which can be found behind this is the customer choice of mobility of devices and communication. It cannot be achieved with desktop computers, also these modern devices provide advantage of customization according to need of customer with the help of new applications. Hence, it is evident that there is a stable demand of smart phones, tablets and laptops in market so their market has grown exceptionally with the passage of time and it has now become one of the most competitive industry (Hsiao & Chen, 2015). Hence technological modernizations made usability a bigger challenge. Therefore, getting a good understanding of these mobile platforms and their usability can give significant input of improvement. Usability remains getting attention of researchers (Venkatesh, Ramesh, & Massey, 2003) and is explained in different ways in industry and academia. Hence, many studies can be found in literature which tried to find usability but they were mostly related to purely application based

studies like application usage in health monitoring and management (Kascak, Rébola, Braunstein, & Sanford, 2013), navigation and voting (Campbell, Tossell, Byrne, & Kortum, 2014) etc. Therefore, a broad view and impact of usability in management science is desirable to study. Hence usability is a significant issue to study as mobile devices continue to grow difficult to operate. Beside the concept of usability and user interface design simplicity has arisen as a major issue in mobile devices. Simplicity and interactivity are necessary for usability and researchers have been continually trying to measure it (Choi & Lee, 2012). Developers had always tried to make applications and devices more useful but that has always been a challenge for them due to interface limitations like small screen and displays and low resolutions of the display etc.

Significant amount of work is being done on general usability as there is scope and uniqueness available in this field. However, there is much less work done for finding impact of usability on brand trust. Therefore, it is suggested to investigate relationship between the usability and brand trust (Lee et al., 2015). Institutional trust has been studied extensively in social sciences literature, while the concept of brand trust remained neglected, especially with respect to technology. Marketing literature has been studying brand trust due to its important nature and its key feature to affect long term relationships with customers (Srivastava et al., 2015). Marketers focused on finding relation of brand trust on consumers decision making process and making linkages between brand trust and loyalty (Fandos Herrera & Flavián Blanco, 2011). Ballester and Aleman (2005) studied brand equity ,whereas brand commitment is studied by Fandos Herrera and Flavián Blanco (2011). Similarly, Fandos Herrera and Flavián Blanco (2011) worked on purchase intention. Delgado-Ballester (2004) studied on the constructs of brand trust. Previous research found overall satisfaction as precedent of brand trust (Ballester & Aleman, 2005), and some others find suppliers competence and his credibility, brand personality, or consumer perceived ethicality (Sung & Kim, 2010) as key contributing factors. Still, the impact of usability on brand trust is relatively less explored (Lee et al., 2015). Consequently, there is ambiguity about the nature of brand trust, which being diverse with respect to its sources is difficult to find its relation with usability. In spite of these facts the exact relation between simplicity, interactivity, usability, and brand trust remains unclear. Hence, the exploration of the relation between usability and brand trust is of immense importance (Lee et al., 2015). This research was conducted to fill the gap so that it will help researchers in providing a roadmap for studying usability and brand trust in future the and to improve customers experience in mobile devices.

2. Review Of Literature

2.1. Theoretical underpinnings

This study aims to examine the role of usability in influencing brand trust in mobile phones and other interactive devices. It proposes a framework suggesting that simplicity and interactivity are antecedents of usability, with brand trust as the outcome. The dependent variable is brand trust. The research empirically investigates the impact of usability on brand trust in mobile devices. Several studies in the literature address behavioral factors influencing technology adoption, providing frameworks to identify elements that determine user behavior (Venkatesh et al., 2003). First, the Theory of Reasoned Action (TRA) posits that individual behavior is influenced by attitudes, which are shaped by beliefs, attitudes, and subjective norms. These factors collectively form behavioral intentions, which predict behavior. Second, Ajzen's Theory of Planned Behavior extends TRA by introducing perceived behavioral control, acknowledging that behavior is influenced by internal and external constraints, such as skills, resources, and opportunities. Third, the Technology Acceptance Model (TAM) by Davis (1989), derived from TRA, replaces attitudes and subjective norms with perceived ease of use and perceived usefulness. TAM suggests that these perceptions influence an individual's intention to use a technology, which in turn affects their behavior. Therefore, this study integrates these models, focusing on usability (ease of use and perceived usefulness) as a critical factor leading to brand trust. Usability enhances customers' acceptance of technology, thus fostering brand trust, aligning with the principles of TRA, TPB, and TAM.

2.2. Simplicity

The concept of simplicity has been evolving here around for a long time and is usually studied a lot in all aspects. Arnheim (1954) perceived simplicity as independent experience and conclusion of a participant if he has no issue in understanding what is presented to him. When

simplicity is studied in reference to retail product the understanding is quiet clear these days (Maeda, 2004). Apples products such as in iPod is a good example which is considered as simple product with respect to simplicity and its usability resulting it as an attractive choice to use (Maeda, 2004). Allowing to scroll a menu makes its user interference enjoyable and very convenient since its only function is to play music so it makes it user friendly. So it becomes familiar, simple and more humanly (Skogen, 2005). Simplicity is required for making and designing products which can be used conveniently, hence technology based business tried to bring simplicity in their merchandises and their design (Maeda, 2004). It is important to decide between features and simplicity in planning any user interface and he recommended that it is better to reduce features and make product more better user interface design. According to Tilson, Dong, Martin, and Kieke (1998) simplicity is key to UI design principles. Nielsen, (1999) recommended that simplicity is one key issue after creation of usable design, which signify that simplicity is users while surfing on web can get what they were there to get. In websites arena users are more goal driven and they are there for their solutions and goals so they never give up anything among them and their goals solution.

Here the study presents simplicity as a concept for information systems area. It not just have concept of simple design as considered in previous studies but also considers simplicity as interface, functionality, and structure of work flow and its framework (Maeda, 2006). Considering the previous studies this study divides simplicity in four parts i.e. Organization, integration, prioritizing and reduction (Maeda, 2006; SAP, 2004). Organization indicates to the degree to which the structure of an application, it functions, and navigation are organized and methodically well-organized. The performance of a user is improved if structure, navigation, functionality, and application screens are organized in a fine manner. Properly organized application also lower level of difficulty and brings positive impact (SAP, 2004). Integration is that put different components of an application which are fragmented it puts them in a clear framework. Integration makes tasks more available to users. So it is better to integrate tasks to make the application simple and maintain basic tasks in a rational way (SAP, 2004). The simplicity can be attained by removing the miscellaneous diverse functions. But it is important to consider a balance between simplicity and functionality which may cause complexity.

Prioritization means setting application in such a way to focus more on core functions and not attempts to serve a large number of diverse goals (SAP, 2004). It comprises of optimization in accordance to key tasks (Maeda, 2006; SAP, 2004). Philips brand came up with "Sense and Simplicity" in 2004 (Maeda, 2006). Simplicity is the ability of Philips to provide ease of access and benefit to their customers in a meaningful way (Philips, 2004). Philips came to know about their newly launched camera and home networking devices that 30% of their home networking and 48% of their camera customers stopped purchasing their products because it was complicated and difficult to use for their customers (Philips, 2004). Trier & Richter, (2013) found simplicity as key to usage of social software for supporting and managing knowledge. Lee et al. (2015) found that simplicity is key factor that impact playfulness along with perceived control of system. Alghamdi & Beloff, (2015) tried to find factors to adopt e-government system and described simplicity as important factor for this system. Similarly Nielsen (1999) devises simplicity as central factor for usable interface. that So we can conclude from earlier research linked to simplicity that Organization, Reduction, Prioritization and integration form simplicity (Lee et al., 2015) and simplicity may lead to brand trust. Therefore, it is proposed that:

H1: Simplicity has a positive significant impact on usability.
H2: Simplicity has a positive significant impact on brand trust.

2.3. Interactivity

The term interactive is considered synonymous to world wide web and sometimes in case of mobile device. Interactivity has been studied for the last two decades for information science, communication, marketing, education and computer science (McMillan & Hwang, 2002). The notion of interactivity was also used as a wide term and in his opinion interactivity is an intuitive appeal and is less studied concept, however other researchers tried to narrow it down and they took the sense of interactivity as the control of user to the information. Interactivity is defined by focusing a medium and its features, by noting its capabilities to create an interactive message or content (Rice & Williams, 1984), or potential for interaction in general. In other words, Wu 2005 interactivity is actually the degree to which the perceiver

depends on it. It is the possible capability to which extent the communicator does realize it to be interactive. Hence interactivity is objective phenomenon and it is to extent which the participator perceives it as interactive. Therefore, it has an important place in making real connectivity and to its participants. So there is limited research available which has empirically examined perceived interactivity (McMillan & Hwang, 2002) and it actually improves usability (Brock, Truillet, Oriola, Picard, & Jouffrais, 2015).

G. M. Wu (2000), defines interactivity in three dimensions i.e. perceived control, personalization and responsiveness. But, Johnson, Bruner II, and Kumar (2006) found that in addition to responsiveness the nonverbal information and the speed of response also have an impact on interactivity. So this research studies the interactivity as second order reflective factor based elucidation to perceived control, nonverbal information, perceived personalization and perceived responsiveness. Rice and Williams (1984) argued in their study that control is a part of interactivity. Whereas Hui and Bateson (1991) posits that "perceived control mediates the consumer's emotional and behavioral responses to the physical environment and the contact personnel that constitutes the service experience". McMillan and Hwang (2002); G. M. Wu (2000) said the core to perceived interactivity is users perception. Also "perceived control over the interaction process reflects his/her ability or confidence in performing related activities, then a consumer' perceived responsiveness refers to how he/she perceives an interactive system responds to his/her input" (G. Wu & Wu, 2006). G. M. Wu (2000) considers responsiveness as collection of "response probability, response relevance, response elaboration, and response speed." Whereas Johnson et al. (2006) said "responsiveness means the degree to which the responses in a communication are perceived to be appropriate and relevant, and resolving the information need of the interaction episode or event." According to Alba et al. (1997); Burgoon et al. (2002) "response speed means that a response to a communication event is perceived to be immediate, or without delay."

Perceived personalization is extent to which someone feels how much his or her communication match is appropriate or relevant to his communication behaviors. Mittal and Lassar (1996) explored perceived personalization increases customers service quality and his satisfaction. Thus, it is the extent to which consumer finds "to reflect consumer's perceptions of how a mobile device serves user while using the device for personal use or with relevance to message. It also means that to what extent the response of mobile devices usage satisfies the anticipations of the user from its usage (G. Wu & Wu, 2006)." Moreover, since interactivity is how easily someone reaches required information and it is assumed that if user reaches required information from multiple channels faster and minus delays it improves understanding of the information provided which produces better learnability due to usability (Mun, Jackson, Park, & Probst, 2006). Thus above literature of interactivity provides us with evidence that interactivity strengthens usability leading to brand trust. Hence, it is proposed that:

H3: Interactivity has a positive significant impact on usability.
H4: Interactivity has a positive significant impact on brand trust.

2.4. Usability

Usability is considered as a basic study material in Human Computer Interaction literature (Agarwal & Venkatesh, 2002). In the words of Norman (1988), usability is defined as "consumer perceptions of the effectiveness and efficiency with which specified goals can be achieved by using a product." It is defined in various ways conceptually (Agarwal & Venkatesh, 2002). Gray and Salzman (1998) define it as "the most important issue facing usability researchers and practitioners alike the construct of usability itself." Usability has been previously studied in product development specially in case of application development (Jordan, Thomas, McClelland, & Weerdmeester, 1996). Flavián, Guinalíu, and Gurrea (2006) explored "Nielsen (1994) studied them with more details and refers to it as ease of use and the comfort of learning a system easily and effectively designed system, which can be remembered easily to use with reduced errors and the satisfaction derived from it." Previously usability has been considered in literature for studies and it has ranged from tangible products to non-tangible domains including application, software, websites and it is main requirement for satisfaction and user experience. And we can find studies of Sonderegger and Sauer (2010) who highlighted link of usability in interface quality of digital devices. Thus, if it is viewed as ease of use then this concept is widely used in online banking and retail websites. Where it is mostly

mentioned like "struggle a user makes to access a website for transection" (Shafique, Ahmad, Adeel, & Hameed, 2015).

Previous researches of Ganguly, Dash, Cyr, and Head (2010) about user interface and design related studies established this fact that usability is important factor for user. This studied user interface importance from users' point of view and its impact on design utility of product. And the work of Norman (1988) shared the importance of simplicity which explains "less taxing and more intuitive facilitator of user–product interaction." And Mishra, Dash, and Malhotra (2015) investigated usability in product design and determined the affiliation between "user-perceived product design and brand equity." With the passage of time usability is becoming a key study area for researchers, especially when it is seen in context of businesses providing online services to their consumers. Usability is found to be a central concern in respect of design studies and making marketing strategies which is key to technology acceptance model that studies the users attitude toward technology acceptance and adoption of current technology (Davis, 1989). Venkatesh et al. (2003) deducted that technology acceptance model which has additional aspect of social factors, resulted in explaining that usability does affect user adoption. Similarly when Shih (2004) applied technology acceptance model he also found that usability dose influence users attitude toward e-shopping. However Koufaris and Hampton-Sosa (2002) put forward an extended model of technology acceptance model that also confirmed usability as key to increase trust level among online buyers. Their study discovered that it is usability of a website design and its ease of use which can ultimately lead the customer to a more favorable and trustworthy organization. DeLone and McLean (2004) suggested the importance of usability in e-commerce system quality. And the studies of Gefen (2000) confirmed that in similar way.

Kamil and Jaafar (2015) found usability as main condition which control impact of product label and its design on customer. And previous research does confirm that usability can change behavior of consumer and have impact on consumer awareness and trust (Flavián et al., 2006). Andreasen, Nielsen, Schrøder, and Stage (2006) described impact of usability as central to open source software development. And Weyand, Schudlo, Takehara-Nishiuchi, and Chau (2015) studied impact of usability in online tests related studies. Unertl, Holden, and Lorenzi (2016) studied usability as a new concept for application in health information technologies. Thus the above literature provides with considerable that usability is an important item which leads to brand trust. Hence, it is proposed that:

H5: Usability has a positive significant impact on brand trust.

2.5. Brand Trust

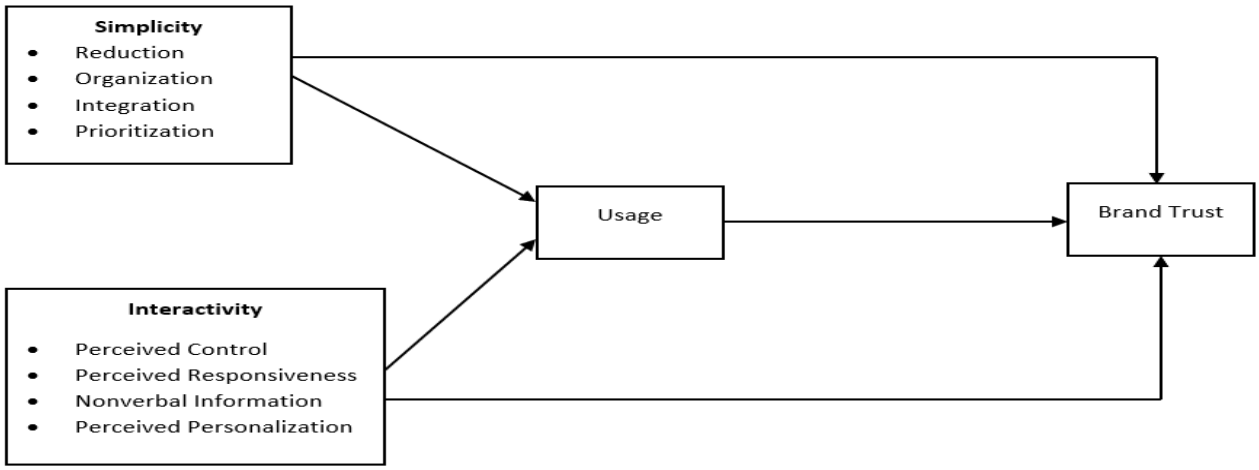
Aaker suggested that brand trust goes beyond consumer satisfaction with a product's functional performance and attributes. Brand trust is often defined as "a feeling of security held by the consumer in his/her interaction with the brand, based on the perception that the brand is reliable and responsible for the consumer's interests and welfare." Chaudhuri and Holbrook (2001) define it as "the willingness of the consumer to rely on the ability of the brand to perform its stated function". Trust is said to exist when one person feels assurance in other dealer's dependability and honesty. Meanwhile, Sichtmann (2007) consider "reliability and in the corporate brand context." Brand trust is mental mechanism through which consumers decrease the undefined risks related to product selection." Whereas, Sung and Kim (2010) said "trustworthiness and expertise" as dimension of brand trust. Xingyuan, Li, and Wei (2010) found brand trust as "consumer's' disposition toward a brand, characterized by positive expectations of, and willingness to rely on, the brand." Furthermore, brand trust is an important link for customer brand relationship and it act as antecedent of brand loyalty. Hamid Hawass (2013) while studying mobile phone market stated brand trust as factor of relational chemistry by which a customer gets linked to a brand name emotionally. Furthermore, a durable relation between a brand and consumer depends heavily on brand trust. So brand trust is a prerequisite to it.

Brand trust is also studied in relation to relationship marketing. Commitment trust theory which focuses on networks which are high in brand commitment and brand trust that brings cooperation. However Lau and Lee (1999) studied brand trust and its characteristics and their impact on brand loyalty. In the same way, Reichwald and Wigand (2008) studied brand trust in relation to brand reputation which he considered as a signal to brand trustworthiness.

Similarly, "If a consumer perceives that other people are of the opinion that a brand is good, the consumer may trust the brand adequately to buy it." Accordingly, in their opinion brand loyalty can be achieved through brand trust. Han, Nguyen, and Lee (2015) found a mediating role of brand reputation among brand trust and brand equity. And Srivastava et al. (2015) studied some antecedents of brand trust in baby care products. Similarly, Wang (2015) explored the relation of brand trust as moderator to self-congruity and functional congruity. Furthermore, Kumar, Roy, and Anand (2015) explored impact of brand trust on customers of public and private sector insurance companies. Also Shafique et al. (2015) studied the antecedents of e-service quality their link to consumer satisfaction with the mediating role of brand trust. Lassoued and Hobbs (2015) studied the mediating impact of brand trust on food system. Also mediation of brand trust is found in customer perception of corporate social responsibility. Jiang, Peng, and Liu (2015) researched in a Chinese environment the role of brand trust on behavioral intention in TAM model and proposed that the more the customer has loyalty toward a game brand it will trust on its quality of game resultantly increasing adoption of that brands game and bringing in more positive attitude. Lertwannawit and Nak (2015) studied mediation effect of brand trust in context of medical tourism. Sambath and Jyh-Fu Jeng (2014) tested impact of celebrity endorsement on brand trust. And Jin and Phua (2015) found moderating role of computer user need of touch on brand trust. Many studies have been conducted on measurement of brand trust and its scales have been developed. Johnson-George and Swap (1982) worked in this field first. And its multidimensionality was studied by Delgado-Ballester and Munuera-Alemán (2001) and similarly its scales were worked on by Gurviez and Korchia (2003). Brudvig (2014) brought forward a psychometric scale of consumer-based brand trust scale in marketing literature.

3. Theoretical Framework

Figure 1



4. Research Methodology

4.1. Research Design

This study adopts a positivist philosophy, investigating the impact of usability—affected by simplicity and interactivity—on user behavior in mobile devices, ultimately leading to brand trust. The aim is to generalize findings, which aligns with positivism rather than interpretivism. The study is quantitative, utilizing numeric data analyzed with SPSS 21. A deductive approach was used since the research question could not be addressed through qualitative methods. The study is explanatory, as it measures the impact of usability on brand trust. Data was collected via a self-administered questionnaire, suitable for management sciences due to the large volume of data required. The questionnaire, adapted from previous studies with established reliability and validity, employed a five-point Likert scale ranging from 1 ("Strongly Agree") to 5 ("Strongly Disagree"). The variables of study of Simplicity, interactivity, usability and brand trust were already established so scale developed by Lee et al., (2015) was adapted which included 15 items of simplicity,15 items of interactivity, 5 items for usability and 3 items for brand trust. Since this study was conducted to find the impact of variable in only one frame of time so it is a cross-sectional study. Data was collected through social media and self-administered questionnaires from a diverse population in terms of age and education, all of whom used mobile devices such as smartphones, tablets, and laptops. Convenience sampling

was employed due to the lack of a comprehensive database of mobile device users. Following Comrey and Lee (2013) recommendation, a sample size of 500 was deemed very good for analysis. Out of 570 distributed questionnaires, 534 were suitable for research, resulting in a 93% response rate. Of these, 150 responses were gathered online via social media, while 384 were collected in hard copy from mobile device users.

5. Results and Discussion

5.1. Demographic Analysis

Table 1 reports information of respondents. The respondents were requested to describe their demographic information which included information about their device and its usage, gender, age occupation and income. Table 2 results, 400 (74.9%), show that majority of respondents were smartphone users, then we have 33 (6.2%) tablet users and 101 (18.9%) laptop users. Study comprises of mostly respondents who are using their devices for more than 13 months which indicate users have good knowledge of their device. The usage of device in months include users using device for 0-6 (119, 22.3%), 7-12 (147, 27.5%), 13-24 (138, 25.8%) 25 or Higher (130, 24.3%). It can be clearly observed that out of 534 respondent male respondents accounted for 304 (56.9%), and female respondents amount to 230 (24.9%). Their age ranged from 19 to 40 but majority belonged to 21-30 age group which becomes 367 (68.7%) of total respondents other ages were **<**19-20, 133 (24.9%), 31-40 were 30 (5.6%), and 4 (0.7%) respondents age was above 40. More than half of the respondents were university students 283, (53.0). other than students we have 120 (22.5%) salaried, 45 (8.4%) self-employed, 79 (14.8%) professional respondents and 7 (1.3%) from other professions. Monthly income can influence choice of device and its usage, in this research 277 (51.9%) researchers had income below 15000, after that we have 114 (21.3%) respondents whose income ranges from 15000-30000, and those whose income is 31000-45000 are 82 (15.4%) and lastly those having income more than 45 were 61 (11.4%) respondents.

Table 1: Demographic Analysis

		Frequency	Percentage
Device	Smart Phone	400	74.9
	Tablet	33	6.2
	Laptop	101	18.9
Usage (Months)	0-6	119	22.3
	7-12	147	27.5
	13-24	138	25.8
	25 or Higher	130	24.3
Gender	Male	304	56.9
	Female	230	43.1
Age	<19-20	133	24.9
	21-30	367	68.7
	31-40	30	5.6
	Over 40	4	0.7
Occupation	Salaried	120	22.5
	Self Employed	45	8.4
	Professional	79	14.8
	Students	283	53.0
	Other	7	1.3
Income	Below 15000	277	51.9
	15000-30000	114	21.3
	31000-45000	82	15.4
	More than 45	61	11.4

5.2. Descriptive of Study Variables

Table 2: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Simplicity	1.00	5.00	3.75	.56	-.448	.691
Interactivity	1.00	5.00	3.88	.59	-.612	.833
Usability	1.00	5.00	4.03	.74	-.963	1.189
Brand Trust	1.00	5.00	3.81	.79	-.834	1.073

As shown in above table the minimum and maximum values of all variables lie between 1 to 5. Mean of simplicity is 3.75 which shows that data is closer to and standard deviation is 0.56 units. Similarly, the mean of interactivity is 3.88 which shows average responses of

respondents are close to agree and standard deviation among responses is 0.59 units. Likewise, the mean of usability is 4.03 which shows responses are intended more towards agree and its standard deviation in 0.74 units.in the same way brand trust has mean of 3.81 showing responses close to agree and its standard deviation is 0.79 units. The skewness data shows that it is between the range of ± 1 and ± 3, so data is normal.

5.3. Confirmatory Factor Analysis

Reliability is defined as "the degree to which a set of indicators is consistent with its measurement (Hair, Black, Babin, & Anderson, 2010). It is a way to check the ability of data that to what extent it is consistent and to what degree a concept or construct is being measured by all items in a test. Thus, to compute reliability of items a construct reliability is used which in turn tells how much measures in an item are related to each other. To check internal consistency of data Cronbach alpha is a measure that is used as most common way for testing reliability but there is no fix rule for its limit, but Bagozzi and Yi (1988) proposes that acceptable level of reliability is 0.50 or more. Cronbach alpha values were found more than 0.50 and the values of each construct ranges from 0.61 to 0.82. Similarly, to find focused effect of all variables factor analysis was conducted with maximum likelihood analysis. Values of factor loadings were found higher than suggested threshold limit of 0.5. Factor loadings were ranging from 0.65 to 0.84. As the AVE value show the total variance in construct and its link to amount of variance due to random error, Fornell and Larcker (1981) say that if a construct value is 0.50 or more it is a reliable construct. The values of AVE of this study ranges from 0.50 to 0.65 for each construct. To complete convergent validity is measured. Composite reliability or CR value should be greater than 0.7. The CR values ranges from 0.80 to 0.91. Similarly, to check discriminant validity results were taken by comparing square root of AVE with correlation of the construct. All constructs displayed satisfactory discriminant validity as squared inter factor correlation were found smaller than AVE (0.25 to 0.42) of each factor. The formulae used for the purpose of calculating AVE, CR is:

$$CR = (\sum X)\,2/\,(\sum X)\,2 + \sum (1 - X2)$$
$$AVE = \sum X2\,/\,\sum X2 + \sum (1 - X2)$$

SEM assumes few assumptions like other statistical methods. It assumptions are like, requirement of sufficient sample size, hypothesis being tested, measurement instrument, multivariate normality, outliers, missing data, independence of observations. Assumption of sufficient sample size was met as the sample size is approximately 15 times more than questionnaire items. The normal distributions requirement of SEM was hard to meet, because the data collected was purely based on subjective response of respondent. Previous researches have however shown that a SEM model of similar nature is applicable in these conditions, and good results can be drawn. The assumption about independence of observation was met, and data was found linear. Moreover, shared variance and multicollinearity were not found problematic. Measurement model was examined first under two step technique suggested by Anderson and Gerbing (1988). In order to measure validity of constructs, confirmatory factor analysis was performed through AMOS 20. The scales for the research were adapted, so the CFA is given priority over EFA, because EFA works with self-developed scale. According to Suhr (2006) EFA, explains structural factor and self-developed questionnaire, whereas, CFA supports hypothesis which are developed by researcher himself works with preceding research.

Table 3: Structural Model Fit Indicators

Indicators	Recommended Values
CMIN/DF	CMIN/DF < 3
GFI	GFI > 0.90
AGFI	AGFI > 0.90
CFI	CFI > 0.90
NFI	NFI > 0.90
RMR	RMR < 0.05
RMSEA	RMSEA < 0.80

The measurement model displayed satisfactory fit results with statistics of CMIN/DF 1.90, GFI 0.90, AGFI 0.90, CFI 0.92, NFI 0.84, RMR 0.04 and RMSEA 0.04 which are within acceptable range and thus the model shows workable fit to data as suggested by (Hair et al., 2010).

Table 4: Reliability Analysis

	Constructs	Codes	Factor Loadings	AVE	CR	Number of items	Cronbach Alpha
Simplicity	Reduction	SRED_1	0.81	0.65	0.88	4	0.82
		SRED_2	0.84				
		SRED_3	0.78				
		SRED_4	0.81				
	Organization	SORG_1	0.70	0.52	0.81	4	0.69
		SORG_2	0.75				
		SORG_3	0.73				
		SORG_4	0.72				
	Integration	SINT_1	0.65	0.50	0.80	4	0.66
		SINT_2	0.67				
		SINT_3	0.73				
		SINT_4	0.76				
	Prioritization	SPRI_1	0.75	0.56	.80	3	0.61
		SPRI_2	0.80				
		SPRI_3	0.70				
Interactivity	Perceived Control	IPC_1	0.68	0.55	0.83	4	0.73
		IPC_2	0.82				
		IPC_3	0.77				
		IPC_4	0.70				
	Perceived Responsiveness	IPR_1	0.81	.58	.81	3	0.65
		IPR_2	0.73				
		IPR_3	0.75				
	Nonverbal Information	INV_1	0.71	0.51	0.81	4	0.68
		INV_2	0.76				
		INV_3	0.72				
		INV_4	0.67				
	Perceived Personalization	IPP_1	0.70	0.57	0.84	4	0.75
		IPP_2	0.77				
		IPP_3	0.79				
		IPP_4	0.74				
Usability		USA_1	0.69	0.54	0.91	5	0.82
		USA_2	0.75				
		USA_3	0.78				
		USA_4	0.79				
		USA_5	0.79				
Brand Trust		BRT_1	0.80	.58	.80	3	0.64
		BRT_2	0.79				
		BRT_3	0.69				
	CMIN/DF	*GFI*	*AGFI*	*CFI*	*NFI*	*RMR*	*RMSEA*
	1.90	0.90	0.88	0.92	0.84	0.04	0.04

5.4. Correlation

Table 5: Correlation

	Simplicity	Interactivity	Usability	Brand Trust
Simplicity	1			
Interactivity	.69**	1		
Usability	.59**	.74**	1	
Brand Trust	.43**	.56**	.59**	1

Correlation is significant at the 0.01 level (2-tailed).**

Correlation shows the relation between variables. It is performed to check the relationship of variables and it also depicts the issue of multi-collinearity of data. Table 5 shows the results of correlation coefficient which ranges between .43 to .74. As evident from table 5 results we find all the variables have good positive and significant correlation among them and we find a healthy relationship among all variables. The value of .69** shows that there is a strong correlation among simplicity and interactivity. Similarly, we have correlation of .74** between interactivity and usability, which show they are highly correlated. Correlation between usability and simplicity is also very good its value is .59**. Similarly, we find very strong and highly significant correlation between brand trust and interactivity usability as their value of correlation are .56**, .59** but correlation between brand trust and simplicity is also significant but relatively weak than correlation of Brand trust with interactivity and usability.

5.5. Common Method Variance

Harman's one factor test (Malhotra, Kim, & Patil, 2006) is conducted to find that no single factor explains all the variance among data and the cutoff value for this is 50, which means results should be less than 50. Table 6, result shows that single first factor explains the variance of 10.96% which indicated that no single factor was depicting results for most of covariance among the measures and data is true and fair.

Table 6: Common Method Variance

	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.96	28.83	28.83	10.36	27.25	27.25	3.17	8.34	8.34

Extraction Method: Maximum Likelihood

5.6. Regression Analysis

Table 7 represents regression analysis. Three distinct regression analysis were applied using SPSS. Model 1 simplicity and interactivity are independent variables and usability is dependent variable. Overall the regression model was found significant statistically (F=331.29; R^2=0.56; P=0.00). This indicate that simplicity and interactivity has a significant positive relation with usability, which was supported by current research thus proving study hypothesis H1 (P<0.01; β=0.16), H3 (P<0.01; β=0.62). Model 2 indicates that usability is independent variable and brand trust is dependent variable which was also found significant statistically (F=285.23; R^2=0.35; P=0.00) as supported by our study and it also proved study hypothesis H5 that usability has a positive significant impact on brand trust (P<0.01; β=0.59). In model 3 we have simplicity and interactivity as independent variable and brand trust as dependent variable. Regression model results were not found statistically significant for impact of simplicity on brand trust (F=125.60; R^2=0.32; P=0.00) thus rejecting the hypothesis H2 (P<0.08; β=0.08) but there is positive significant relation between interactivity and brand trust (F=125.60; R^2=0.32; P=0.00) which supports study hypothesis H4 (P<0.00; β=0.50).

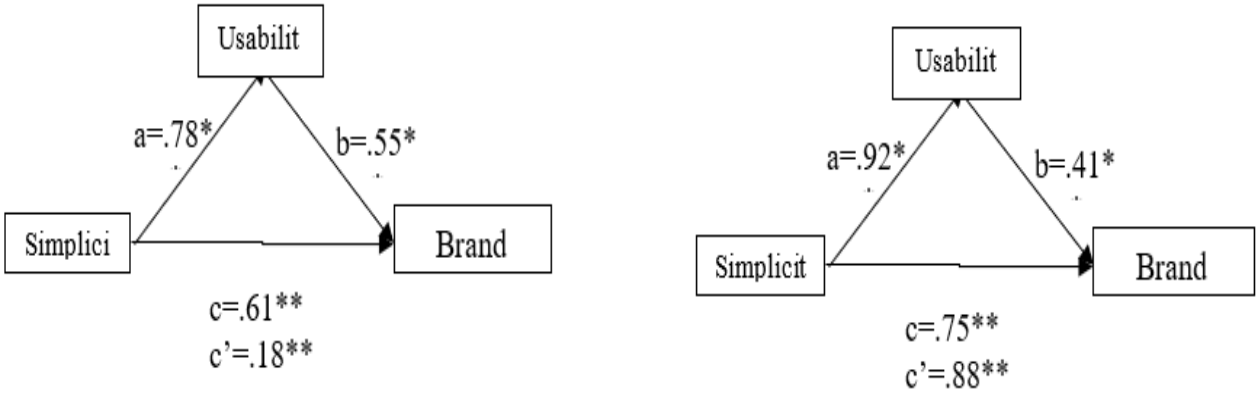
Table 7

	Predictor	Model 1		Model 2		Model 3		Collinearity Statistics		
		Beta β	Sig.	Beta β	Sig.	Beta β	Sig.	VIF	Tolerance	Condition Index
Dependent Variable: Usability	Simplicity	0.16	0.00					0.53	1.89	15.45
	Interactivity	0.62	0.00					0.53	1.89	20.80
Dependent Variable: Brand Trust	Usability			0.59	0.00			1.00	1.00	11.02
Dependent Variable: Brand Trust	Simplicity					0.08	0.08	0.53	1.89	15.45
	Interactivity					0.50	0.00	0.53	1.89	20.80
R^2		0.56		0.35		0.32				
F		331.29		285.23		125.60				
Sig.		0.00		0.00		0.00				

Multi- collinearity test was also performed whose results are also reported in table 7. The VIF results were found less than 3 in all regression analysis and similarly as values of condition index results are less than 30 so we can say that high correlation between usability and interactivity has no effect on regression analysis.

5.7. Mediation Analysis

Figure 2



Mediation of variable was checked with bootstrapping method given by Preacher and Hayes (2004). Other methods are also available for checking mediation like Sobel test which are complex to work out but Preacher and Hayes method has a clear advantage of simplicity and is usually more effective than Sobel test (Zhao, Lynch Jr, & Chen, 2010). It is a non-parametric approach which uses replacement method to replace original data with random sampling and generate mediation results. Bootstrapping technique is commonly utilized to find confidence intervals (CI) with total direct and indirect effect, and mediation is found significant if we have no zero in CI effect (Preacher & Hayes, 2004; Zhao et al., 2010). This study used 1000 samples and the results were obtained using SPSS by obtaining 95% Confidence Interval CI. Two path analysis were conducted to check mediation.

Firstly, mediation of usability was checked between simplicity and brand trust. It was proposed that H6: Usability mediates the association between simplicity and brand trust. And the results of total effect (total effect=0.618***), direct effect (direct effect=0 .55***), and indirect effect (indirect effect=0.43***), were all found significant which indicate there is partial mediation between simplicity and interactivity (lower 95 % CI = 0.33, upper 95 % CI = 0.51). Secondly, mediation among interactivity, usability and brand trust was checked. It was proposed that H7: Usability mediates the association between interactivity and brand trust. The results of total direct effect (total effect=0.75***), direct effect (direct effect=0 .41***), and indirect effect (indirect effect=0.43***), were also significant which clearly indicate that there is mediation effect of usability between simplicity and brand trust (lower 95 % CI = 0.26, upper 95 % CI = 0.54). H6 was that usability mediates between simplicity and brand trust which is confirmed (β=0.61, p=***). H7 was that usability mediates between interactivity and brand trust which was also established true with results (β=0.71, p=***).

Table 8: Mediation Analysis

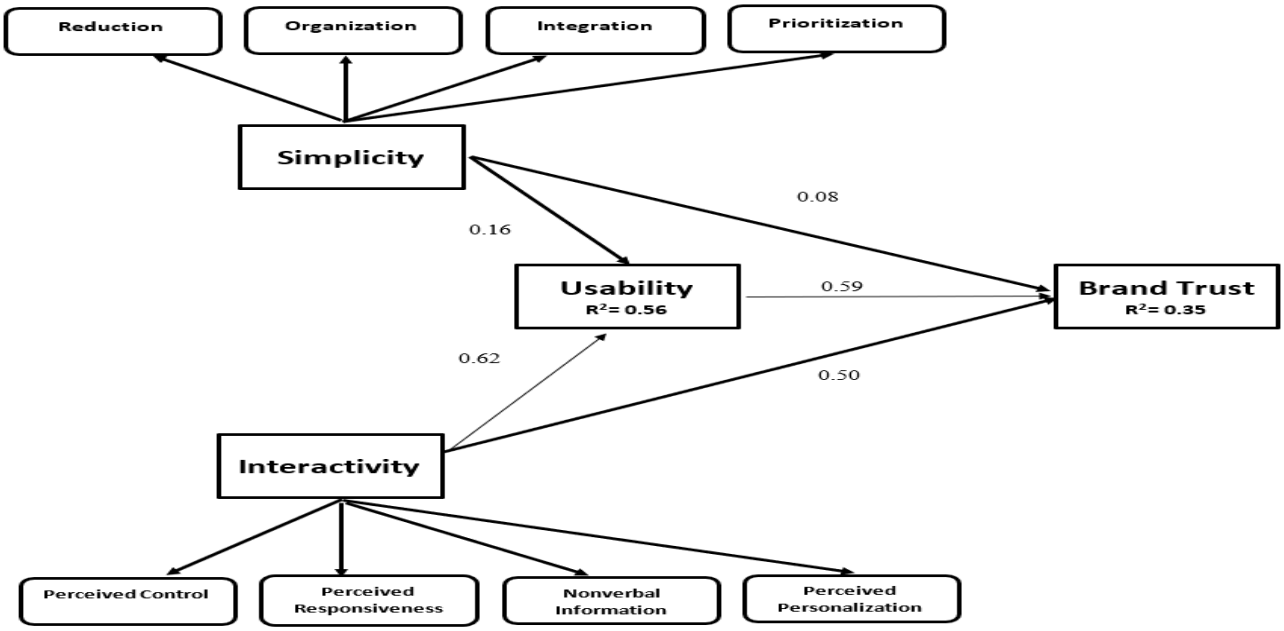
Path	Direct Effect	Indirect Effect	Total Effect	95% CI	
				Low Level	Upper Level
Simplicity → Usability → Brand Trust	0 .55 (0.00)	0.43 (0.00)	0.61 (0.00)	0.33	0.54
Interactivity →Usability→ Brand Trust	0 .41 (0.00)	0.38 (0.00)	0.75 (0.00)	0.26	0.51
a Simplicity → Usability		a Interactivity → Usability			
b Usability → Brand Trust		b Usability → Brand Trust			
c Simplicity → Brand Trust		c Interactivity → Brand Trust			

5.8. Hypotheses Testing

Table 9: Hypotheses Testing

		Estimate	Label
H1	Simplicity → Usability	0.20***	Accepted
H2	Simplicity → Brand Trust	0.12	Rejected
H3	Interactivity → Usability	0.79***	Accepted
H4	Interactivity → Brand Trust	0.68***	Accepted
H5	Usability → Brand Trust	0.63***	Accepted

Figure 3



The study was conducted to check role of simplicity interactivity as a precursor of usability also to investigate consequential impact of usability on brand trust. A structural model that contained precursors and successors of usability was suggested and studied. Table 9 provides outcomes of hypothesis results. Table 9 reports β coefficient and p value of 5 hypotheses. And the results declared that we can find support for our four hypothesis but one hypothesis is rejected. H1 suggest a positive significant relation between simplicity and usability which is supported by results (β=0.20, p=***). In the same manner respondents have validated the hypothesis H2, was that simplicity has a positive significant impact on brand trust but results point out that this hypothesis is rejected (β=0.12, p=0.08). H3 was that interactivity has a positive significant impact on usability which is evident from results (β=0.79, p=***). H4 was that interactivity has a positive significant impact on brand trust and its results signal to confirmation (β=0.68, p=***). H5 was that usability had a positive significant impact on brand trust and as the results confirmed (β=0.63, p=***).

6. Conclusion and Recommendations

This study has presented the model of antecedents of usability and studied its impact on brand trust. the objective of current study was to empirically confirm that simplicity and interactivity are antecedents of usability and there is mediating role of usability between brand trust. Collectively the model was positively supported by study results.

H1: Simplicity has a positive significant impact on usability.

It was proposed that simplicity has positive significant impact on usability and from the study results it can be confirmed that simplicity has a positive significant impact on usability. These results are consistent with the studies of Maeda (2004); Nielsen (1999); Lee et al. (2015) because they claimed that simplicity enhances usability. From the results it can be comprehended that simplicity has important role in interaction design because it is feeling of consistency, unity, or performing frequently used functions without any difficulty or unnecessary operational steps. That is why respondents associate simplicity with usability and consider simplicity as important precursor of usability which ultimately leads to brand trust.

H2: Simplicity has a positive significant impact on brand trust.

It was proposed that simplicity has a positive significant impact on brand trust. But the study results find this relationship insignificant. It can be because of the reason that customer of high end mobile do not want their phones to be that much simple so if their security to device can be compromised in this sense simplicity is not required and device should have a

strong and complex operating system and applications should have complex system to cater security issues.

H3: Interactivity has a positive significant impact on usability.

It was proposed that interactivity has a positive significant impact on usability. The study results stated that the hypothesis is valid as the results illustrate the strong relation of interactivity to brand trust. All the sub-constructs of simplicity were found statistically significant. The results turn out to be resembling to previous studies (Brock et al., 2015; Lee et al., 2015) who claimed interactivity as an important element for usability. Interactivity is the sense of control, ability to move freely to get and manage required information in the form of results or relevant information and involving the user by providing usable interface and becomes a precursor of usability, that leads to brand trust.

H4: Interactivity has a positive significant impact on brand trust.

It was proposed that interactivity has a positive significant impact on brand trust. The study results proved this relationship significant which is similar to previous literature provided by Lee et al. (2015), which reveals that a more interactive and attractive interface device leads to brand trust because it provides services according to expectation from brand and required results with interactive interface, also due to more diverse choice of devices has increased the need of interactive design because competition is developing on interactivity and customer can be retained with devices that are more easy to use and provide good experience with interactive interface.

H5: Usability has a positive significant impact on brand trust.

It was proposed that usability has a positive significant impact on brand trust. The study results prove that the hypothesis and it can be realized through results that there is a substantial relation between usability and brand trust which is according to the previous research undertaken in the field and results are consistent with expectation (Flavián et al., 2006). Which signify the fact that usability leads to brand trust and respondents feel that usability is associated with brand trust since more user friendly easily understandable and quick to learn device leads to brand trust.

H6: Usability mediates the association between simplicity and brand trust.

It was proposed that usability mediates between simplicity and brand trust. And study results also confirmed this hypothesis which are in confirmation with previous studies of Lee et al. (2015). This means that if simplicity is provided in interface of mobile devices the study results proved that it will increase usability of device and it will be more effective to user for usage which will increase user's affection with device resulting in brand trust.

H7: Usability mediates the association between interactivity and brand trust.

It was proposed that usability mediates between interactivity and brand trust. The results of study proved that this hypothesis is correct which is in confirmation with previous study of Lee et al. (2015). This signify to the fact that if device UI is made interactive it will involve users more into device providing required information timely and interactively which will make device more useful and resulting in brand trust.

7. Conclusion

The research was conducted to find mediating impact of usability among its antecedents' simplicity and interactivity and the consequences of brand trust and also the impact of simplicity and interactivity was studied on brand trust. The model provided information that why user accept usability and simplicity as antecedents of usability and how it leads to brand trust. It was hypothesized that simplicity interactivity have an impact on usability and brand trust. The results were tested and studied using AMOS and SPSS. All the hypotheses were found true but only hypothesis of simplicity impact on brand trust was not validated by respondents. Data was analyzed using regression and it was found that users gave more value to interactivity so it is a more important factor in studying usability and it provides

strength to brand trust. The antecedents of usability accounted for 56% (R^2 = 0.56) which explains simplicity and interactivity enhance usability and the usability enhance the relation with brand trust which is 35% (R^2 = 0.35). In this way role of simplicity and interactivity was found to be important in discovering usability of mobile devices which ultimately becomes mediating factor for brand trust. So this study results can be used to build brand trust by using simple and interactive user interface and the instrument used in research can be used for both academic and practical uses of building brand trust in mobile devices.

7.1. Implications, Recommendations and Limitations

7.1.1. Implications

This study presents a framework identifying simplicity and interactivity as key precursors to usability, which in turn impacts brand trust. By emphasizing simplicity, mobile device manufacturers can streamline interfaces, enhancing usability despite the trend of incorporating more features. Interactivity is highlighted as crucial for engaging users and enhancing usability, thereby fostering brand trust and attracting more customers. The research offers practical guidelines for designing user interfaces that can build brand trust, providing valuable insights for mobile device developers worldwide. The relationship among simplicity, interactivity, and usability offers a roadmap for achieving brand trust through improved usability.

7.1.2. Recommendations

The framework developed in this study can be utilized to design simple, interactive user interfaces that build brand trust. Practitioners can apply these findings to their branding strategies or user interface designs. Future research could adopt a longitudinal approach by comparing devices with simple, interactive designs against those that are complex and less interactive. Additionally, the study could be narrowed to focus on specific brands, providing a clearer picture. Exploring interactivity's effect on affective and cognitive involvement (Kang, Mun, & Johnson, 2015) and incorporating user experience could yield more comprehensive results.

7.1.3. Limitations

This study employed a cross-sectional design and convenience sampling due to time constraints and the lack of a comprehensive database of mobile device users. Future studies could use systematic sampling if a suitable customer frame of reference becomes available. Other variables, such as user experience and affective and cognitive involvement, were not included due to the focused exploration of usability’s impact on brand trust. Future research could consider these variables for a more detailed analysis.

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