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Underpinnings of User Participation in Innovation on Online Communication Platforms

Puneet Kaur

Aalto University

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Underpinnings of User Participation in Innovation on Online Communication Platforms

Puneet Kaur

A doctoral dissertation completed for the degree of Doctor of Science (Technology) to be defended, with the permission of the Aalto University School of Science, at a public examination held at the lecture hall AS1 of the school on 27 May 2016 at 12.

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Abstract

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Abstract

The aim of this dissertation is to advance the understanding of the motivational and behavioral factors affecting user participation in innovation on online communication platforms. In particular, social networking service (SNS)-based brand communities (such as Facebook) have been recognized as effective platforms for practicing user innovation, and they are very popular among small, medium and large organizations. However, these platforms suffer from two major challenges, user retention and continuous user participation. Prior literature has paid little attention to understanding these important issues of user participation in the innovation process. Therefore, this dissertation aims to fill these gaps by investigating different factors that affect user participation and retention in innovation on SNS-based brand communities.

The research questions of the dissertation are addressed using quantitative research methods and psychometrics. This dissertation utilized several theoretical frameworks, including the flow theory, consumption value theory, uses and gratification theory, social cognitive theory, the theory of reasoned action, and developmental psychology to explain different aspects of user participation in innovation on online communication platforms. A total of five empirical research articles were undertaken to address the different aspects of the phenomenon. The present thesis developed an instrument for measuring users' flow experience during SNS and SNS-based brand communities' use. It examined users' online regret experience in SNS from the perspective of their demographic characteristics and flow experience. The thesis also investigated users' participation from the perspective of the participation facilitating functionalities (i.e., commenting). Finally, the present thesis aimed at understanding the reasons that motivate users to continue participating in SNS-based brand communities. The main results of the dissertation are: First, a valid and reliable flow experience instrument for addressing the different dimensions of users' flow experience was developed. Second, it was found that online regret was experienced by older adolescents and those spending more time on SNS-based brand communities, and was positively correlated to playfulness and focused attention. Third, the elements of self-efficacy, social influence, reciprocal benefit and hedonic motivation were found to influence users' attitudes towards the usage of the commenting in SNS-based brand communities. Fourth, playfulness and social enhancement were found to predict users' intention to continue using SNS-based brand communities. Fifth, a valid and reliable instrument measuring users' flow experience during the usage of SNS-based brand communities was developed.

Keywords Continued service usage, user innovation, user participation, user retention, online brand community, social media

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Espoo, Finland

Taipei, Taiwan

April 2016

Puneet Kaur

List of Publications

This dissertation is comprised of the following five empirical articles:

Study I Kaur, P., Dhir, A., Chen, S., & Rajala, R. (2016). Flow in Context: Development and Validation of a Flow Experience Instrument for Social Networking. *Computers in Human Behavior*, 59, 358-367.

Study II Kaur, P., Dhir, A., Chen, S., & Rajala, R. (2016). Understanding online regret experience using the theoretical lens of flow experience. *Computers in Human Behavior*, 57, 230-239.

Study III Kaur, P. (2016). Underpinnings of User Participation in Service Provider-hosted Online Communities. In Press, *Service Science*.

Study IV Kaur, P., Dhir, A., Rajala, R., & Dwivedi, Y. (2016) Understanding motives behind continued usage of Facebook-based brand communities. (Under Review)

Study V Kaur, P., Dhir, A., & Rajala, R. (2016) Assessing Flow Experience in Social Networking Sites: An Instrument Development and Validation Approach. In Press, *Computers in Human Behavior*

Author's Contribution

Study I. Kaur, P., Dhir, A., Chen, S., & Rajala, R. (2016). Flow in Context: Development and Validation of a Flow Experience Instrument for Social Networking, *Computers in Human Behavior*, 59, pp. 358–367

The doctoral student was responsible for all the major tasks such as: literature review, survey instrument construction, data collection, data analysis and preparing the first draft of the paper. The second author provided comments on the survey instrument, helped with data collection, cross-checked the analysis and provided comments for paper improvement. Similarly, the third and fourth authors also helped with improving the survey and paper draft in addition to cross-checking the data analysis. The doctoral students made all the changes based on the comments received from the co-authors and different review rounds from the journal. All the co-authors also cross-checked the changes made by the doctoral candidate based on the comments received by the journal.

Study II. Kaur, P., Dhir, A., Chen, S., & Rajala, R. (2016). Understanding online regret experience using the theoretical lens of flow experience. *Computers in Human Behavior*, 57, pp. 230–239

As in the case of Paper 1, the doctoral student had the sole responsibility of carrying out the main tasks related with the research process and paper writing (e.g., literature review, data collection, data analysis, survey instrument preparation, preparing the first draft of the paper and improving the paper based on the comments received from co-authors and journal reviewers). The other co-authors cross-checked the data analysis and helped with improving the survey and paper. Additionally, they also cross-checked the corrections made by the doctoral candidate based on the journal comments. The second author also helped with data collection.

Study III. Kaur, P. (2016). Underpinnings of User Participation in Service Provider-hosted Online Communities, Service Science special issue on Multi-actor Value Creation in Service Innovation, *Service Science* (In press), pp. 1 – 33

The doctoral student is the sole author of this article. This article was first submitted to the RESER conference in September, 2014 where it won the best paper award. Later, this article was invited for submission to the special issue of the Informs Service Science journal, 'Multi-actor Value Creation in Service Innovation'. It was accepted after two rounds of review. The doctoral student was responsible for carrying out all the tasks related to this paper and research process resulting in this paper.

Study IV. Kaur, P., Dhir, A., Rajala, R., & Dwivedi, Y.K. (2016). Understanding motives behind continued usage of Facebook-based brand communities, Online Information Review (*in review*)

As in the case of Paper 1 and Paper 2, the doctoral student was solely responsible for all the activities associated with this paper preparation. As in the previous case, the second author helped with the data collection. All the co-authors cross-checked the analysis, survey instrument and reviewed the paper for providing comments for improving the paper.

Study V. Kaur, P., Dhir, A., & Rajala, R. (2016). Assessing Flow Experience in Social Networking Sites: An Instrument Development and Validation Approach, *Computers in Human Behavior* (In *press*), pp. 1-33

For this paper also, the doctoral student carried out all the tasks related with paper writing and improving the paper. The co-authors helped with improving the paper and survey in addition to cross-validating the analysis. As mentioned in the prior papers, the second author also helped in the process of data collection.

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PART I: OVERVIEW OF THE DISSERTATION

1 Introduction

The concept of open innovation, introduced by Henry Chesbrough in 2003, has received attention in the recent decade across academia and practitioners. Open innovation can be defined as the in and out thinking whereby organizations practice innovation by utilizing knowledge from outside together with the commercialization of their in-house concepts and ideas with others for the purpose of innovating new products and services (Chesbrough, 2006). Additionally, the concept of open innovation is important for organizations as it assists them in gaining a competitive edge over others in the dynamic market sphere. Also, open innovation deals with the exploitation and exploration of the knowledge existing outside the boundaries of the organization itself (Calanstone & Stanko, 2007).

In contrast to goods, services have gained prominence owing to their increased contribution to the Gross Domestic Product of nations (Berry, Venkatesh, Parish, Cadwallader, & Dotzel, 2006). Together with open innovation, the notion of service innovation is also making a surge. It had already gained attention in the academic world in the 1980s. This surge in service innovation can be attributed to an increase in the sophistication and affluence levels of the general public, which possibly generated the increased demand of services (Miles, 1993). Hence, the growth in the service sector is aimed at fulfilling the expectations and needs of their consumers. This led to the emergence of another concept called service-dominant logic (Lusch, Vargo, & O'Brien, 2007; Vargo & Lusch, 2008; Grönroos, 2008), according to which the process of service creation cannot

be carried out in isolation. It states that value generation from services is possible by co-creating them with the current and potential users of these services. Service-dominant logic defines service innovation as a process of co-creation of services as a joint activity carried out among organizations, their users, other technologies and firms, and value propositions created through information sharing linking different external and internal service systems (Maglio & Spohrer, 2008).

Organizations have recently started showing interest in the different forms of social networking services (SNS) for connecting with their existing and potential customers. Therefore, SNS influence the current functioning of organizations to a greater extent (Cvijikj & Michahelles, 2013; Muk & Chung, 2014). SNS enable organizations to connect to their potential and existing customers in a low-cost manner across geographical boundaries (Jung, Kim, & Kim, 2014). Organizations are establishing their presence on SNS by creating their own pages. Users who are interested in them can join by liking them. The aggregation of such admirers of brands on such pages can be referred to as SNS-based brand communities. In general, a brand community has been defined as a "*specialized, non-geographically bound community, and based on a structured set of social relations among admirers of a brand*" (Muniz & O'Guinn, 2001). SNS help organizations to enhance their brand attractiveness, facilitate the establishment of closer bonds with their existing customers, promote their offerings to their existing and potential customers, gather feedback and ideas about possible future goods and services, and empower their end-users by providing them with a platform for expressing their concerns (Lin & Lu, 2011).

SNS-based brand community (e.g., Facebook pages) refers to an online community established by the company for customers of a certain brand (e.g., Samsung electronics) to

engage in conversation where they exchange information on Samsung so that Samsung can use the information collected in these communities for product improvement. The SNS-based brand communities come into existence when the organizations generate their page on some SNS platform. This is followed by generating awareness regarding their existence on SNS to their customers (i.e., existing as well as prospective) through different strategies. For example, publishing their presence via shopping bags, newspapers etc. Following this, interested users will join these communities on SNS. At the same time, the SNS-based brand community managers will begin posting content on them. The users who have joined these communities will participate in these communities in different ways such as: liking the posted content, sharing their content, generating new content, increasing their visibility in their social networks, etc. The SNS-based brand communities serve as efficient marketing tools for the organizations. Additionally, they offer an easy and cost efficient way of establishing connection with their current and prospective customers, and gathering information related to their existing and future offerings. This dissertation found different factors affecting user participation and continuation intention in SNS-based brand communities. The user participation can help organizations to improve their existing and future offerings. These factors are important for measuring the success and failure of their products and services.

The involvement of existing or potential customers in the service innovation process can be referred to as user-driven service innovation (von Hippel, 2005). The research field long ago recognized the importance of users as providers of vital information regarding prospective future goods and services (Bogers, Afuah, & Bastian, 2010). For the first time in the 1970s, von Hippel recognized the role of users as innovators (von Hippel,

1976). Later, the user's role as innovator was categorized as that of consumers and the intermediate user field (Bogers et al., 2010). The intermediate user field operates at the business-to-business (B2B) level, and refers to the consumption and innovation of goods and services at the level of the organization itself. In other words, the innovators in this category are the organizations themselves. On the contrary, the consumer user field operates at the business-to-consumer (B2C) level and refers to the innovation and consumption of the goods by the end users. Academicians and practitioners have shown interest in exploring the role of end-users and their communities in the process of the innovation of goods and services. The motivation of the users participating in co-creation related activities is mainly dependent on the motivational aspects (Lakhani & von Hippel, 2003). Committed and motivated users can provide context-specific information that can significantly contribute to the innovation of new goods and services. Hence, the knowledge generation from motivated users can serve as a real asset for an organization (Nambisan & Baron, 2010). Moreover, the involvement of end-users in innovation-related activities could potentially help to reduce the distance between end-users and organizations (Prahalad & Ramasawmy, 2004).

SNS-based brand communities are surging in the organizational domain. Recent statistics indicate that about 80% of organizations are on Facebook (Infographics, 2012). Hubspot (2011) reported that organizations prefer SNS for the purpose of their B2C-oriented activities. The members of SNS-based brand communities can participate in the co-creation and innovation of future goods and services by sharing their feedback on the existing offerings, providing ideas for the enhancement of existing services and potential future goods and services, and evaluating ideas regarding possible goods and services.

Knowledge in the form of information is generated either by the members themselves or in collaboration with the SNS-based brand community managers and other community members.

In the present dissertation, we have operationalized the term "user participation in innovation" as involvement of users in innovation of future goods and services in addition to providing opportunities for improving their existing offerings. The increased competition in the market and ever-changing user needs have necessitated the involvement of users in the innovation of future and existing goods and services. The SNS platforms can be the potential resource for involvement of users in the innovation activities of the organizations. The user participation in innovation through online SNS platforms can be understood through different phases such as: awareness generation, user retention, shifting passive user activity towards active engagement modes and finally, maintaining active participation together with user retention. This dissertation looks at the user participation in innovation as an overall process rather than focusing on the intricate details of the participation mode. For example, the dissertation intends to understand factors affecting user participation. It does not aim at evaluating the content generated via commenting functionality.

1.1 Research Gap

This dissertation addresses the B2C perspective of user participation in innovation. It is focused on the integration of the outside knowledge existing with the customers of organizations in the process of innovating new products and services. The customers hold the key to potential new services or enhancements to existing services. The real knowledge regarding the needs and expectations from future services lies with the customers only.

Hence, the knowledge residing in the customers makes them an extremely powerful tool for organizations. In this regard, SNS-based brand communities are quite significant for organizations. However, such communities are facing challenges regarding user retention and their participation (Deloitte, 2009; Ding, Phang, Lu, Tan, & Sutanto, 2014; Habibi, Laroche, & Richard, 2014). Since users are the key to practicing user-driven service innovation, it is important to understand strategies for addressing the aforementioned challenges.

As mentioned previously, SNS are influencing organizational functioning in various ways. For example, engagement and active user participation in Facebook-based brand communities are enabling organizations to attain their aspired outcomes (Ding et al., 2014). However, the existing research has paid little attention to the role of SNS in organizational contexts (Cvijikj & Michahelles, 2013). Similarly, despite the increase in popularity of SNS-based brand communities, they have received little research attention in the prior literature (Habibi et al., 2014). The recent research has investigated SNS-based brand communities in an organizational context by following different perspectives, namely consumer engagement (Cvijikj & Michahelles, 2013), brand trust (Habibi et al., 2014; Jung et al., 2014), brand love (Wallace, Buil, & de Chernatony, 2014), intention of word-of-mouth (Wallace et al., 2014), joining intention (Muk & Chung, 2014), continuation intention (Lin & Lu, 2011; Jung, Kim, & Kim, 2014), the role of marketer- and user-generated content in user participation (Ding et al., 2014), and motivations of user participation (Zaglia, 2013).

As is evident, the domain of user participation in innovation on SNS-based brand communities still requires further exploration from different perspectives. The existing

literature has examined the following dimensions of user participation: engagement (Cvijikj & Michahelles, 2013), word-of-mouth intentions (Wallace et al., 2014), intention to join (Muk & Chung, 2014), continuation intention (Lin & Lu, 2011; Jung et al., 2014), motivations governing participation (Zaglia, 2013), and the roles of different kinds of content (Ding et al., 2014). In the context of motivations, the prior literature on user participation in SNS-based brand communities has undergone investigation from the perspective of the utilitarian and hedonic motivations of the users (Habibi et al., 2014; Zaglia, 2013). Caers and colleagues (2014) have suggested the need for more research on user participation in SNS-based brand communities to understand better: (i) the preferred ways of user participation, (ii) strategies for retaining and attaining user attention, (iii) strategies and extent of user participation preferred by organizations, and (iv) motivations driving joining decisions. This dissertation is focused on ways to attain and retain user participation in innovation on SNS-based brand communities.

The existing literature on SNS-based brand communities is lacking in valid and reliable instruments for measuring the experience of their users. This dissertation addresses this limitation by proposing instruments for measuring the flow experience of the users of SNS and SNS-based brand communities. These instruments provide information on the elements that can intrinsically motivate users to participate in SNS-based brand communities by providing a sense of enjoyment. On the other hand, the prior literature lacks clear understanding of users' intention to continue using SNS-based brand communities. In this regard, this dissertation highlights the role of the commenting functionality as a mode of continued user participation in innovation on SNS-based brand

communities, and the influence of different social, emotional and epistemic values on a user's intention to continue using SNS-based brand communities.

1.2 Theoretical positioning of the study

Previous research on open innovation and user innovation has addressed user participation in different innovation activities. The present study continues the research of user participation by focusing on the motivational and behavioral underpinnings of user participation in innovation on online communication platforms. In so doing, the study uses flow theory, consumption value theory, uses and gratification theory, the theory of reasoned action, social cognitive theory and developmental psychology.

Flow Theory

Flow theory is the popular theoretical framework for examining the intrinsic aspects of user behavior in the context of continued usage of information systems. Flow experience is defined as "*the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it*" (Csikszentmihalyi, 1990:4). According to flow theory conceptualization, flow experience consists of the following dimensions: balance of skills and challenges, clear goals, instant feedback, focused attention, perceived control, combination of action and awareness, time distortion, loss of self-consciousness, and autotelic experience (Csikszentmihalyi, 1990). The prior literature has used flow theory to examine user behavior in different domains, for example, human-computer interaction (Hoffman & Novak, 1996; Novak, Hoffman, & Yung, 2000), computer-mediated communications (Webster, Trevino, & Ryan, 1993), online games (Chou & Ting, 2003; Hsu & Lu, 2004; Lee & Tsai, 2010), online shopping (Guo & Poole, 2009; Koufaris, 2002),

social networking services (SNS) (Chang & Zhu, 2012; Qi & Fu, 2011), online banking (Lee, Kang, & McKnight, 2007), mobile instant messaging (Zhou & Lu, 2011), etc. Despite being in existence for four decades, the flow theory suffers from three main limitations: (i) incomplete conceptualizations of flow (Finneran & Zhang, 2002; Guo & Poole, 2009), (ii) ambiguity regarding the dimensionality of flow experience (Guo & Poole, 2009), and (iii) unknown psychometric properties of the flow construct (Guo & Poole, 2009). Due to the ambiguity at the conceptual level, researchers have tended to select the constructs most often used in the prior literature (Kwak, Choi, & Lee, 2014). A similar trend can also be observed in the exploration of user behavior on SNS from the perspective of flow theory (Chang & Zhu, 2012; Qi & Fu, 2011). This creates a bias in the existing understanding of the flow experience. To bridge this gap, this dissertation has developed instruments for examining flow experience specifically for SNS and SNS-based brand communities.

Consumption Value Theory

Consumption value theory is a relatively new theory that aims at enhancing the understanding of various value-oriented elements pertaining to consumer choice behavior in the context of brand, products, or services (Sheth, Newman, & Gross, 1991). This theory is comprised of five different consumption values describing consumers' choice-related behavior. These values are: functional, emotional, social, epistemic, and conditional (Sheth, Newman, & Gross, 1991). The functional value can be explained as "*the perceived utility acquired from an alternative's capacity for functional, utilitarian, or physical performance*". Emotional value can be described as "*the perceived utility acquired from an alternative's capacity to arouse feelings or affective states*". Social value can be explained as "*the perceived utility acquired from an alternative's association with one or*

more specific social groups". Epistemic value can be described as "*the perceived utility acquired from an alternative's capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge*". Finally, conditional value can be defined as "*the perceived utility acquired by an alternative as the result of the specific situation or set of circumstances facing the choice maker*". The consumption value theory has been used for understanding user behavior in different contexts such as social networking communities (Kim, Gupta, & Koh, 2011), social virtual worlds (Mäntymäki & Salo, 2015), college course work (Stafford, 1994), smartphones (Bodker, Gimpel, & Hedman, 2009), mobile phone ringtones (Turel, Serenko, & Bontis, 2010), etc. In the domain of SNS, consumption value theory has been used for examining playing oriented intentions (Lu & Hsiao, 2010), digital item purchasing intention in social networking communities (Kim, Gupta, & Koh, 2011), and user behavior on Facebook (Aladwani, 2014). However, nobody has yet employed this theory for examining user behavior in SNS-based brand communities. This dissertation utilized this theory for investigating the epistemic, social and emotional values for predicting users' intention to continue using SNS-based brand communities.

Uses and Gratification Theory

The uses and gratifications theory is a well-known theoretical framework utilized in the field of communication research (Rubin, 1983; Severin & Tankard, 1997). The uses and gratifications theory framework explains the underlying gratifications experienced by the users of different services or platforms. According to the prior literature, the U&G of any platform is driven by the users' hedonic, utilitarian and social needs (Stafford, Stafford, & Schkade, 2004; Mäntymäki & Riemer, 2014). Earlier literature on online communities emphasized the role of hedonic, utilitarian and social U&G (see McAlexander, Schouten,

& Koeing., 2002; Muniz & Schau, 2007; Schau, Muniz, & Arnould, 2009). Consequently, this dissertation examines the impact of hedonic, utilitarian (i.e., reciprocal benefit) and social uses and gratifications theory on user participation in SNS-based brand communities.

Social Cognitive Theory

Social cognitive theory is a well-recognized and comprehensive theoretical framework that has been utilized for understanding the user behavior and motivation that affect media adoption, usage and continuous use (Bandura, 1986; LaRose, 2009; Compeau, Higgins, & Huff, 1999; Liaw, Chang, Hung, & Huang, 2006). According to Bandura (1986), SCT offers a three-way relationship among intention to engage in a given behavior, users' cognitive abilities, and their environment. Furthermore, users tend to engage in those activities and behavior, resulting in favorable results. Social cognitive theory emphasizes the need to study the effect of self-efficacy and the habits of users on their attitudes and their continuation intention (LaRose, 2009; Lee & Ma, 2012; Lee, Lee, & Choi, 2012; Stefanone, Lackaff, & Rosen, 2011; Mohamed & Ahmad, 2012).

According to Bandura (1986), self-efficacy is defined as the belief about carrying out an activity or engaging in a behavior. Furthermore, self-efficacy influences the decisions of users to engage in the given task, activity or behavior, and also influences their technology adoption (Vijayasarathy, 2004; Hernandez, Jimenez, & Jose Martin, 2009). Prior literature has suggested that users with high self-efficacy tend to put more effort and persistence into accomplishing a certain task or activity than those with low self-efficacy (Schunk, 1990; Bandura, 1977). The prior literature on online communities suggests that users' self-efficacy has a critical role in their participation (Zhou, 2011; Cheung, Lee, &

Lee, 2013). Similarly, habit refers to a stage of automaticity in user behavior that is achieved through self-learning (Kim, Malhotra, & Narasimhan, 2005; Limayem, Hirt, & Cheung, 2007). Prior literature has suggested that habit has an influential role in technology use and adoption (Kim et al., 2005; Limayem et al., 2007; Venkatesh, Thong, & Xu, 2012). However, previous literature on user participation has not yet considered the role of self-efficacy and habit in understanding users' continuation intentions in the context of SNS-based brand communities. Consequently, this dissertation investigates the impact of self-efficacy and the habit of participating in the commenting functionality on Facebook-based brand communities on the user's attitude, continuation intention and activity level.

Theory of Reasoned Action

The Theory of Reasoned Action is a popular and widely known theoretical framework that is utilized for predicting users' intention to engage in particular activities or behavior (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Furthermore, users' attitudes and subjective norms are taken into consideration for predicting their intentions. "*Attitude*" refers to the overall evaluation of the behavior in question (Jung et al., 2014), while "*subjective norms*" measure the social influence (e.g., friends, family, and peers) and external influence (e.g., external entities like mass media, online communities) on that behavior or activity (Hsieh, Rai, & Keil, 2008; Irani, Dwivedi, & Williams, 2009; Venkatesh et al., 2012). Prior literature on information systems has successfully applied TRA for understanding human behavior in different contexts (Kim, Kim, & Goh, 2011; Doane, Pearson, & Kelley, 2014). The present dissertation utilizes *social influence* and *external influence* as the representative of subjective norms. In particular, this dissertation examines the effect of subjective norms on attitude, continuation intention and users'

activity levels in the context of user participation via commenting in SNS-based brand communities.

Developmental Psychology

The theoretical foundations from the developmental psychology literature were utilized for understanding adolescents' behavior in the context of their participation in SNS-based brand communities. The developmental psychology literature offers essential insights into adolescents' behavior regarding technology use (Brown, 1990; Erikson, 1968). Adolescents are different from young adults since they are in the developmental stage of growing maturity and cognitive abilities (Piaget, 1970; Leontjev, 1978). Their developing maturity also affects adolescents' formulation of subjective norms as well as their attitudes towards the use of online communication platforms (Mäntymäki & Salo, 2011).

1.3 Research Design

This dissertation is based on the quantitative research methodology that enables the collection of data from a large number of respondents representative of the target user group in a cost-efficient manner. A total of five empirical studies were undertaken to fulfill the different research objectives of this dissertation (see Table 1). The empirical studies were conducted using pen-and-paper surveys with adolescents and young-adult SNS users. The majority of the research in the domain of SNS-based brand communities has been conducted on undergraduates and young adults. However, adolescents, who are a potential user group for organizations, have failed to receive the required attention. Especially in the context of participation in online communities, adolescents have not received sufficient research attention (Mäntymäki & Salo, 2011; Mäntymäki & Riemer, 2014). Adolescents

and young adults have been reported to play a key role in influencing the choices of their peers, parents and other family members (Lapowsky, 2014). Moreover, they are a loyal user group in the market and have often been observed to follow trends in the market (Lapowsky, 2014). Hence, it is very important for organizations to take into consideration the needs and expectations of this user group while innovating future goods and services. This dissertation involves research on the domain of SNS specifically focusing on Facebook. The units of analysis are flow experience, online regret experience and continuation intention of user participation in innovation on Facebook and Facebook-based brand communities. The whole dissertation is grounded in different theories of information systems, namely flow theory, consumption value theory, uses and gratifications theory, the theory of reasoned action, social cognitive theory, and developmental psychology.

1.4 Outcomes

This dissertation provides insights into the intrinsic and social elements that motivate users to participate in SNS-based brand communities and to continue using them in the future. The understanding of these aspects of user participation in innovation on SNS-based brand communities can help to resolve the challenges related to user participation in these communities. The findings of this dissertation will contribute to the existing literature on online brand communities, computer-mediated communications and information systems. The dissertation results can guide organizations and their brand community managers in the efficient management of their SNS-based brand communities. Broadly speaking, the findings from this dissertation can facilitate organizations' successful practice of user-driven innovation on online platforms for innovating future goods and services in addition to enhancing their existing practices.

Table 1. Summary of the main aim, study participants, measures and analyses of the five empirical studies

Studies	Main Objective	Participants	Measures	Analysis
Study I	To develop a valid and reliable instrument for measuring users' flow experience on SNS	A cross-sectional survey with 804 adolescents from India	84-item pool	Psychometrics analysis, EFA CFA, Second-order CFA Instrument validity & Reliability
Study II	To examine online regret experience from the perspective of flow experience and user demographic characteristics in the context of SNS	A cross-sectional survey with 804 adolescents from India	4-item regret experience, 26-item flow experience instrument, demographic characteristics of age, gender, daily time spent on Facebook and total experience of Facebook usage	Independent sample t-test, Pearson correlation, One-way ANOVA, Posthoc Analysis Hierarchical regression
Study III	To examine social and individual factors driving users' intention to continue using participation-enabling functionalities on SNS-based brand communities	A cross-sectional survey with 728 adolescents from India	4-item social influence, 4-item reciprocal benefit, 3-item external influence, 3-item social presence, 5-item self-efficacy, 4-item habit, 3-item hedonic motivation, 4-item attitude, 3-item continuation intention, 4-item user activity level	EFA, CFA, Validity & Reliability, SEM, Mediation Analysis
Study IV	To examine the role of epistemic, social and emotional values in predicting users' intention to continue using SNS-based brand communities in addition to examining the role of users' activity level on the same.	A cross-sectional survey with 577 young adults from India	3-item social influence, 2-item information seeking, 4-item playfulness, 4-item social enhancement, 3-item social interaction, 3-item continuation intention	Measurement model, Validity & Reliability, SEM
Study V	To develop a valid and reliable instrument for measuring users' flow experience on SNS-based brand communities	A cross-sectional survey with 577 young adults from India	26-item instrument complemented with 33 new items resulting in a 59-item pool	Psychometrics analysis, EFA CFA, Second-order CFA, Instrument validity & Reliability

Note: ANOVA = Analyses of variance, CFA = Confirmatory Factor Analysis, EFA = Exploratory Factor Analysis, SEM = Structural equation modelling

2 Research Objectives and Delimitations

SNS-based brand communities have proven to be an easy and economical way for organizations to connect with existing and potential customers across geographical boundaries. They can assist organizations in attaining an edge over their competitors in the dynamic market base. SNS-based brand communities can provide organizations with the knowledge essential for successful innovation of future goods and services. However, SNS-based brand communities suffer from the major challenge of user participation and retention (Deloitte, 2009; Ding et al., 2014; Habibi et al., 2014). This dissertation addresses the challenge of user participation in SNS-based brand communities by focusing on SNS, and specifically SNS-based brand communities. Among the different SNS platforms, Facebook is considered as the focus of the different undertaken empirical studies.

2.1 Objectives of the study

The objective of this dissertation is to construct a more comprehensive understanding of the factors that affect user participation and retention in user-driven innovation activities in SNS-based brand communities. The present study suggests that user participation in user-driven innovation is vital, but poses challenges in four different phases (see Figure 1). The first phase involves attracting users to join the brand communities on different SNS. This phase requires generating awareness among users of the presence of brands on different SNS. For example, placing icons of different SNS platforms where the brand has its presence on receipts, shopping bags, newspaper and television advertisements, etc. The second phase initiates as soon as users start connecting

with brands via different SNS-based brand communities. The main objective of the second phase is to retain users along with their existing level of participation, which can be active or passive. Active users will participate in an active mode in different activities of the SNS-based brand communities, e.g. generating content by expressing their opinions, entering into discussions with other members of the community, sharing brand community posts, etc. On the other hand, passive users are silent or passive recipients of the information posted on the brand communities. However, this level of user participation might not be sufficient to fulfill all the desired objectives of the organizations behind establishing SNS-based brand communities. Hence, the third phase should focus on shifting the user orientation towards more active forms of participation (e.g., generating content by expressing their opinions on the posted content or creating completely new content). Finally, the fourth phase should work on motivating the users to continue actively participating in the established SNS-based brand communities.

This dissertation intends to improve the current understanding of the factors that affect user participation in each of the four phases identified in the process model of user participation in innovation on SNS-based brand communities. A more comprehensive understanding of user participation may help both scholars and business practitioners to resolve at least two of the key challenges of user participation in innovation – user engagement and retention. In addition, user participation, particularly active involvement, is essential for the sustenance and success of SNS-based brand communities (Deloitte, 2009; Ding et al., 2014; Habibi et al., 2014).

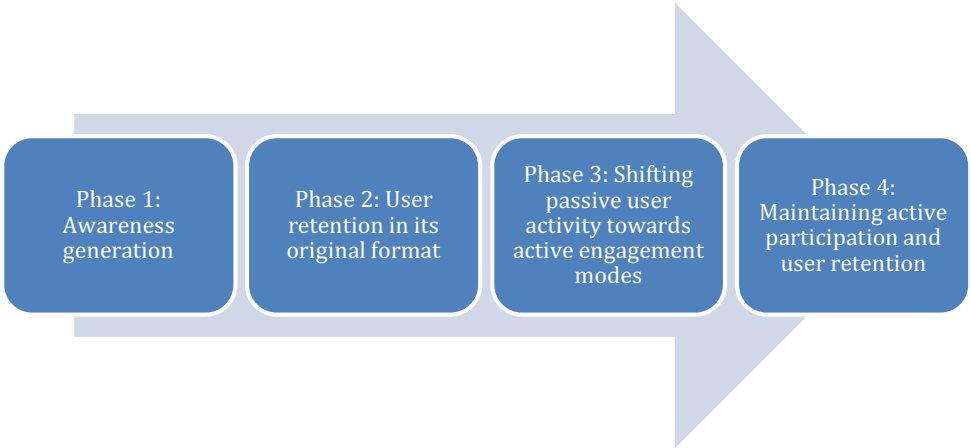

Figure 1. A process model of user participation in user-centric innovation in SNS-based brand communities

2.2 Delimitations of the study

The main delimitation is the focus of this dissertation, which is centered on understanding young people's participation, and retention in Facebook and Facebook-based brand communities, where the young people are all from India. Therefore, the dissertation focus was delimited to a specific demographic user group of adolescents and young adults, a cultural group of Indian users, and the SNS platform of Facebook. Therefore, the research efforts were not channeled towards generalizing the dissertation results to other demographic groups of participants (e.g., adults, older people), other cultural groups besides Indian users, or other SNS platforms (e.g., Twitter, LinkedIn, Tumblr). Similarly, the empirical investigations of this dissertation were limited to three specific units of analysis, namely flow experience, online regret experience, and continuation intention in Facebook and Facebook-based brand communities.

2.3 Research questions

The following main research questions are posed:

Research question 1:

What factors affect user participation in online activities across the user-driven innovation process in SNS-based brand communities?

Research question 2:

How can these factors be measured?

To answer these main research questions, this dissertation has developed a research framework that examines the intrinsic user-oriented elements related to user participation through five empirical studies (see Figure 2). In so doing, the main research questions are further divided into more specific questions addressed in the separate studies as part of this dissertation. Study I and Study V provide information on the intrinsic elements that induce flow among users of SNS and SNS-based brand communities. Study II yields new knowledge on the intrinsic and demographic elements that induce regret experience among users. Study III and Study IV generate knowledge for inducing intention for continued participation in SNS-based brand communities. This dissertation addresses the challenge of user participation from different perspectives with the intention of providing a holistic view of the participation phenomenon.

The present dissertation has utilized a variety of theoretical frameworks for achieving the different underlying research objectives. To begin with, the flow theory framework was employed for understanding the intrinsic elements of user participation related behavior. As discussed previously, the flow theory framework has been used to

investigate user behavior for several decades in different contexts. This is a popular theoretical framework for examining the intrinsic motivational aspects of user behavior in offline and online settings. However, while reviewing the existing literature on flow theory, it was found that the prior literature is missing valid and reliable measurement instruments for specifically measuring user's flow experience in SNS settings. To address this gap, Study I was undertaken with the aim of developing the flow experience instrument for measuring users' flow experience while using SNS. Furthermore, the applicability of the developed instrument was assessed specifically in the domain of SNS-based brand communities in Study V. This study also fulfills the dissertation objective of understanding factors that affect user participation in SNS-based brand communities. User retention has been pointed out as the major challenge faced by SNS-based brand communities. This challenge has been addressed by Studies II, III and IV. Regret experience can be a possible hurdle in user retention on SNS and SNS-based brand communities. The prior literature has empirically shown that regret experience can impact the satisfaction and continuation related decisions of the users in the context of information systems. Therefore, Study II, was undertaken to understand the regret experience from the perspective of flow theory. The flow experience instrument developed in Study I was used to examine the regret experience of the users. Additionally, the effect of the user demographics on regret experience was also analyzed. This provided us with information about the user profiles which are more prone to experience regret as compared to others. Additionally, the understanding of the continuation intention can also help in tackling the challenge of user retention. Commenting functionality can be considered as one form of user participation on SNS and SNS-based brand communities. Different theoretical frameworks were used

for understanding the user's intention to continue using commenting functionality as a mode of user participation in Study III, for example, the uses and gratification theory, social cognitive theory, the theory of reasoned action, and developmental psychology. All of these considered frameworks are well-known theoretical perspectives for understanding user behavior in the online context. These theoretical frameworks were used for deriving the different social and individual factors affecting users' attitudes and continuation intention regarding the usage of the commenting functionality as a mode of their participation in SNS-based brand communities. Finally, Study IV was undertaken to investigate users' continuation intention using the consumption value theory. The value generation is an important variable that can contribute to user retention. Hence, the dissertation uses the popular theoretical framework of consumption value theory for understanding user values in the context of their intention to continue using SNS-based brand communities. Consumption value theory has been previously used for understanding the value generation related behavior of users in different contexts. Additionally, Study IV also investigates the impact of users' activity level on the relationship between values and continuation intention. The following paragraphs detail the underlying objectives of the five undertaken empirical studies.

Study I aimed at addressing the existing limitations pertaining to the usage of flow experience as a measurable construct. A 26-item valid and reliable instrument for measuring flow experience in the SNS domain was developed. To the best of our knowledge, the existing literature lacks a valid and reliable instrument for measuring users' flow experience in the context of their SNS usage. Moreover, considering the vast amount of time spent by users on SNS, it makes them an ideal platform for understanding users'

flow experience while using SNS (Hoffman & Novak, 2009). The developed flow experience instrument possesses excellent validity, reliability and model fit. The developed instrument consists of the following six components of flow experience: skill, machine interaction, social interaction, playfulness, enjoyment and concentration.

Study II aimed at understanding the regret experienced by users during their SNS usage. The online regret experience is examined from the perspective of the individual and service platform characteristics in the context of Facebook use. The influence of the service platform characteristics is examined via the theoretical framework of flow experience. On the other hand, the relationship between online regret experience and individual characteristics is evaluated using the user's demographic characteristics (e.g., age, gender, service use experience and time spent on the service). The increase in the level of users' focused attention and playfulness brought about an increase in the regret experienced by the users. On the contrary, older adolescents and those who spent more time on Facebook tend to experience more regret as compared to their younger counterparts and those who spend less time on Facebook.

Study III aimed at understanding adolescents' intention to continue using Facebook-based brand communities from the perspective of the usage of the commenting function. This study examines the role of social and individual factors in formulating adolescents' attitudes towards participation in Facebook-based brand communities via the commenting function. Furthermore, the relationship between adolescents' attitude is examined with their activity levels and intention to continue using Facebook-based brand communities. Adolescents represent an important user group for the organizations for their

business purposes. However, the existing research has not paid much attention to adolescents or the potential of the role they play in enhancing the existing business of the organizations. Additionally, the prevailing research on SNS-based brand communities also lacks focus on examining users' intentions to continue using them. The study findings report that the elements of hedonic motivation, self-efficacy, social influence and reciprocal benefit positively influence users' attitudes. Furthermore, adolescents' attitudes, activity level and continuation intention are interrelated with each other.

Study IV aimed at understanding the continuation intention of the users regarding Facebook-based brand communities. The success and sustenance of the brand communities relies on the user retention and their active participation. The understanding of the elements that motivate users to continue using Facebook-based brand communities can provide insights for dealing with the challenges faced by the brand communities. In this regard, the study examined the role of epistemic, emotional, and social values in users' intention to continue using Facebook-based brand communities. The considered values have been investigated using the following constructs: information seeking, social influence, social enhancement, playfulness and social interaction. Additionally, the relationship between users' varied activity levels and the influence of the examined study constructs is also explored. The study findings report that emotional and social values partially influence users' continuation intentions. Specifically, the constructs of playfulness and social enhancement predict users' intention to continue using Facebook-based brand communities. Besides playfulness, the other considered study constructs' influence on continuation intention is consistent for users with different activity levels on Facebook-based brand communities.

Study V aimed at understanding the elements that facilitate users' entrance into flow experience while using SNS-based brand communities. To achieve this aim, a valid and reliable instrument for measuring users' flow experience in the domain of SNS-based brand communities was developed. The apprehension of the elements that induce intrinsically enjoyable experience for the users of SNS-based brand communities is important for resolving the two major challenges that they face. These challenges are user retention together with sustaining active participation in the SNS-based brand communities. Moreover, SNS-based brand communities suffer from a lack of instruments aimed at measuring users' experience of them. The analysis resulted in a 10-item instrument for measuring flow experience on SNS-based brand communities. This instrument consists of the following three constructs: social interaction, enjoyment and concentration.

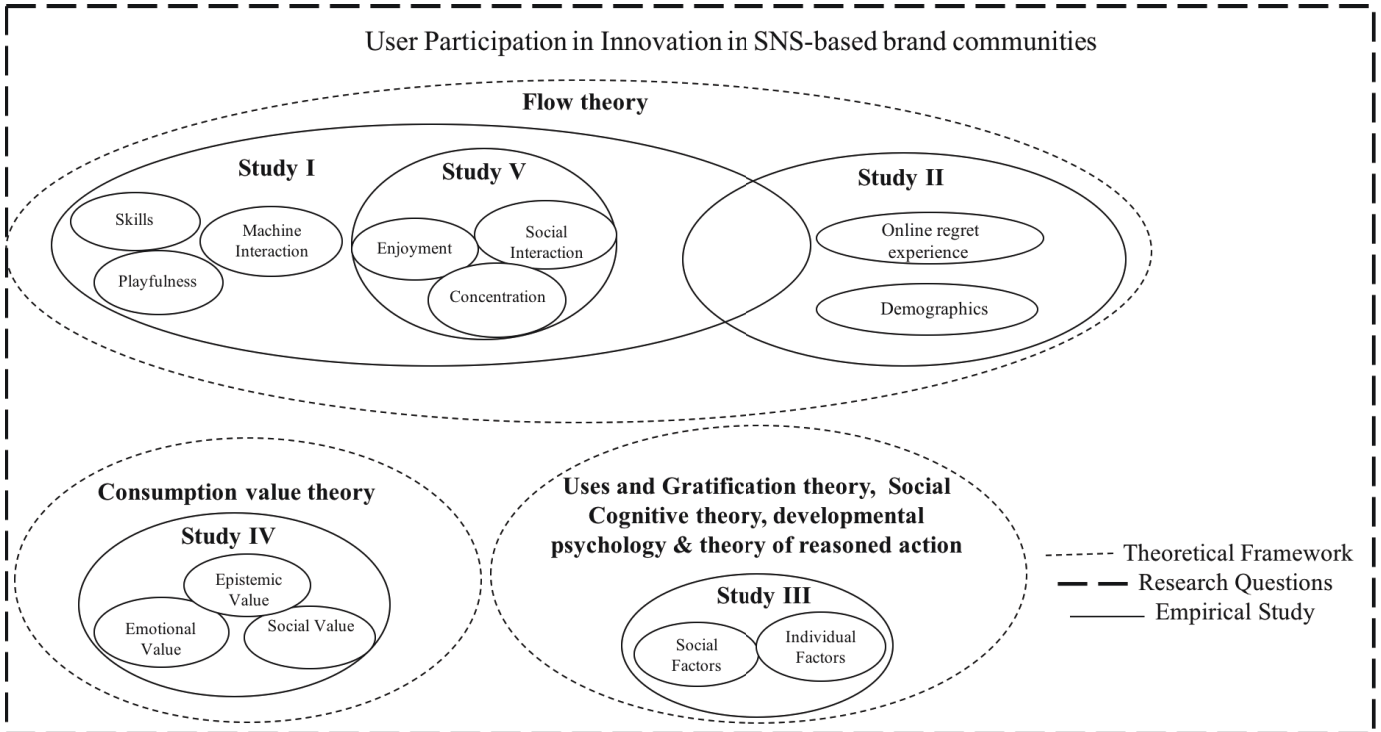

Figure 2. Overview of our Research Framework

3 Research Methods

3.1 Empirical Context

This dissertation is focused on young people (adolescents and young adults) who are members of SNS and SNS-based brand communities. Young people represent an important user segment for organizations and are also considered as potential users of their future goods and services. Additionally, young people also represent a significant driver that leads to the formulation of favorable buying and adoption-related decisions regarding the organization's goods and services among their parents, peers and family (Lapowsky, 2014). Young people are not only avid users of technology, but are also early adopters of new goods and services offered by organizations (Lapowsky, 2014). Furthermore, they are not loyal users of any brand. Rather, they prefer to follow and adopt the latest products in the market. Hence, their feedback and opinions regarding existing and potential future offerings are quite relevant for organizations. It is important for organizations to involve adolescents and young adults in their innovation and co-creation related activities in order to achieve their desired outcomes. However, despite their significant role, adolescents and early young adults have not received the required research attention in the existing literature (Mäntymäki & Salo, 2011; Mäntymäki & Riemer, 2014).

The existing literature suggests that approaching adolescents and influencing their choices and decisions can be most effectively done via their preferred platform (Lapowsky, 2014). In this regard, the prior literature suggests that SNS are the most favored online platforms for adolescents. For example, 81% of adolescents were reported as using some form of SNS in the United States in 2012 (Madden, 2012). Furthermore, Hofstra, Corten and Tubergen (2015) suggest that Facebook is the most favored SNS platform among

adolescents. Among 81% of the SNS users in the United States in 2012, 94% were Facebook users (Madden, 2012). Additionally, Sterling (2013) stated that 94% of adolescents were using Facebook. Even with the passing of time, Facebook is still the preferred SNS platform. For example, recently it has been found that 71% of adolescents are still using Facebook (Lenhart, 2015). Furthermore, it has been found in the prior literature that the majority of studies involving Facebook have been conducted in the western world, and specifically on populations in the United States (Dhir, Chen, & Chen, 2015; Dhir, Kaur, Lonka, & Nieminen, 2016). Recent statistics have reported that about 83.5% of Facebook users are, however, outside of the United States (Facebook Newsroom, 2015). Furthermore, the existing research recommends understanding user behavior on Facebook in different geographical and cultural settings (Caers et al., 2013; Rains & Brunner, 2015; Peters, Winschiers-Theophilus, & Mennecke, 2015). This dissertation addresses this research gap by conducting research on adolescents and young adults from India. In fact, India has the second largest number of Facebook users, most of whom are adolescents and early young adults (Prabhudesai, 2013).

3.2 Main methodological choices

The present study adopted a quantitative approach to investigate the phenomenon of user participation in innovation on SNS and SNS-based brand communities. The methodological choice of utilizing a quantitative approach is considered justifiable for three main reasons. First, several previous studies have also adopted a similar approach for addressing user participation in innovation on online communication platforms. Consequently, following a similar methodological choice enabled us to compare and complement the dissertation results with the prior literature. Second, there are theories that

explain the phenomenon of user participation in innovation on online communication platforms to a degree. Therefore, it is obvious that we should utilize these available information system theories for understanding the underlying phenomena, and hypothesize the influence of the earlier identified factors on users' behaviors. Third, the empirical context includes the need to understand the behaviors of a large number of participants instead of just individual users. Therefore, the analyses conducted as part of this dissertation apply statistical univariate and multivariate techniques, including exploratory factor analysis (EFA), confirmatory factor analysis (CFA), second order CFA, and structural equation modeling (SEM), independent t-test, Pearson correlation, hierarchical regression and analysis of variance (ANOVA).

The present study adopted psychometrics for the development of newer instruments for measuring flow experience in the use of SNS and SNS-based brand communities (Study I & Study V). It was important to develop these newer instruments on flow experience in order to address the limitations of the prior literature. The main limitations were the lack of a specific instrument for SNS and SNS-based brand communities, ambiguity in the conceptualization of flow experience, and inconsistency in the results pertaining to the flow experience. Consequently, devoting efforts to qualitative research was not a viable option.

The dissertation utilized the deductive approach to test the explanatory power of the selected theories and hypotheses of user motives, behaviors and experience related to user participation in innovation on online communication platforms. This was necessary since previous research has established theories that explain a great deal of the variety in users' intentions to participate in collective and online activities on online communication platforms.

At the beginning of this doctoral research, qualitative research methods such as sentence completion, personal interviews and focus discussions with adolescents and young adults were considered. It was initially thought that qualitative research could be instrumental in understanding the different dimensions of the flow experience and various other important aspects of user participation in innovation on online communication platforms. However, during the course of the doctoral research, it was observed that flow experience research spans nearly four decades and has produced a massive amount of literature. There are three main reasons due to which the idea of including qualitative research methods were later dropped. First, there was an urgent need to review this vast amount of prior literature and also address the bias in the flow experience literature in order to develop valid and reliable instruments. Furthermore, the conceptualization of flow experience was pretty clear from the flow theory and the large number of measures representing different aspects of flow experience available in the prior literature. Consequently, qualitative research was not needed for the construction of different measures representing flow experience. Second, the research question of the dissertation was "*how to measure user participation in online communication platforms*". However, measurement of a given phenomenon is best performed using quantitative methodology. Third, it was observed during field studies with Indian schools that the concept of flow experience was too abstract and difficult to explain to most of the adolescents. Consequently, tested psychometric measures were required so that the study participants could evaluate those and share their opinions about their flow experience on online communication platforms.

To avoid the potential risks in the chosen research methods, the present study has applied theory triangulation, data triangulation and investigator triangulation (e.g., Flick, 1992; Bryman, Lewis-Beck, & Liao, 2003). That is, multiple theories were considered when developing the models to examine user behaviors. Also, multiple datasets were collected and analyzed. Finally, the analysis was performed by a team consisting of several researchers with different backgrounds and perspectives on the phenomenon.

This dissertation has given careful attention to the epistemological issues, i.e. why the chosen research methods allow us to know what we wanted to know about user participation in innovation on online communication platforms. The two main justifications for why this dissertation has addressed epistemological issues are: First, since the beginning of this doctoral research, it was considered that a strong theoretical foundation in the form of theories was required in order to obtain newer as well as deeper understanding of user participation. Consequently, several theories from the information system literature were consulted. This process resulted in the selection of multiple theories, namely flow theory, the consumption value theory of reasoned action, social cognitive theory, uses and gratifications theory, and developmental psychology. The prior information system literature clearly suggests that all of these selected theories work very well in understanding the complex issues concerning user participation. Second, the choice of theories motivated the doctoral student to undertake the quantitative research approach involving psychometrics, instrument development, and univariate and multivariate statistical analysis. Furthermore, the validity and reliability of the study measures were examined in order to ensure that the study results and associated findings were correctly interpreted.

The target user groups of the dissertation were adolescents and young-adult Facebook users. It was decided that in order to recruit this target group, the educational institutions should be contacted and involved in this research. The main reasons behind this choice were: First, to answer the associated research questions of this dissertation, large numbers of study participants were required. This requirement can be easily catered for through educational institutions since schools are the only place to get in touch with a large number of adolescents under one roof. Second, it was economically a viable option to collect data from a large number of participants by organizing survey-answering sessions in the classrooms of the respective participating institutions. Consequently, the recruited informants (students) made a suitable sample to investigate young people's participation in innovation on online communication platforms.

The confirmation of validity and reliability of the results are of prime importance for any scientific study. Similarly, the examination of the validity and reliability of the utilized measures has been recognized as essential in quantitative research, especially in psychometrics and instrument development. In this context, validity refers to the degree to which the results are reproducible if similar study processes, measures and study participants are recruited. Similarly, reliability refers to the degree to which the results have lower measurement error and are interpreted in the way they should be interpreted. This dissertation has utilized a wide range of statistical tests for ensuring that the study measures, results and associated findings are valid and reliable. This includes the examination of different forms of validity such as content, face, factorial, convergent and discriminant validity. In addition to this, internal and construct reliability were also

examined. A detailed discussion of the validity and reliability of the study results is presented in Chapter 4.

3.3 Unit of Analysis

The unit of analysis is user participation on SNS and SNS-based brand communities. The phenomenon of user participation is investigated from three different perspectives, namely flow experience, regret experience and continuation intention.

The flow experience perspective addresses the intrinsic aspects of user participation behavior. Having an understanding of the elements that facilitate the members of SNS and SNS-based brand communities' flow can play a significant role in practicing successful user innovation. The two main motivations for researchers to explore the flow experience on SNS are the ubiquitous nature of SNS and the large number of SNS users who spend a significant amount of their time every day on its use (Hoffman & Novak, 2009). There are a few empirical research investigations into the flow experience in SNS use (see Zhou, Li, & Liu, 2010; Qi & Fu, 2011; Wu & Wang, 2011; Chang & Zhu, 2012; Chang, 2013; Kwak, Choi, & Lee, 2014). However, the investigation of flow experience in SNS is still in its early stages. These prior research investigations suffer from various limitations including lack of consensus on the dimensionality of flow experience and consideration of incomplete flow models by the selection of flow experience elements that are most commonly used in the prior literature. This has obviously created research bias in the research outcomes and existing understanding of flow experience. In addition to this, the existing literature lacks valid and reliable instruments for measuring users' flow experience while using SNS, and SNS-based brand communities specifically. These instruments can

provide insights regarding the elements that can help in generating intrinsically enjoyable experience on SNS and SNS-based brand communities (Study I and Study V).

The online regret experience perspective of user participation investigates the elements that can lead to the generation of online regret (Study II). Regret experience can be defined as "*negative, cognitively based emotion*" experienced by people upon imagining or realizing that their present situation would have been better if they had acted in a different way (Zeelenberg, 1999). The prior literature has empirically proven that regret experience can have a negative influence on users' satisfaction, their intention to continue their use, and their repurchase decisions (Taylor, 1997; Inman, James, & Jianmin, 1997; Tsiros & Mittal, 2000; Lemon, White, & Winer, 2002; Kang, Hong, & Lee, 2009; Bui, Krishen, & Bates, 2011). Regarding user participation in SNS and SNS-based brand communities, the online regret experience has been investigated from the perspective of flow experience and demographic characteristics. Understanding of the elements that generate online regret can also help in creating meaningful user experience, which will in turn lead to the flourishing of user participation in innovation.

Finally, user participation has been explored from the perspective of continued use and, in particular, users' continuation intention. Continuation intention can be understood as the users' tendency to continue using a particular brand, product or service. Attaining comprehensive understanding of the factors driving the continuation intention of members of SNS-based brand communities is very important for organizations in fulfilling their desired objectives. However, the phenomenon of the continuing use of SNS-based brand communities has received little research intention (Lin & Lu, 2011; Jung et al., 2014). Moreover, the prior literature has reported that social media based brand communities

suffer from the major challenge of active user participation and retention (Deloitte, 2009; Ding et al., 2014; Habibi et al., 2014). The problem of user retention is the main motivation for investigating users' continuation intention. This dissertation fills this research gap by examining users' continuation intention with regard to usage of participation-enabling functionalities (Study III) and SNS-based brand communities (Study IV).

3.4 Data

This dissertation, consisting of five considered empirical studies, is based on three cross-sectional data-sets collected in December of 2013 and December 2014. The first data-set was collected in December 2013 from 804 adolescents, which is used in Study I and Study II. The second data-set, which was also collected in December 2013 from 728 adolescents, was used in Study III. Finally, the third data-set collected in December 2014 from 577 young adults was used in Study IV and Study V. The research methodology used for data collection in all three data-sets was exactly the same. All the empirical studies required that participants should have experience with Facebook and Facebook-based brand communities. However, Study IV and Study V, based on the third cross-sectional data-set, specifically invited participants experienced in using Facebook-based brand communities. The following text gives details of the process of data collection.

Paper-and-pen based surveys were utilized for the data collection of the three cross-sectional data-sets. The target population was reached via their respective institutions. At the beginning of the research process, different educational institutions were contacted via phone calls and email to enquire about their availability and interest in participating in the study. All of the contacted educational institutions had English language as their medium of instruction and had students from lower to upper middle class economic groups. This

stage was followed with face-to-face discussion with the respective institutional head, i.e. the principal and/or institution management board. During these meetings, the invited institutions were clearly informed of the research objectives, process, requirements and expected outcomes. The educational institution's management and principal were responsible for providing permission to conduct the study. Upon receiving a positive response from them, the schedule for the proposed study was finalized with the institution authorities. Following this, the study was advertised through the management and teachers of the respective participating institution using classroom announcements and noticeboards. The advertisement clearly informed students of the study objectives, expected outcomes, time requirements, venue and prerequisites for participation in the study.

Before the actual study, usually a pilot study was conducted with the participants representing the target population. During the pilot study, the participants were asked to advise of any difficulty with the survey items in terms of the vocabulary, language related difficulties and the length of the survey. Based on the feedback from the pilot study, the surveys were improved. For all the collected data-sets, the pilot study participants suggested minor issues of difficulty comprehending some of the item-stems used in the survey items. These item-stems were replaced in the improved survey. For the first and second cross-sectional data-sets, pilot studies were conducted with 30 participants each, while the third data-set involved a pilot study with 12 participants.

For Study I and Study II, the first cross-sectional data-set was collected in two phases as per the suggestions of the participating institutions. During the first phase, the topic of interest, recommended by the participating institution's authorities, was discussed

with the students in the form of a workshop/seminar. The discussed topic was related to the recent developments in the field of information technology. This phase did not interfere with and was independent of the main study. However, it proved to be an incentive for the students to participate in the study. For the researcher, it facilitated the building of rapport with the study participants. During the second phase, the actual data collection took place with the interested students. Similarly, for Study IV and Study V, the data collection session was initiated by briefly discussing Facebook-based brand communities. The main intention behind this brief discussion was to ensure that the participants' understanding of Facebook-based brand communities matched the researcher's understanding. Following this, the interested students were requested to fill in the paper-and-pencil survey in English since it was the language of the instrument in the participating institutions. Before the beginning of the data collection, the study participants were again reminded of the study objectives and the anticipated outcomes. The participants were also clearly informed that they had freedom to quit the study at any time they desired during this second phase as well. Other than this, to ensure participant anonymity, they were informed that they should not mention any personal details (e.g., phone number, name, student number or email address) on the survey (Morrow & Richards, 1996). The study participants for Study I and Study II consisted of 71.5% (N = 575) males and 28.4% (N = 199) females with a mean age of 14.47 years (SD = 1.21). The study participants for Study III consisted of 61.7% (N = 449) males and 37.9% (N = 276) females with a mean age of 14.53 years. The Study IV and Study V participants consisted of 26% (N = 150) females and 73.8% (N = 426) males. The mean age of the participants was 19.41 years.

3.5 Study Measures

This section presents and discusses the measures utilized in the five empirical studies.

In Study I, the instrument development was carried out in different stages. During the first stage, the review of the existing empirical and conceptual work involving flow theory in general and instruments developed for measuring flow experience was conducted. All the literature between approximately the 1990s and 2013 was systematically reviewed. This was followed by the second stage, where the constructs were selected for inclusion in the current research. This involved revisiting all of the reviewed literature. This stage resulted in the selection of 14 constructs that were frequently used for representing or measuring flow experience in the prior literature. These constructs are: skill, curiosity, escape, control, machine interaction, social interaction, telepresence, challenge, exploratory behavior, playfulness, enjoyment, concentration, intrinsic interest, and time distortion. During the third stage, the selected constructs and their respective items were scrutinized to avoid any redundancy. For example, during this stage, the construct of "*intrinsic interest*" was moved out due to its resemblance with another construct called "*enjoyment*". It was decided to retain enjoyment as it has been considered as an inseparable part of flow experience as per the prior flow experience literature (Csikszentmihalyi, 1990; Guo & Poole, 2009). Furthermore, the construct of enjoyment covers the user experience more broadly as compared to intrinsic interest. This led to the deletion of four items from the total pool of items, resulting in 84 and 13 items in total. The fourth stage involved the evaluation of the constructed instrument with the target user group.

Study II used measures addressing demographics, flow experience and regret. In terms of demographics, the study participants were asked to respond to the following demographic characteristics: age (assessed using an open-ended question), gender

(assessed using Male = 1 and Female = 2), time spent on Facebook (assessed using a five point response scale: 1 = less than 1 year, 2 = from 1 to 2 years, 3 = from 2 to 3 years, 4 = 3 to 4 years and 5 = more than 4 years) and experience of using Facebook (assessed using a five point response scale with the following categories: 1 = less than 1 year, 2 = between 1-2 years, 3 = between 2-3 years, 4 = between 3-4 years, 5 = more than 4 years). Flow experience was measured using the scale developed specifically for SNS from the prior flow theory literature (Kaur et al., 2016). The considered flow scale consists of 26 items comprised of the following components of flow experience: skill, machine interaction, social interaction, playfulness, concentration and enjoyment. The items measuring flow experience gathered participants' responses on a five-point scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). Finally, the measure of regret is evaluated using four items adapted from Kang, Hong, and Lee (2009) and Patil, Norcie, Kapadia and Lee (2012). All the items measuring regret required the participants to respond to a five-point scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). The considered items measured regret occurring due to Facebook usage from the following perspective: spending more time than required, wastage of time, forgetting work that ought to be done, and suffering of studies. The overall regret measure resulted in good internal reliability with a Cronbach's alpha equivalent to .74.

Study III consisted of the following constructs: social influence, external influence, reciprocal benefit, social presence, hedonic motivation, self-efficacy, habit, attitude, continuation intention and user activity level. All the selected study constructs are based on the following theories: social cognitive theory, uses and gratifications theory, theory of reasoned action, and developmental psychology. As mentioned previously, the items for

all of these constructs were drawn from the existing literature. The details of the considered social and individual factors are discussed in Study III. However, the details of the other constructs are discussed as follows. Attitude measures "*individual's evaluations of an object*" (Jung et al., 2014). It was measured using the items adapted from the prior literature (Ajzen, 1991). It gathers participants' opinions on whether using commenting functionality is a wise thing, a good idea, a positive thing and favorable. Continuation intention addresses the user's intention to continue using the commenting functionality in the future. It was measured using items adapted from the prior research of Bhattacherjee (2001) and Dholakia, Bagozzi and Pearo (2004). It measures the participant's intention to use the commenting function in the future, as part of their daily life and more frequently. User's activity level addresses the user's tendency to increase their engagement based on their prior feedback on their activity. It was measured using the items adapted from the prior literature (Witt, Scheiner, & Robra-Bissantz, 2011). It measures increase in the participant's activity level based on the possibility of receiving more likes and comments. Additionally, it also measures the effect of an increase in response to their posts on the participant's motivation to become more active and generate more content. Furthermore, all these items recorded users' feedback using a five-point scale ranging from never (1) to always (5).

As in the case of Study III, Study IV consisted of different constructs broadly addressing the consumption values, namely social, epistemic and emotional. The constructs used for investigating the considered consumption values are social influence, information seeking, playfulness, social enhancement, and social interaction. As mentioned above, all the study constructs were measured using the scales previously

validated in different contexts in the prior literature. The measured study constructs required the participants to respond to the five-point Likert scale ranging from strongly disagree '1' to strongly agree '5'.

Study V also involved developing an instrument for measuring users' flow experience specifically for SNS-based brand communities. The instrument developed in this study is an extension of the previously developed flow experience-measuring instrument for SNS in 2013. This study extends this existing instrument in the domain of SNS-based brand communities. As discussed previously, the prior instrument consists of 26 items representing six components of flow experience, namely skill, machine interaction, social interaction, playfulness, enjoyment and concentration. The current study expands the existing instrument by adding 33 new items to the existing set of 26 items, resulting in a total of 59 items. The newly incorporated items deal with the following constructs: challenge, intrinsic interest, exploratory behavior and perceived ease of use. It should be noted that the context of SNS-based brand communities guided the selection of the new constructs to be added in the existing instrument.

3.6 Analysis

This dissertation involves analysis conducted using SPSS and AMOS. The analysis for the different considered studies was conducted differently depending on the requirements of each study. For example, scale development related analysis was carried out in the case of Study I and Study V, whereas the other studies used other statistical analysis techniques such as correlation, post hoc analysis, analysis of variance (ANOVA), Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), second-order CFA, hierarchical

regression, and so forth. To begin with, all the data-sets were checked for any missing values, skewness and kurtosis together with the possible presence of any outliers.

The normalcy of the collected data was established using skewness and kurtosis. The collected data-set was considered to be normally distributed if its skewness and kurtosis values were between the suggested threshold value of ± 1 (Hair, Anderson, Tatham, & Black, 1998; Byrne, 2001; George & Mallery, 2003). This was followed by the calculation of the z-scores for spotting outliers in the data-set. The calculated z-score values should be less than 3.29, which is the recommended threshold value (Tabachnick & Fidell, 2007). This indicated the absence of outliers in the data-set. All the missing values were imputed using the maximum likelihood algorithm. In order to make the data-set ready for further analysis, the aforementioned steps were performed on all three data-sets. Regarding the missing data, all the data with 25% or more entries missing were deleted. For example, in the case of the third data-set, originally data were collected from 590 young adults, of which 12 entries with more than 25% of missing data were deleted. Additionally, one more entry was deleted as the age of the participant was found to be 42 years. Finally, this led to a data-set of 577 participants.

For Study I, the data-set of 804 adolescents was split into two for the purpose of analysis. Sample A (n = 382) was used for performing the EFA. On the other hand, Sample B (n = 422) was utilized for validating the factor structure obtained from Sample A using CFA and second-order CFA. For Study II, the analysis involved examination of the descriptive statistics of the study variables and evaluation of differences among study variables using independent sample t-test analysis, analysis of variance (ANOVA) and post hoc analysis. Additionally, hierarchical regression analysis was performed to evaluate the

constructs predicting users' regret experience in the context of Facebook usage. Study III involved different kinds of statistical analysis performed on the collected data for validating the drawn hypotheses. The EFA was conducted to examine the initial factorial structure for the study constructs. This retrieved factor structure was validated using the CFA. It also helped to establish the validity and reliability of the study constructs. Hypothesis testing was performed by running the structural model of the study constructs. Finally, mediation analysis was conducted for deep exploration of the relationship between adolescents' attitudes, continuation intention and their activity level. Study IV used the two-step process recommended by Anderson and Gerbing (1988) for performing analysis. During the first step, the validity and reliability of the study constructs was examined using the measurement model. In the second step, the assumed hypotheses were tested using the structural model. In the case of Study V, the data-set of 577 participants was randomly split into two samples. Sample A (n = 269) was used for performing CFA, while Sample B (n = 308) was employed for executing second-order CFA.

4 Results

This chapter presents the results obtained from the five empirical studies. The results from the different studies are based on the following statistical techniques: Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), second-order CFA, different validity and reliability measures, independent sample t-test analysis, one-way ANOVA analysis, post hoc test analysis, Pearson correlation, hierarchical regression analysis, mediation analysis, measurement model and structural model.

EFA was performed in the cases lacking any *a priori* factorial structure. The suitability of the sample for performing EFA was ascertained using the statistical measures of Bartlett's test of Sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy. Additionally, the EFA was performed using the maximum likelihood algorithm and Varimax rotation. CFA was performed to confirm the factor structure obtained through the EFA. The goodness of the model fit was evaluated using the following cut-off scores: $\chi 2/df$ <3, comparative fit index (*CFI*) ≥ .95, and root mean square error of approximation (RMSEA) < .08 (Byrne, 2001; Hu & Bentler, 1999). After performing CFA, a second-order CFA was performed in order to examine the possibility of one or more second order factors being able to represent the first order latent factors (see Parasuraman, Zeithaml, & Malhotra, 2005; Wu, Tao, Yang, & Li, 2012). This is also consistent with the observations of the prior literature which emphasized that second order factors are better compared to first order factors (Chen, Sousa, & West, 2005). Second-order CFA was performed since it satisfied the two recommended conditions: (i) the obtained factor structure has the likelihood of being represented as a second-order construct called flow experience, and (ii) all of the first order factors share correlation amongst themselves in the range of .28 to .67.

Different forms of instrument validity and reliability were examined in all the considered empirical studies. The content validity was ensured by selecting the instrument items from the existing literature. This means that the selected items had already been widely reviewed by international practitioners and academicians. The face validity was undertaken by carrying out a pilot study. This process helped to eliminate any ambiguous and difficult to comprehend "text" from the developed item pool. The discriminant validity helps in ensuring that the theoretically different constructs are not associated with each other (Anderson & Gerbing, 1988). The different considered studies satisfied discriminant validity which was ascertained by using different statistical tests suggested in the prior literature. The details of the undertaken tests are as follows: (i) the average variance extracted (AVE) for all the constructs should exceed their corresponding average shared variance (ASV) and maximum shared variance (MSV) values (Barclay, Higgins, & Thompson, 1995); (ii) the correlation within each pair of the considered constructs should be less than .80 (Barclay, Higgins, & Thompson, 1995); and (iii) the correlation of a particular construct with other considered constructs should be smaller than the square root of the AVE value of that particular construct (Chin, 1998; Fornell & Larcker, 1981). The convergent validity evaluates the actual association between the different theoretically related constructs. The considered empirical studies were also found to possess convergent validity as per the following statistical guidelines in the prior literature. These are: (i) values of the item loadings for different items of all the constructs should be greater than .50 (Anderson & Gerbing, 1988); (ii) the composite reliability (CR) value for the considered constructs should be greater than .70 (Nunnally, 1978; Molina, Montes, & Ruiz-Moreno, 2007; Fornell & Larcker, 1981); and (iii) the AVE values for the study constructs should

be more than .50 but smaller than their corresponding CR values (Fornell & Larcker, 1981). In the case of the instrument development, factorial validity was examined to ensure that the recovered factor structure for the developed instrument is recoverable and stable. In the present study, it was found that EFA with Sample A resulted in a six-factor structure which was later confirmed by CFA of Sample B. Instrument reliability is performed to demonstrate the presence of low measurement error for the developed instrument and considered study constructs. The possession of high instrument reliability is confirmed by different statistical tests. First, the internal reliability of the different study constructs was examined by calculating Cronbach's alpha (α) values for all study constructs that should be greater than .70 (Nunnally, 1978; DeVellis, 2003). Furthermore, the internal reliability of the whole instrument is calculated by evaluating the α value (> .70) for the whole instrument (i.e., taking all items together). Second, prior literature has indicated that the α value may over- or underestimate the true reliability of the measure, and so the CR value should be considered instead (Raykov, 1998). As mentioned previously, the CR values should be greater than .70 which holds true in the case of the constructs considered in the present study.

Mediation analysis was performed to attain deeper understanding of the relationship between user's attitude, continuation intention and user's activity level. The mediation analysis was carried out as attitude was mediating the relationship of different social and individual factors with the constructs of continuation intention and user activity level. Similarly, continuation intention was also mediating the relationship between attitude and user activity level. The main purpose of performing mediation analysis was to enhance the clarity of the relationship of different constructs considered in the proposed

research model. Furthermore, mediation analysis was the only available alternative for enhancing the clarity to the proposed research model. It was performed using Baron and Kenny's approach together with bootstrapping (Zhou, Lynch, & Chen, 2010). Baron and Kenny's approach is used for examining the presence of kind of mediation (Baron & Kenny, 1986). The bootstrap approach is used for establishing the significance of indirect effect (Preacher & Hayes, 2004; 2008). According to Zhou et al. (2010) mediation can be established by the presence of indirect effect.

4.1 Study I

This study addressed the limitations of the existing instruments used to measure users' flow experience in different contexts. In so doing, the study developed and validated an instrument for empirical research that can be used to examine flow experience in the domain of social networking services. The developed instrument represents six components of flow experience: skill, machine interaction, social interaction, playfulness, concentration and enjoyment.

EFA was performed due to the absence of an *a priori* factorial structure for the proposed flow experience instrument for the domain of SNS. The constructs have been drawn from the existing flow theory literature, which could be interpreted differently in the context of SNS. Hence, the factorial structure was first assessed using EFA on Sample A. Sample A returned statistically significant Bartlett's test of Sphericity (X^2 = 5093.49, df = 325, p <. 01) (Bartlett, 1954). Additionally, it also resulted in a very good value of .91 for the Kaiser-Meyer-Olkin measure of sampling adequacy (Kaiser, 1970). Following this, EFA was performed using maximum likelihood with Varimax rotation with the factor loadings' minimum threshold value set at .40. All the instrument items whose factor

loadings did not satisfy the threshold values were deleted to attain a stable structure. The final EFA resulted in the six factor structure explaining 67.69% of the variance in flow experience on SNS. The retrieved six factor structure resulted in the 26-item instrument having excellent internal consistency represented by the Cronbach alpha's value of .92. The resulting six components of the flow experience on SNS are: skill, machine interaction, social interaction, playfulness, enjoyment and concentration.

The factor structure obtained using EFA was validated by performing CFA on Sample B. The six-factor structure attained using EFA resulted in a good model fit (X^2/df = 1.97, *CFI* = .95, *TLI* = .94, *RMSEA* = .05, *SRMR* = .04) (Browne & Cudeck, 1992; Hu & Bentler, 1999; Kline, 2010). Following this, second-order CFA was performed to examine the possibility of the second order factor (Parasuraman et al., 2005; Wu et al., 2012). The current study satisfies both the criteria for performing second-order CFA. The second-order structure resulted in an adequate model fit (X^2/df = 2.23, *CFI* = .94, *TLI* = .93, *RMSEA* = .05, *SRMR* = .06) (Schermelleh-Engel & Moosbrugger, 2003). Additionally, the results showed the following contribution made by the different first order factors to flow experience: enjoyment (.84), playfulness (.80), social interaction (.73), skill (.61), machine interaction (.60), and concentration (.56). This was followed by the establishment of the validity and reliability of the developed instrument as it is essential for assuring its applicability, genuineness and soundness. Validity and reliability were established using the previously mentioned statistical tests. In this case, face validity was assured by performing a pilot study with a set of 30 user representatives of the target population. The present study constructs had α values ranging between .77 and .90. The reliability of the

instrument as a whole was examined, resulting in the excellent value of .92 (Cronbach & Meehl, 1955; Nunnally & Bernstein, 1994).

This study provides a valid and reliable 26-item instrument for measuring flow-experience. The findings revealed that flow experience on SNS consists of the following six elements: skill, machine interaction, social interaction, playfulness, concentration and enjoyment. The findings clearly highlight that flow experience on SNS is different from that experienced in other contexts such as physical activity, gaming, different information systems, etc. Prior research involving flow theory in SNS contexts (for example, Qi & Fu, 2011; Kwak et al., 2014) has not considered all these elements. Rather, some of the elements, such as time distortion, curiosity and telepresence, have been considered, but they did not emerge in the present research. This indicates a potential bias in the findings of the existing research using flow theory in SNS. However, the findings of this study should be further validated with users of other age groups and different cultural backgrounds.

4.2 Study II

This study investigated the factors that affect online users' regret experience associated with users' participation in online activities. Understanding online regret experience can be considered to be an important part of a comprehensive view of user participation in user innovation, because a regret experience may lead to dissatisfaction and discontinuity of participation.

The independent sample t-test analysis revealed the absence of any differences in terms of the regret experienced by the male and female users (t (801) = 1.66, $p < .01$). The differences in terms of age and regret were examined using one-way ANOVA analysis. As

there were very few users in some of the age groups, they were combined with the nearest age group users for the purpose of analysis. For example, the users aged 12 years were combined with those aged 13 years old, and those aged 18 years were grouped with the 17-year-old users. The one-way ANOVA analysis revealed the differences in the regret experienced by users belonging to different age groups (F (4,791) = 7.12, $\eta 2$=. 04, p <. 01). However, according to Cohen (1988), the strength of the difference relationship is small. The Levene's test reveals support for the assumption of unequal variance. Hence, according to the Games-Howell post hoc analysis, the users aged 12/13 years experienced less regret compared to users belonging to the higher age groups of 14, 15, 16 and 17/18 years. The Pearson correlation analysis showed the presence of low positive correlation between regret experience and the amount of time spent on Facebook (r = .17, p <. 01). Consistently, one-way ANOVA analysis revealed that the users spending varied time on Facebook are statistically different in terms of the regret they experience (F (4,787) = 6.42, $\eta 2$=. 03, p < .01). The strength of the difference relationship is small (Cohen, 1988). The Levene's test supported the assumption of equal variance. Consequently, Tukey's Honest Significant Difference (HSD) post-hoc analysis showed that users who spent more time on Facebook tend to experience more regret as compared to those who spend less time. Finally, the Pearson correlation analysis revealed that the user's experience of using Facebook is not correlated with the regret they experience (r = .06, p < .01).

Pearson correlation analysis was performed to examine the correlation between different flow experience components and regret experience. The results show that most of the flow experience components (skill, machine interaction, social interaction, playfulness and enjoyment) have low positive correlation with regret experience. On the other hand,

the flow experience component of concentration is found to have medium positive correlation with regret experience. Finally, hierarchical regression analysis was performed to understand which demographic or flow experience components contribute to the online regret experience on SNS. For the purpose of analyzing flow experience, the components were divided into 'antecedents of flow experience' and 'while in flow'. The antecedents of flow experience represent the elements that enable users to enter into flow experience (skill, machine interaction, social interaction and playfulness). On the contrary, 'while in flow' represents elements that describe the user experience when the user is in the flow state (enjoyment and concentration). The hierarchical regression analysis results show that demographics explain 5% of variance while flow experience components explain 13% of the variance in regret experience. In terms of demographic characteristics, it was found that older and frequent users of Facebook experience higher regret. From the perspective of the flow experience components, concentration and playfulness predict regret experience as compared to other components of flow experience.

The present study suggests that playfulness (e.g., happiness, satisfaction, excitement, and hopefulness) and focused attention have positive influences on users' online regret experience. This indicates that if the user is more concentrated or gets more playful experience from the SNS, then this will reinforce his/her feeling of regret. The prior literature lacks exploration of regret experience from the perspective of flow theory. To the best of our knowledge, there is only one study which explores the relationship between flow experience and regret (Kuhnle & Sinclair, 2011). It states that intrinsic enjoyment does not help in reducing the feeling of regret. Similarly, the present study also found that such experiences have a positive relationship with regret experience. In the context of

demographic characteristics, gender and SNS experience are found to have no effect on regret experience. On the other hand, older adolescents and those spending more time on SNS on a daily basis experience higher online regret. Some of these findings are consistent with the literature while others are not. For example, the relationship of online regret with gender, SNS experience and SNS users' age is found to have mixed consistency with the prior literature. This indicates that the findings are consistent with some findings of the prior literature while contradicting others. However, the findings related to the relationship between daily time spent and online regret were consistent with the prior literature.

4.3 Study III

This study examined the factors affecting user intention to continue participating in user-centric service innovation on social media-based brand communities. In particular, the role of social and individual factors in the formulation of users' attitudes to participation was examined.

EFA was performed after confirming the suitability of the data set. In this regard, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) declared the collected data set fit for running EFA as the data returned a significant Bartlett's test of sphericity (p <.01) and a KMO value of .93. EFA was run using varimax rotation with the maximum likelihood algorithm with the factor loadings threshold set to .45. All the items not complying with this criterion were deleted. The process was repeated until a stable factorial structure was obtained. The EFA resulted in seven factors, namely: social influence, reciprocal benefit, external influence, social presence, self-efficacy, habit, and hedonic motivation.

CFA run to confirm the obtained factorial structure resulted in a good model fit (X^2/df = 1.88; *CFI* = 0.976; *GFI* = 0.94; *AGFI* = 0.923; *RMSEA* = 0.035) (Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2010). The validity and reliability was ascertained using the different statistical measures discussed previously. The structural model run for testing the assumed hypothesis explained 58% of the variance in users' attitude towards the usage of the commenting function for participation in Facebook-based brand communities. Among different considered study constructs, self-efficacy was found to have the strongest influence, followed by hedonic motivation, reciprocal benefit and social influence. On the other hand, external influence, social presence and habit were found to have no influence on users' attitude formation. Additionally, the model explains 31% variance in users' intention to continue using the commenting function to participate in Facebook-based brand communities. Finally, 41% of the variance in users' activity level was based on the feedback on their past activity. Social influence, reciprocal benefit, self-efficacy and hedonic motivation predict users' attitudes.

The mediation analysis shows that attitude mediates the relation between continuation intention and considered constructs, namely social influence, social presence, self-efficacy, habit and hedonic motivation. However, no mediation exists between external influence and reciprocal benefit and continuation intention. Full mediation exists between social influence and continuation intention. Partial mediation occurs in the remaining cases. On the other hand, attitude fully mediates the relation between users' activity levels and constructs such as social influence and hedonic motivation. On the contrary, partial mediation exists in the case of self-efficacy, reciprocal benefit, habit and hedonic motivation with users' activity levels. Social presence has only an indirect

mediated effect on users' activity level. Finally, a partially mediated relationship exists between users' activity level and attitude via continuation intention.

Broadly speaking, the study findings state that self-efficacy, hedonic motivation, reciprocal benefit, and social influence have positive impacts on the formulation of users' attitudes towards the usage of commenting as a way of participation in SNS-based brand communities. Among all these factors, self-efficacy has been found to share the strongest relationship with attitude. Additionally, attitude was found to share a significant positive relationship with users' intentions to continue using the commenting functionality as a way of participation, and with the users' activity levels. Similarly, continuation intention was also found to have a strong positive influence on users' activity levels on SNS-based brand communities.

4.4 Study IV

This study examined the role of epistemic, social and emotional values in users' intention to continue using SNS-based brand communities. Additionally, the study also examined the possibility of differences in predicting users' continuation intention by the considered values based on the different activity level of the users.

The measurement model resulted in a good model fit (X^2/df = 2.23; *CFI* = .95; *TLI* = .94; *RMSEA* = .05) (Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2010). The validity and reliability of the study constructs were analyzed using the statistical tests discussed previously. As mentioned above, the AVE values of the study constructs should be greater than .50 as one of the prerequisites for convergent validity (Fornell & Larcker, 1981). It should be noted that the AVE value for social influence is .50 which is exactly on the threshold. However, in the case of exploratory research, the value of .50 is considered

acceptable. Hence, it can be seen that all the statistical tests satisfied the aforementioned validity and reliability tests.

The assumed hypotheses were validated by running three different structural models with users with various activity levels. Model A consists of users with all activity levels from *very active* to *don't use much*. Model B consists of users with high-end user activity, i.e. *very active* and *active*. Model C consists of the users with low-end user activity, i.e. *less active* and *don't use much*. All the three structural models returned a good model fit: Model A (X^2/df = 2.23, *CFI* = .95, *TLI* = .94, *AGFI* = .93, *GFI* = .95, *RMSEA* = .046), Model B (X^2/df = 1.67, *CFI* = .91, *TLI* = .89, *AGFI* = .83, *GFI* = .88, *RMSEA* = .063) and Model C (X^2/df = 1.72; *CFI* = .94, *TLI* = .92, *AGFI* = .88, *GFI* = .91, *RMSEA* = .055). The results report the minor differences and similarities among users with varied activity levels. Across users with varied activity levels, the constructs of social influence, information seeking and social interaction do not positively influence users' intention to continue using SNS-based brand communities. Social enhancement predicts users' continuation intention in the case of users with all activity levels. Finally, playfulness predicts continuation intentions only in the case of users with all the activity levels and users with low-end user activity.

The study findings reveal that social and emotional values partially influence users' intention to continue using SNS-based brand communities. Specifically, the factors of playfulness and social enhancement have been found to have a significant influence on users' intention to continue using SNS-based brand communities. Additionally, the study also examined the differences among users with different activity levels on SNS-based brand communities and their continuation intention from the perspective of the considered

factors. In this regard, the findings reveal that social interaction, fashion and problem solving are found to have no visible influence on users' continuation intention among users with varied activity levels. Playfulness is found to influence continuation intention for users with high activity levels. Finally, social enhancement is found to predict continuation intention among users with different activity levels. Some of the findings of this study actually contradict the findings of the prior literature. For example, in the prior literature, epistemic value was found to be a significant motivation for using SNS and SNS-based brand communities (Park, Kee, & Valenzula, 2009; Cheung, Chiu, & Lee, 2011; Zaglia, 2013; Jung, Kim, & Kim, 2014). However, the present study found epistemic value to have no influence on users' intention to continue using SNS-based brand communities. On the other hand, some of the study findings are consistent with the prior literature. For example, positive influence of playfulness on continuation intention is consistent with the prior literature (Sledgianowski & Kulviwat, 2009).

4.5 Study V

The purpose of this study was to establish a valid and reliable instrument for measuring users' flow experience in SNS-based brand communities. The developed instrument is an extended version of the flow experience instrument developed for SNS in Study I.

CFA was performed on Sample A using the iterative process until a stable factor structure was obtained. The iterative process involved deleting all the items with factor loadings less than .50 and then examining the internal consistency via the discriminant and convergent validity of the current factorial structure. The final factorial structure resulted in a good model fit (X^2/df = 1.82, *CFI* = .97, *TLI* = .95, *RMSEA* = .055) (Browne & Cudeck,

1993; Hu & Bentler, 1999; Kline, 2010). The final factorial structure consisted of a 10-item instrument representing the following constructs: social interaction, enjoyment and concentration.

Second-Order CFA was performed as the present study was suitable for performing it according to the previously discussed pre-conditions. The second-order CFA model resulted in a good model fit (X^2/df = 2.08; *CFI* = .97; *TLI* = .95; *RMSEA* = .059). The second-order CFA also showed that enjoyment (.86) contributed most to user's flow experience on SNS-based brand communities, followed by concentration (.60) and social interaction (.53). As discussed before, this extended tool for SNS-based brand communities was also found to possess content validity, face validity, convergent validity, discriminant validity, factorial validity and instrument reliability.

The present study developed a valid and reliable 10-item instrument for measuring users' flow experience on SNS-based brand communities, which is composed of the following elements: enjoyment, concentration and social interaction. The findings are consistent with the prior literature which has also found enjoyment and concentration to be an integral part of users' flow experience in different contexts (Csikszentmihalyi, 1990; Guo & Poole, 2009). The element of social interaction is a relatively new construct, which is found to be applicable in social contexts (Lin & Lu, 2011).

5 Contributions

The overall objective of this dissertation is to understand user participation in innovation on online communication platforms. Specifically, this dissertation examines the user participation in innovation practiced in SNS and SNS-based brand communities. Recent years have witnessed an increased presence of organizations on different SNS platforms in order to attain a competitive edge in the dynamic market. The most efficient way of achieving their desired objectives is through the innovation of successful goods and services. The existing and potential users of these goods and services are the best source of information in this regard. SNS-based brand communities provide the easiest and most cost effective way of establishing direct connection with a large user base across geographical boundaries. The prior literature has also suggested that SNS-based brand communities prove to be useful for the organizations. However, the success and sustenance of such communities requires active user participation in addition to user retention. Despite the increasing popularity of these communities, they have received little research attention. Specifically, the existing literature on them lacks in-depth understanding of user participation in innovation on online communication platforms. This dissertation bridges this research gap by developing instruments for measuring users' flow experience and exploring its influence on the regret experienced by users while using SNS-based brand communities. It also examines different social and individual factors influencing users' intention to participate via participation-enabling SNS functionalities on their activity level and continuation intention. Additionally, this dissertation also provides insights into the elements that contribute to users' intention to continue using SNS-based brand communities. The aforementioned aspects related with user participation in innovation on

online communication platforms have been investigated using different theoretical foundations such as flow theory, consumption value theory, uses and gratification (U&G) theory, the theory of reasoned action, social cognitive theory, and developmental psychology. The following sections in this chapter provide the meaning of the dissertation findings in addition to their different theoretical and practical implications. The chapter is then concluded by pointing out the limitations of the current research and providing avenues for future research.

The flow experience components suggested by Study I have specific meaning for the considered user group of adolescents. For example, possessing the required skills for using SNS is important for adolescents since it facilitates their efficient usage of the system in addition to enhancing their self-image among peers. The findings suggest that some of the elements of flow experience prominent in the flow theory literature are also significant, specifically in the case of adolescents. For example, receiving feedback from SNS in the form of speedy interaction has been recognized as being important for adolescents (Csikszentmihalyi, 1990; Guo & Poole, 2009). Similarly, enjoyment and concentration have also been found to be significant elements of flow experience, which is also valid in the case of adolescents (Csikszentmihalyi, 1990; Agarwal & Karahanna, 2000). Additionally, new elements not part of the original flow theory conceptualization such as social interaction have also been found to be valuable for adolescents. This is consistent with the existing literature on computer-mediated communication which suggests that the establishment of new relationships and the retention of existing ones is an important driver of Facebook usage (Ellison, Steinfield, & Lampe, 2007; Lin & Lu, 2011).

The majority of the prior literature on online regret has investigated it from the perspective of platform usability (Wang, Komanduri, Leon, Norcie, Acquisti, & Cranor, 2011) and user-generated content (e.g., Patil et al., 2012; Moore & McElroy, 2013; Xu, Burchfiel, Zhu, & Bellmore, 2013; Sleeper et al., 2013a, 2013b; Stern, 2015). However, the current study addresses the online regret experience from the perspective of platform-specific characteristics and user-demographic characteristics (Study II). The possible reasons are lack of support between different demographic variables (e.g., gender and SNS experience) and online regret experience since the study participants were a homogeneous group of users, i.e. adolescents. Additionally, it is also possible that personality factors may have more influence on regret as compared to users' demographic variables (Moore & McElroy, 2012). In terms of age, the relationship between age and regret is not consistent. Older adolescents experience higher regret as compared to their younger counterparts. As suggested by the developmental literature, the possible reason may be that the younger adolescents may not be mature enough to understand the concept of regret (Piaget, 1970; Leontjev, 1978; Smahel & Wright, 2014). Other than this, the differences might also not be so visible due to consideration of the homogeneous age-group of the users. The possible reason behind experiencing regret due to spending more time on SNS may be due to its negative impact on their studies. Similarly, the generation of playful experiences that help users to focus their attention on SNS leads to regret due to the possibility of the suffering of their studies.

Study III provides insights regarding the role of different social and individual factors in users' attitudes, continuation intention and activity level from the perspective of the commenting functionality on Facebook. Users' self-efficacy was found to have the

strongest influence on their attitudes towards the usage of commenting functionality on SNS-based brand communities. The possible reason could be that their ability to efficiently use the commenting functionality might be giving users a pleasurable experience. Similarly, the reciprocal benefits of SNS-based brand communities can help their users to gain recognition, solve their problems, and enhance their existing knowledge. The possibility of enhancing their existing knowledge base and solving their problems via the information shared by other members can provide users with pleasurable experience. Additionally, receiving feedback on the content they generate through the usage of the commenting feature could also provide them with a sense of recognition that in return gives them happiness and enhances their social status within their peer network. The visibility of their relationship with the brand to their social network also helps in catering to their impression management needs (Vorvoreanu, 2009; Lipsman, Mudd, Rich, & Bruich, 2012; Wallace et al., 2014). All of this aforementioned argumentation provides enjoyable experience to the users of SNS-based brand communities who use the commenting functionality. In this regard, the prior literature on adolescents has revealed that they are generally in search of fun, enjoyment and entertainment (Leung & Wei, 1998). It is possible that due to this, self-efficacy is found to have a positive impact on users' attitudes.

The findings of Study IV reveal that epistemic value has no influence on users' continuation intention. The possible reason could be that the young users of SNS-based brand communities are more interested in continuing to use them for serving their impression management needs rather than for information seeking. In this regard, the prior literature has also reported that impression management and the formulation of positive self-identity among social networks is the most favorable activity among young users of

SNS (Zhao, Grasmuck, & Martin, 2008; Special & Li-Barber, 2012). This has also been validated by the present study since it found that social enhancement is a significant predictor of users' continued use intention of SNS-based brand communities. The emotional value explored via the construct of playfulness is found to influence users' continuation intention. The playfulness provides enjoyable experience to the users of SNS-based brand communities. This is consistent with the prior literature which has revealed that playfulness affects users' continuation intention in online environments (Sledgianowski & Kulviwat, 2009). The provision of enjoyable experience is also found to influence users' behavior and continued intention on SNS-based brand communities (Zaglia, 2013; Kang, Tang, & Fiore, 2014). However, playfulness was found to influence the continued intention only of users with high activity levels. The possible reason could be that the users with neutral and low activity levels have additional emotional needs which contribute to their intention to continue usage. In this regard, the other probable factors could be community identification and intimacy with the brand, which have been found to influence continued intention to participate in SNS-based brand communities in the prior literature (Chen, Papazafeiropoulou, Chen, Duan, & Liu, 2014; Ho, 2014). Finally, social value measured via social interaction and social enhancement was found to have partial influence on the users' continuation intention. Social interaction was found to have no influence on users' intention to continue using SNS-based brand communities. This is not consistent with the prior literature on online community usage (Preece, 2000; de Valck, Bruggen, & Wierenga, 2009) or on SNS (Ellison, Steinfield, & Lampe, 2007; Joinson, 2008). Similarly, in the SNS-based brand community literature, social interaction was found to influence continuation intention (Lin & Lu, 2011; Zaglia, 2013; Jung, Kim, &

Kim, 2014). A possible reason for this contradiction is the conceptualization of the construct of social interaction. Another reason could be the lack of interest of users in establishing connection with new acquaintances via SNS-based brand communities. This is found to be prominent in the case of young SNS users (Ellison, Steinfield, & Lampe, 2007; Lenhart & Madden, 2007). The construct of social enhancement was found to be a significant predictor of users' intention to continue using SNS-based brand communities. As mentioned previously, social enhancement helps in giving the impression that management needs the users, which is a significant driver of user behavior on SNS (Zhao, Grasmuck, & Martin, 2008; Special & Li-Barber, 2012) and SNS-based brand communities (Zaglia, 2013). This study is a first attempt at empirically analyzing the influence of social enhancement on users' intention to continue using SNS-based brand communities. It was found to have a consistent impact on continuation intention across users with varied activity levels.

The findings of Study V are consistent with the prior literature. It was found that users' flow experience on SNS-based brand communities is comprised of enjoyment and concentration. This is consistent with the original conceptualization of flow experience by Csikszentmihalyi (1990). Even after so many years since the origin of flow theory and its applicability in various domains, enjoyment and concentration have been considered as the integral part of users' flow experience by different researchers in different time frames (Guo & Poole, 2009). Additionally, social interaction was found to be part of users' flow experience. This finding is also consistent with the prior literature (Ellison, Steinfield, & Lampe, 2007; Lin & Lu, 2011).

5.1 Theoretical Contributions

The results of this dissertation contribute to the expansion of the flow theory in the research of users' experience and its influences on behaviors in online communication platforms. As noted in this dissertation, the existing literature has lacked a psychometrically reliable instrument for measuring users' flow experience specifically in the domain of SNS and SNS-based brand communities. The existing research on SNS using flow theory has relied on the prior literature for choosing the flow experience constructs to be considered in their research. Relying on the existing research conducted in domains other than SNS can generate bias in the understanding of the flow theory as provided by these research studies. The proposed flow experience instruments were found to be psychometrically valid and reliable, and can thus be used by researchers for measuring flow experience for users in the domain of SNS and SNS-based brand communities. This can help them improve the accuracy of their research owing to the specificity of the instruments for the domain of SNS and SNS-based brand communities. Moreover, the reliable instrument measures can also provide new research avenues and usage of the results in other domains. Furthermore, the insights provided by the flow experience instruments developed in this dissertation contribute towards the rising yet limited research initiatives on the employment of psychometrics in the new media research aimed at exploring user behavior. To the best of our knowledge, Study I and Study V are the first initiatives aimed at developing instruments specifically for measuring users' flow experience in SNS and SNS-based brand communities.

This dissertation contributes to the existing literature on flow experience, consumption value theory, adolescent technology usage, computer-mediated platforms, technology adoption, media research, online regret experience, user innovation, and

continuation intentions. The systematic approach to instrument development can also guide young scholars in their research on instrument development. The majority of the existing research on online regret experience addresses the generation of regret due to user-generated content and the usability of the concerned platform. This dissertation fills the existing research gap in the domain of online regret experience by providing information on the relationship among demographic variables, elements of flow experience and online regret experience. The findings related to regret experience can assist teachers, parents, counselors, and policy makers in shaping adolescents' participation in online communication platforms.

The findings of this dissertation also contribute to the literature addressing the employment of SNS by organizations. This dissertation contributes to the existing scant literature addressing adolescent behavior in the domain of online communication platforms. Adolescents represent an important user group but have not, to date, received sufficient research attention (Mäntymäki & Salo, 2011; Mäntymäki & Riemer, 2014). The dissertation results provide contextual insights into adolescent behavior from the perspective of online social context. For example, Study I and Study V provide information on the components that are relatively important to adolescents as compared to others for entering into flow experience. Study II provides information regarding which flow experience elements and demographic variables lead to the generation of regret among the adolescent users on the online communication platforms such as SNS. Similarly, Study III reports the social and individual factors influencing adolescents' attitudes and intention to continue using participation-enabling functionalities on SNS.

This dissertation shows that the prior information system theories are also applicable in the domain of SNS-based brand communities. For example, Study III showed that traditional theories such as the theory of reasoned action and social cognitive theory are also applicable for examining user behavior in SNS-based brand communities. On the other hand, this dissertation also makes some suggestions regarding the applicability of the new theories in the domain of hedonic information systems. In this regard, this dissertation suggests that consumption value theory might not be the best option for predicting users' continuation intention. As compared to the prior literature using theoretical frameworks such as social capital theory and the theory of reasoned action the dissertation reports the reduction in the percentage of variance explained in continuation intention using the consumption value (Lin & Lu, 2011; Jung et al., 2014; Ho, 2014). This also suggests the need for additional variables for enhancing the percentage of variance explained in users' intention to continue using SNS-based brand communities. Additionally, this finding can also be interpreted as nullifying the need for new theoretical frameworks for investigating user behavior in hedonic information systems (Turel, Serenko, & Bontis, 2010).

5.2 Practical Implications

The proposed flow experience instruments can be used by practitioners for measuring users' flow experience in the organization's SNS or SNS-based brand community-related services. These instruments can help determine the level of flow experienced by the users of their services. This can also provide insights to the organizations for improving their existing and future services. Furthermore, these psychometrically reliable instruments can also guide the development of new information systems. In this regard, the flow experience instruments can provide assistance regarding

the elements that could be avoided or those which should be given priority while designing and developing new information systems for adolescents and young adults for facilitating their entrance into the flow experience. Similarly, the organizations dealing with the development of educational goods and services can also benefit from the findings of this dissertation.

The findings of the dissertation can also provide insights to those organizations intending to practice innovation by using online communication platforms. As mentioned previously, the majority of organizations use some form of online communication platform (e.g., SNS) for different purposes such as establishing close relationships with their potential and existing user-base, and involving them in their processes of improving or innovating new goods and services (Palmer & Koeing-Lewis, 2009; Bolotaeva & Cata, 2010; Richter, Riemer, & vom Brocke, 2011; Ding et al., 2014; Park & Kim, 2014). The developed flow experience instruments can be employed by the organizations and the managers of their SNS-based brand communities in monitoring the level of flow experienced by the members of their communities. Furthermore, the components of users' flow experience pointed out by the proposed flow experience instruments can guide them in enhancing the flow experience of their SNS-based brand communities. The existing literature has provided empirical evidence regarding the positive influence exerted by flow experience on users' increased satisfaction levels and their continuation intentions (Koufaris, 2002; Hu & Kettinger, 2008; Hausman & Siekpe, 2009; Lee, 2010; Lee & Tsai, 2010). Similarly, ensuring the flow experience of the members of the SNS-based brand communities providing the sense of intrinsic enjoyment where any other form of extrinsic

motivation stops making sense can assist organizations in building a loyal network of their potential and existing user-base that can facilitate successful practice of user innovation.

This dissertation provides assistance to practitioners in preventing members of SNS-based brand communities from having negative experiences. The prior literature has shown that negative experience can influence users' satisfaction (Taylor, 1997; Inman et al., 1997; Kang et al., 2009; Bui et al., 2011). Furthermore, it can also impact users' intention to continue taking part in the community (Lemon et al., 2002; Kang et al., 2009) and to repurchase products (Tsiros & Mittal, 2000). Similarly, the presence of negative experience such as regret can also turn away users from using SNS and SNS-based brand communities. In this regard, this dissertation provides assistance on the flow experience elements that should be ignored or strengthened for avoiding online regret experience. For example, platform speed, social interaction, user's skill set and enjoyment do not make users experience regret. The finding is that increase in the amount of time spent enhances the level of regret experienced by the users. This should motivate organizations and their brand community managers to devise strategies that are quick in retrieving useful information from the users in a shorter time span. This can help to engage the users without generating regret experience. This will in turn help foster user participation in innovation on SNS and SNS-based brand communities. However, the results should be interpreted with caution as the role of other factors associated with users' experience (e.g., self-efficacy and other similar behavioral characteristics) have not been explored.

This dissertation provides guidance regarding the social and individual elements that affect users' intention to continue using functionalities that enable their participation in content generation in Facebook-based brand communities. These elements will help

organizations and their brand community managers to cultivate meaningful interactions with the members of their Facebook-based brand communities. It will also help organizations achieve their desired outcomes by innovating goods and services as per the desires of their existing and potential customers (Zaglia, 2013).

The findings suggest that organizations and the managers of their Facebook-based brand communities should focus on strengthening users' self-efficacy in addition to providing an enjoyable experience of using them. The two possible ways by which managers can help their users strengthen their self-confidence is by: (i) paying attention to the content generated by the user, and (ii) keeping the tasks, content and interaction in the communities according to the skill set of the users. The users will feel that the content they have generated has been paid attention to if the brand community managers refer to them by name and provide them with positive feedback. In addition to enhancing the self-efficacy of the users, these actions will also give the impression that management needs the community members. In this regard, the prior literature has stated that the establishment of self-identity and its expression has a significant influence on users' behavior in Facebook-based brand communities (Vorvoreanu, 2009; Lipsman et al., 2012; Wallace et al., 2014). All the aforementioned initiatives undertaken by the managers of the Facebook-based brand communities can help their members build their self-identity, as these activities will become visible to the user's social network via the Facebook ticker functionality. This can also lead to the generation of entertaining and enjoyable experience for their brand community members.

Enjoyable experience was found to have a positive influence on users' continuation intention and their engagement (Park et al., 2009; Cvijikj & Michahelles, 2013; Jung et al.,

2014). In the online brand community literature, user experience is said to play a significant role in shaping users' attitudes towards the brand (McAlexander et al., 2002; Jung et al., 2014). Hence, it can also be assumed that positive user experience can help in strengthening their intention to continue participating in brand-related activities. In the context of Facebook-based brand communities, this can also motivate users to often use the commenting feature for content generation. This will in turn facilitate the flourishing of the user innovation. Consistent with the prior literature, the dissertation findings also suggest that the creation of enjoyable experience is one of the essential elements for driving users' continuation intention and user participation in SNS-based brand communities.

This dissertation reports that young users of SNS-based brand communities derive value through playfulness and enhancing their self-image among others. These derived values contribute towards their intention to continue using SNS-based brand communities. The dissertation also points out the existence of minor differences in users' intentions to continue using SNS-based brand communities from the perspective of their activity levels. For example, for those users who are highly active in SNS-based brand communities, the element of playfulness does not play an influential role in strengthening the intention to continue using them.

On a general note, the presence of minor differences suggests that managers of SNS-based brand communities do not need to devise different strategies for users with varied activity levels to motivate the users to continue using them. However, this assumption requires further investigation. The findings also suggest that the element of playfulness should be strengthened, especially for motivating less active members of SNS-based brand communities to continue using them.

5.3 Limitations and Future Research Directions

The research carried out in this dissertation suffers from some limitations that provide directions for future research. First, the different aspects of user participation in innovation on online communication platforms have been investigated with adolescents or young adults. Second, the different research studies have been carried out only with Indian populations. This provides contextual contributions to the existing research. However, the generalizable applicability of the findings remains unclear. This generates the need to validate the findings and the developed instruments with users of other age groups and different cultural backgrounds. Third, the findings of the study should also be validated with the users of the brand communities on other SNS platforms (e.g., YouTube, Twitter, etc.). The existing research has pointed out the differences among the user-generated content on different SNS platforms (Smith, Fischer, & Yongjian, 2012). The differences among the members of brand communities can provide insights regarding the need to devise different user engagement and retention strategies for different SNS platforms. Fourth, the analysis performed in the dissertation could also be improved in different ways that could be considered in future research. For example, oblique rotation should be adopted rather than the orthogonal rotation method when performing higher-order CFA, SEM could be used for performing mediation analysis, and multiple group SEM could be adopted for simultaneously evaluating the proposed models aimed at examining differences among the users with different activity levels.

The generalizability of the dissertation findings should also involve research employing panel and longitudinal studies that can bring comprehensiveness to the understanding of the user participation in innovation on SNS and SNS-based brand communities. Regarding the usage of consumption value theory in the future for

understanding user behavior on SNS-based brand communities, the future research should explore other factors for emotional, social and epistemic values to enhance its predictive value of users' continuation intentions. The need to devise general or specific strategies for ensuring continued usage for users with varied activity levels on SNS-based brand communities also requires further investigation. In the future, research should focus more on investigating the motivational aspects of user behavior, especially for content generation on SNS-based brand communities. This can have significant implications for the successful practice of user innovation on online communication platforms.

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Prior literature has paid little attention to understanding important issues of user participation in the innovation process. This dissertation aims to fill these gaps by investigating different factors that affect user participation and retention in innovation on SNS-based brand communities. It contributes to the existing literature of user participation in innovation on online communication platforms by generating new knowledge and insights into user participation in SNS-based brand communities. All the five undertaken empirical studies provide information on the different elements that can intrinsically motivate users to use and continue their usage of SNS and SNS-based brand communities. Scholars intending to research SNS-based brand communities can utilize the findings of this dissertation. Similarly, the findings provide insightful information for efficient practice of user-centric service innovation by organizations through the channel of SNS-based brand communities

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