Understanding Acceptance Decisions and Identity Associated with Smartphones: A Qualitative Enquiry

Ummaha Tul Hazra

2014

Thesis Presented for the Degree of

DOCTOR OF PHILOSOPHY

In the Department of Information Systems

Faculty of Commerce

University of Cape Town

February, 2014

Supervisor: Ojelanki Ngwenyama

Student name: Ummaha Tul Hazra

Student Number: HZRUMM001

Declaration

1. All the works used in this project have been appropriately cited and referenced.

2. This thesis is my own work. My supervisor and colleagues acted on advisory roles only.

3. I will not allow anyone to copy this research and pretend that it is her/his own work.

Signature: Signed by candidate

Signature removed

Date: February 17, 2014

Contact: HZRUMM001@myuct.ac.za

Acknowledgements

During this journey, I have always found some people beside me. First of all, I want to thank my supervisor Professor Ojelanki Ngwenyama for his continuous support and encouragement during difficult times. His help started during the research methods course I took with him. He revealed a new world of knowledge to me and showed me how to look beyond the boundaries. His suggestions about the research approach proved to be invaluable. I found him to be most helpful when he allowed me to learn the process by myself. I learnt how to unlearn previously held perspectives, question ideas and beliefs using evidence, and argue for what I am passionate about.

I also thank Professor Irwin Brown, Department of Information Systems, University of Cape Town, for his interest in my research proposal and continuous help and encouragement. Thanks also to the members of the research proposal review committee in UCT for their insightful feedback on the proposal as those comments clearly improved the research project. Special thanks to Professor Joanne McNeish of Ryerson University who have given me support and advice during this journey. I worked with her in innovation resistance projects which gave me broader perspectives on technology acceptance research.

I am also extremely grateful to my husband, Asad Karim Khan Priyo who has always been there for me in times of joys and more importantly, in times of sheer panic. My parents, in-laws, sister and brother all supported me throughout this process. It has been difficult to stay so far from my family, but they all stood beside me with regular communication from Bangladesh.

It has been a difficult but enjoyable journey and I greatly appreciate everyone's help in this endeavour.

Understanding Acceptance Decisions and Identity Associated with Smartphones: A Qualitative Enquiry

Abstract

This research project investigated how users accept smartphones and construct self and social identities around their devices. Working from the social constructionist paradigm and employing the perspective of symbolic interactionism to understand the acceptance decisions and choice, this research developed an integrated model of smartphone adoption through four empirical studies. The data were gathered from user self-reports on smartphones running on three leading operating platforms – iOS, BlackBerry OS, and Android. Acceptance decisions were analyzed in first two studies from the perspective of users' experiences. Study 1 utilized an extension of technology acceptance model and analyzed influences of key product attributes on attitude and actual use through qualitative content analysis. Study 2 focused on both users and non-users of specific smartphones. Employing ethnographic decision tree modeling, this study proposed a model for smartphone acceptance. Using social identity theory as the analytical lens and qualitative content analysis as the research technique, Study 3 examined the ways social identities are formed based on specific smartphone use. Study 4 explored why users attach identification with their smartphones employing a hermeneutic circle framework. The results of these studies suggest that both pragmatic and hedonic attributes of smartphones are important for usage decisions. Identification, enjoyment, and strength of nomadic abilities were found to be important. The results also suggest that users form social identities around their devices by self-categorizing themselves in celebrated user groups and self-enhancing their member status. Identification fulfils the need for legitimizing the commitment toward the device cued by positive contextual experiences and helps to hold a positive image to self and relevant others. The integrated theoretical understanding offered in this thesis illuminates smartphone adoption as a set of processes which unfolds over time based on users' interactions with the object and the peers in relevant communities. This novel understanding, along with the separate findings of the studies contributes to IS theory and methodology. Implications for practice and directions for future research are also suggested by this research.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

CIIM	Common Ingroup Identity Model
EDTM	Ethnographic Decision Tree Modeling
IDT	Innovation Diffusion Theory
PEOU	Perceived Ease of Use
PCI	Perceived Characteristics of Innovation
PU	Perceived Usefulness
SCT	Social Categorization Theory
SI	Symbolic Interactionism
SIT	Social Identity Theory
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
TTF	Task-Technology Fit
UTAUT	Unified Theory of Acceptance and Use of Technology
UX	User Experience

1.0 Introduction

Smartphones are computing and communicating devices which offer individuals enhanced capabilities to maintain inter-personal connections and to accomplish various types of computing tasks without regard to time and location (Kakihara & Sørensen, 2001). These devices offer unprecedented access to the internet and influence the intensification of new media based interactions at individual and group levels. Smartphones are considered and promoted as essential for maintaining 'perpetual connection' to individual and social groups (Katz & Aakhus, 2002). The combination of smartphone capabilities, the emergence of high-speed, secured networks and social media sites has influenced changes in individual behaviour in both personal and work contexts. Further, these devices are not only influencing the way people connect with each other, but also how they behave in public spaces, organize events, engage in political action, and how they construct and project their self-identities and locate themselves within the social world. Together, these emerging social forces have led to a perceptual shift in the way people interact at work and other social contexts that require critical inquiry by social scientists (Friedrich, Gröne, Hölbling, & Peterson, 2009).

While there have been some studies of smartphone technologies, our knowledge of how individuals come to accept and identify with these devices is still very limited. A few recent studies have pointed to emerging issues in the acceptance and identification with smartphones that need further investigation. For example, Prahalad & Krishnan (2008) have pointed out that consumers have specific expectations of personalized experiences with smartphone devices and demand specific functional capabilities to which designers must respond. Furthermore, there is a growing base of consumers who critically analyze device capabilities and expectation gaps soon after a new product appears on the market. Advancements in global information technology infrastructure and consumer demands for convergence of computing and communications functionalities within a single device are reshaping how designers and marketers approach the development and promotion of new smartphone devices (P.-C. Chang, 2010). Smartphone producers are now promoting the notions of 'having the right device' and 'any device will not

do'. For example, Apple promotes the iPhone as a product that gives exclusive access to new media for personal enjoyment and social status through participatory culture (Pedersen, 2008). While BlackBerry has for a long time focused primarily on business context use (Firmin, Firmin, Orient, Edwards, & Cunliff, 2012; Middleton, 2007), but recently it is seeking to extend the contexts of use by providing new functionalities focused on new experiences? (Krashinsky, 2013).

A second set of issues concern how individuals come to identify with smartphone devices and use them to project their self-identities (Firmin et al., 2012). In a study of the smartphone use by 1700 high school students and 150 college students, it has been observed that young people form "social solidarities and differences, both among themselves, and between themselves and other social groups" (Green, 2003, p. 207) based on the device they use. Some other studies have pointed out that smartphones are used as 'fashion statements' by the younger generation (Katz & Sugiyama, 2006; Oksman & Rautiainen, 2003). It is clear from these studies that individuals use smartphones as objects of social identity and to claim membership in specific social groupings (Tajfel, 1972, p. 31). However, only few studies investigate the role of smartphones in forming specific social identities and the processes associated with this phenomenon (Campbell, 2005; Green, 2003; Holmes & Russell, 1999; Swallow, Blythe, & Wright, 2005).

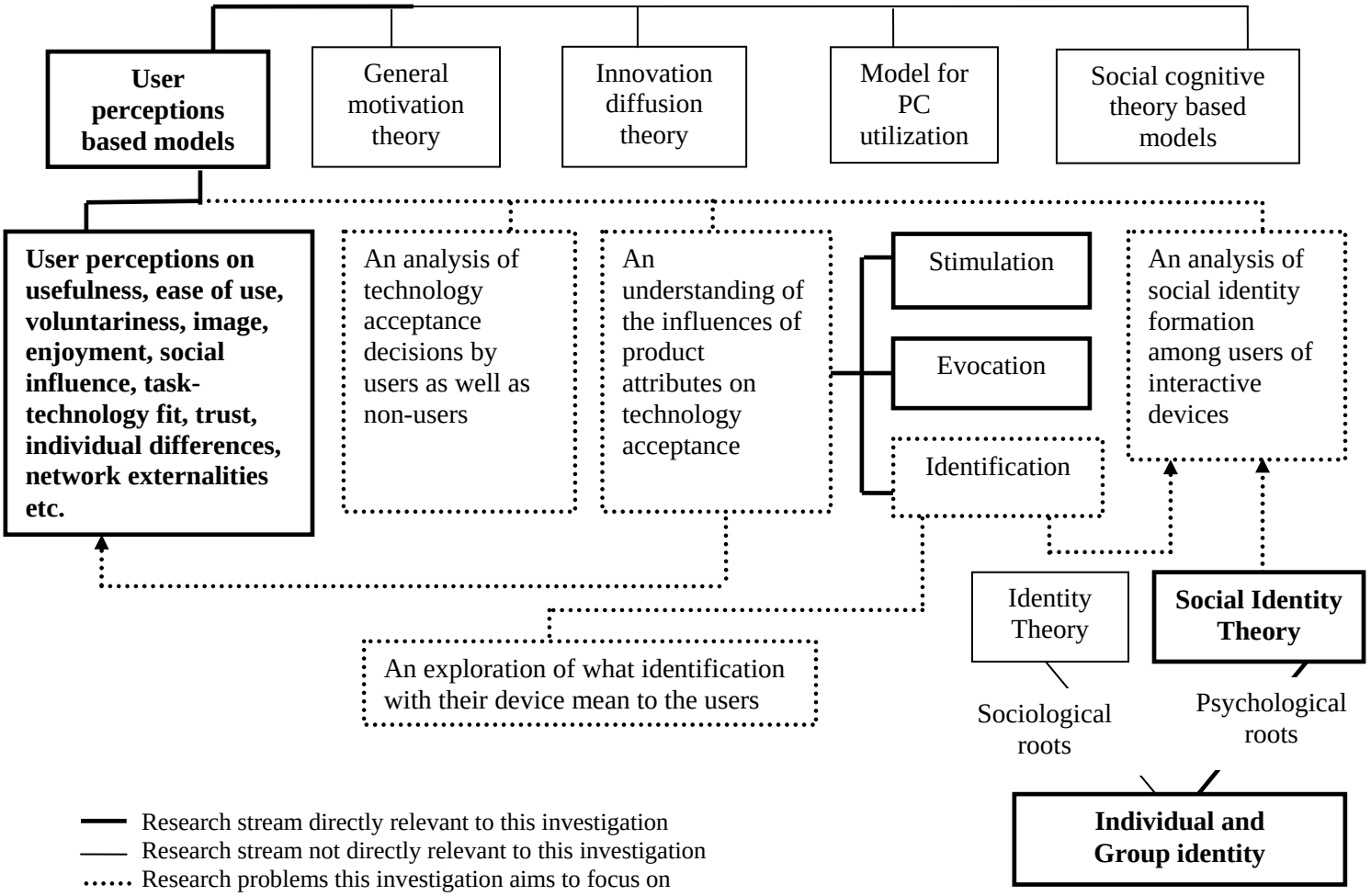
Existing information systems approaches investigating technology acceptance rooted in TAM (F. D. Davis, 1989, 1993; F. D. Davis, Bagozzi, & Warshaw, 1992) are inadequate to address the emerging concerns of individual acceptance of smartphone technologies. For a start TAM was based on older fixed computing devices within the organizational context in mandatory usage situations (Scheepers, Scheepers, & Ngwenyama, 2006). Further, many of the later studies of mobile device acceptance (Auter, 2007; Bruner II & Kumar, 2005) focus on older generation devices which predated technology convergence presently embedded in today's smartphones. Technology changes and changes in social behaviour in smartphone acceptance make it necessary to engage in new systematic research on the individual acceptance of and identification with these technologies. Smartphone is not only reshaping how individuals engage

with their immediate and remote environments, but it is also making us more individualistic in the public and personal spheres (Bull, 2005). While smartphones offer more connectivity to larger numbers of individuals and freedom to connect in virtual spaces without any spatial and temporal boundaries, this unique situation brings with it new challenges for social scientists who try to understand the emerging relationship between individuals and technology. This investigation is important to properly understand their actions and therefore, to devise future plans for technology development. The point at issue is that there is a need to know why and how people accept smartphones and if any identity formation process is emerging during the acceptance process. Smartphones can be viewed as a bridge to future technologies. If we want to provide devices which are more adapted to users' requirements and contexts, then we need to pay closer attention to developing a deeper understanding of individual acceptance from a social constructionist perspective.

1.1 Research Program

This research program is situated in the domain of technology acceptance studies but focuses on (a) *individual acceptance of* and (b) *individual identification with* smartphone devices from a social constructionist perspective. In this research individual acceptance refers to the continued use of smartphones by individual users after the trial period is over. The focus of my research is on developing a deeper understanding of users' perceptions of how attributes of smartphones stimulate enjoyment and influence identification with these devices. This study focuses on four general questions: (1) What are the key product attributes that affect the acceptance decisions of smartphone users? (2) What are the main decision criteria that users and non-users invoke when making a decision to accept or reject a smartphone? (3) What are the key processes that influence smartphone users to develop a social identity? (4) What does identification with a smartphone mean to the users? While the philosophical foundations of this research are discussed later in this chapter, Figure 1.1 presents a graphical illustration of the primary focus of the research program and its relationship to other streams of technology acceptance research. The dotted lines in the figure represent the areas of interest of this research.

Figure 1.1: Map of the Underlying Logic of the Research Program



1.2 The Social Constructionist Approach

The social constructionist approach is concerned with developing theory to enrich our understanding of how actors in social situations intersubjectively create, understand, and reproduce them (Burrell & Morgan, 1979; Turnbull, 2002; Winch, 1958, 1990). The social constructionist approach embraces a subjective ontology and espouses two foundational assumptions to ground its research: (1) the meanings which actors ascribe to their actions and

artifacts in a social situation are essential to the constructing of knowledge about it; (2) knowledge of social actions and social situations is socially constructed by the social scientist by inquiring into the actors' interpretations of the social situation (Berger & Luckman, 1966; Garfinkel, 1967; Mead, 1934; Schutz, 1967). Two perspectives of the social constructionist approach are especially relevant to this research, social constructionism (Berger & Luckman, 1966; Gergen, 1999) and symbolic interactionism (Blumer, 1969a; Goffman, 1959). The former is relevant to the interrogation of individual acceptance of smartphones and the latter to the interrogation of individual identification with smartphones.

The social constructionist approach embraces an interpretive epistemology and inductive and deductive qualitative methods such as ethnography, discourse analytic methods which focus on the interrogation of text and text analogue. This research unfolds as a set of four qualitative empirical studies using inductive and deductive methods for generating and testing theory about individual acceptance of and social identification with smartphones. The deductive use of theory in social constructionist research does not imply the positivist assumption of truth and an objectivist social reality; instead, such use is for interpreting and explaining social action from different perspectives (Alvesson & Deetz, 2000). The theory development objective of this research is congruent with the principle of qualitative inquiry which holds that "theories are interpretations made from given perspectives as adopted or researched by researchers" (Strauss & Corbin, 1998, p. 171). From this perspective this research adopts a multi-method strategy which uses open coding, content analysis and ethnographic decision tree modeling of qualitative data collected from user self-reports. Details of the research methods are discussed in Chapter 3 of the thesis.

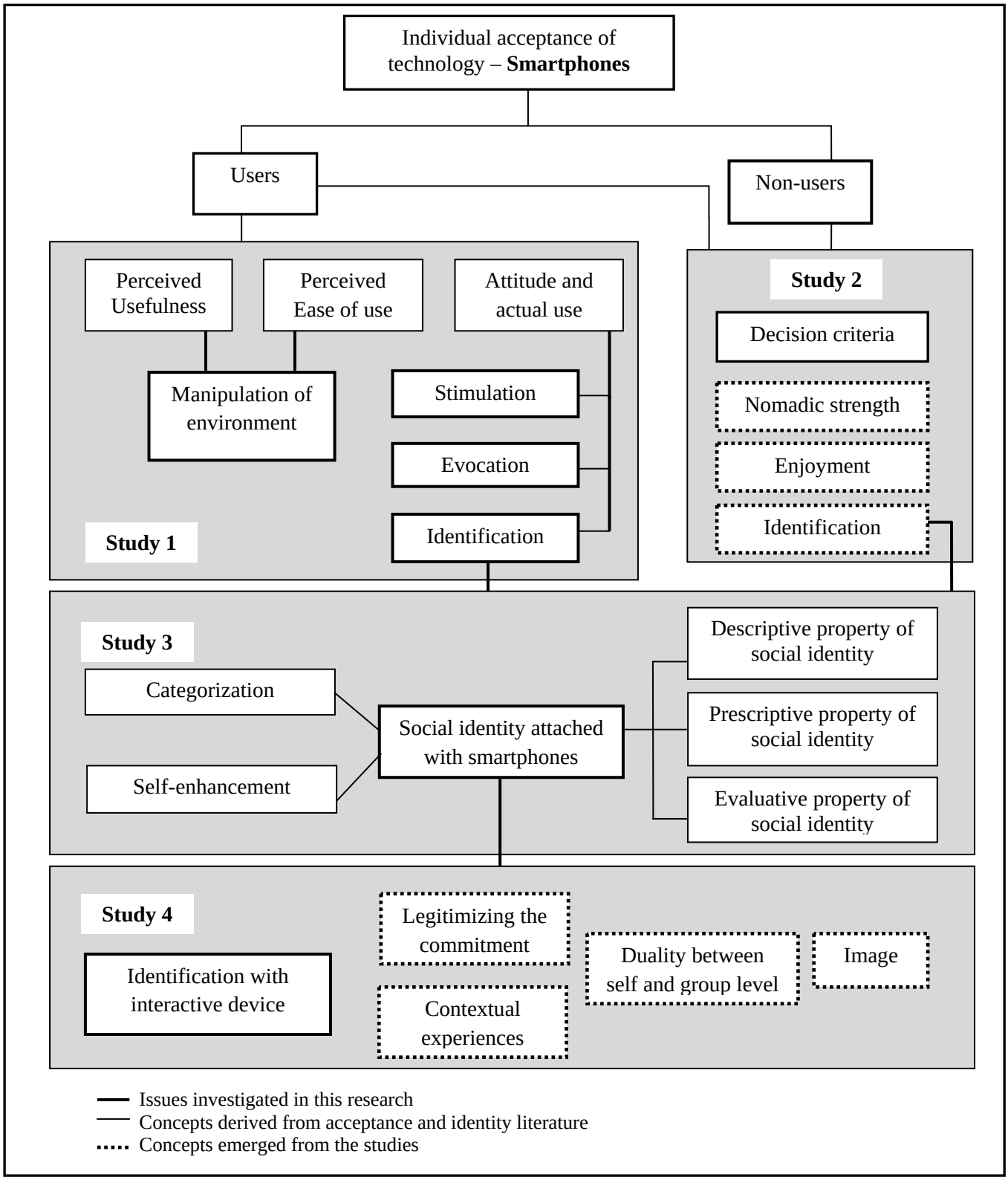
1.3 The Nomological Net

The nomological net is an important aspect of an empirical research program as it helps the researcher to articulate and contextualize the core concepts of the investigation within the relevant literature (Benbasat & Zmud, 2003; Cronbach & Meehl, 1955; Peterson & Zimmerman,

2004). Figure 1.2 illustrates the core concept, *individual acceptance of smartphones*, its basic features, observable sub-constructs and their interrelationships. It also relates the core concept to the concept of social identity and its relevance to understanding the core concept. The nomological net further illustrates the relationships of the four empirical studies in the context of the research program. In study 1, the core concepts under investigation are product attributes and their relations with attitude and actual use of smartphones. Technology adoption literature has investigated this issue mostly from the perspective of organizational usage of technology concentrating on task-related aspects of a device/system. However, with the advent of new generation interactive technologies, it became important to understand the roles of product qualities that are not directly related to the tasks. Human-computer interaction research and in some cases, marketing research have tried to incorporate these non-task related product qualities into the frameworks for understanding consumer (individual) adoption of technologies. IS literature, on the other hand, emphasizes on organizations and technology usage under mandatory conditions and therefore has given limited attention to individual acceptance.

There have been debates about the identity of the IS literature (Benbasat & Zmud, 2003). One perspective suggests that IS literature should focus only on IT artefacts within the context and boundary of organizations and leave some issues of individual adoption and acceptance of technologies to other fields (Y. Yoo, 2010). However, the increasing use of smartphones in the workplace and virtual presence of the workforce, it is important to understand everyday individual adoption as an IS research issue (J. Yoo, Yoon, & Choi, 2010). Y. Yoo (2010) also argues that by focusing on everyday experiential computing, IS literature will actually go back to its roots and enhance its scope. With this backdrop, Study 1 focuses on non-task related qualities of smartphones that influence attitude and actual use. The sub-concepts are stimulation, identification and evocation (Hassenzahl, 2003) which have been investigated in user experience literature, but not directly with technology acceptance within IS literature.

Figure 1.2: Nomological Net of the Research Program



The technology acceptance literature also focuses on users of technological systems to understand adoption. However, it can be argued that to convert the non-users into users, it is equally important to analyze the decisions by the non-users or non-adopters. This understanding is almost non-existent in the literature compared to the number of 'user-only' studies and Study 2 focuses on that issue through exploration. The concepts that emerged from the investigation are – identification, strength of nomadic ability, enjoyment, importance of basic features and applications.

User generated textual self-reports on different smartphones can give a closer look into their reality with the device. Words can be conceptualized as textual symbols which hold the meanings users attach to their devices. These symbols are socially constructed (Berger & Luckman, 1966; Denzin, 1969). Hence, utilization of certain words, phrases etc. in user textual accounts can shed light on users' reality. Examination of these word-symbols uncovers a recurring theme; that is users form attachments with their smartphones. Interestingly, when users articulate why a particular device suits them as a person, they often mix individual and group related issues as if they are active members of a user group. Understandings drawn from symbolic interactionism helps to make sense of this situation where self-indication of group membership is enough for identification, without the need for physical existence of a group or community (Blumer, 1969b; Mead, 1934). There have been some research on identification with mobile devices (Cassidy, 2006; Castells, Ardevol, Qui, & Sey, 2007; Katz & Sugiyama, 2006). But, there is a dearth of research on how identification is formed and what it means to users in the context of smartphones. These issues are investigated in study 3 and 4 of this thesis. Study 3 focuses on identity formation process from the perspective of Social Identity Theory (SIT) (Tajfel, 1974; Tajfel & Turner, 1979). In this study, the concepts of self-categorization, self-enhancement, descriptive and prescriptive properties of social identities emerged as important for understanding identification process with smartphones. Study 4, on the other hand, focuses on exploring what identification with their smartphones mean to users. The core concepts that emerged from study 4 are – legitimizing the commitments, positive contextual experiences and

image. Table 1.1 shows the research questions, objective of each empirical study and the research strategy used.

As Table 1.1 illustrates Study 1 and study 3 use deductive research strategy. Both studies use theoretical lenses as research guides. The relevant concepts are identified from the theoretical frameworks, propositions are derived expressing the connection among the concepts and are tested with empirical data. Study 2 explores the decision criteria expressed by users and non-users of specific smartphones using an abductive research strategy. Abductive strategy is suited for this study since it enables the researcher to formulate theories from the language of social actors derived from their everyday activities (Blaikie, 2010). Study 4 adopts an inductive research strategy which suits its purpose of exploring identification with smartphones and developing a descriptive theoretical framework about the phenomenon.

Table 1.1: *Research Questions and Purposes*

Study	**Research questions**	**Study title**	**Objective of study**	**Research Strategy**
Study 1	What are the key product attributes that affect the acceptance decisions of the smartphone users?	Analysis Of Acceptance Decisions by Smartphone Users – A Qualitative Enquiry from User Experience Perspective	*To explain and understand* the key product attributes that play important roles in user acceptance decisions.	Deductive
Study 2	What are the main decision processing criteria that individuals move through when they make decisions about accepting or not accepting a smartphone?	An Ethnographic Decision Modeling Analysis of Smartphone Acceptance Decisions	*To explore* specific decision criteria that users or non-users move through when making acceptance decisions.	Abductive
Study 3	What are the key processes that influence smartphone users to develop a social identity?	Acceptance of Smartphones: A Qualitative Enquiry from the Perspective of Social Identity Theory	*To explain and understand* the key processes influencing the smartphone users to develop a social identity (if any)	Deductive
Study 4	What does identification with a smartphone mean to the users?	Identification with a device: An Interpretive Analysis using Hermeneutic Circle Framework	*To explore* the phenomenon of identification with an interactive device and what this means to the users	Inductive

1.4 Structure of the Thesis

The remainder of the thesis is structured as follows –

2.0 Literature Review

This chapter reviews the relevant literature to link the research problems with the gap identified in IS field regarding adoption of smartphones. The review discusses research studies from the fields of human-computer interaction, sociology, psychology, consumer behaviour along with those in IS.

3.0 Research Methodology

This chapter focuses on the choice of multi-methods approach followed in this project. It also lays out the research methods followed in each study and provides details about data, data selection and collection procedure, and data analysis frameworks.

4.0 Study 1: Analysis of Acceptance Decisions by Smartphone Users – A Qualitative Enquiry from User Experience Perspective

This chapter focuses on the first research question. It presents the analysis concentrating on the extensions proposed to the Technology Acceptance Model (TAM) based on the user experience perspective. This study utilizes qualitative content analysis and suggests contributions, limitations and future research directions.

5.0 Study 2: An Ethnographic Decision Modeling Analysis of Smartphone Acceptance Decisions

This chapter presents the study conducted to answer the second research question. The acceptance or non-acceptance decision criteria are identified and presented in a theoretical model. The guiding research method is the Ethnographic decision tree modeling. Specific contributions, limitations and future research directions are identified.

6.0 Study 3: Acceptance of Smartphones: A Qualitative Enquiry from the Perspective of Social Identity Theory

This chapter focuses on the third research question. Based on the Social Identity Theory, it investigates the process of social identity formation attached with smartphones. It employs qualitative content analysis and provides contributions, limitations and future research directions.

7.0 Study 4: Identification with a device: An Interpretive Analysis using Hermeneutic Circle Framework

This chapter focuses on the fourth research question. It presents the results of an exploratory research about users' identification with their smartphones utilizing a hermeneutic circle framework. It discusses specific contributions, limitations and future research directions.

8.0 Theoretical Elaboration

This chapter integrates the findings from four empirical studies. A theoretical narrative is presented to sum up the understandings achieved from these studies.

9.0 Reflections and Conclusions

This chapter reflects on the research process and discusses contributions, practical implications, limitations and future research directions.

(This space has been kept blank intentionally)

2.0 Literature Review

2.1 User Acceptance of Technology

User acceptance of technology is a widely researched concept in IS literature (Al-Natour & Benbasat, 2009; Venkatesh, Davis, & Morris, 2007). In its early stages, IT acceptance research gave more emphasis on functional aspects of technology. Usage dimensions unintended by designers were not conceived as anything worthy of investigation (Dillon, 2001). Information technology systems were viewed solely as productivity tools (Al-Natour & Benbasat, 2009) intended to be used in work environments in a mandatory usage context (mainly in organizational settings). Accordingly, IS researchers put considerable efforts to explain user acceptance in aforementioned situations (to help designers and implementers).

Technology Acceptance Model (TAM) (F. D. Davis, 1989)**,** developed on the basis of Theory of Reasoned Action, (TRA) (Ajzen & Fishbein, 1980), has been the leading user acceptance theoretical framework for more than two decades (Bagozzi, 2007). It proposes that actual use depends on intention of use and that intention is influenced by users' perceptions about usefulness and ease of use of a given technology system. TAM provides a conceptual framework with practical implications which according to Goodhue (2007) was previously missing in IS literature. A large number of studies used TAM to explain user acceptance of different technologies (Y. Lee, Kozar, & Larsen, 2003) and as suggested by Bagozzi (2007), TAM passed the test of time with its applicability and parsimony. One stream of TAM research tested and validated the original model (Adams, Nelson, & Todd, 1992; Castañeda, Muñoz-Leiva, & Luque, 2007; F. D. Davis, 1993; F. D. Davis, Bagozzi, & Warshaw, 1989; Gefen & Straub, 2000; Igbaria, Guimares, & Davis, 1995; Lu, Yu, Liu, & Yao, 2003; N. Park, Roman, Lee, & Chung, 2009). Another stream extended the original model and added important constructs such as perceived enjoyment (F. D. Davis et al., 1992), task-technology fit (Dishaw & Strong, 1999), gender differences (Gefen & Straub, 1997), intrinsic motivation (Venkatesh, 1999), social influence (Malhotra & Galletta, 1999), enjoyment and learning goal orientation (Yi

& Hwang, 2003), technology readiness (C.-H. Lin, Shih, & Sher, 2007), pleasure-arousal-dominance (Kulviwat, Bruner II, Kumar, Nasco, & Clark, 2007), technology anxiety and innovativeness (J. Kim & Forsythe, 2008), trust and computer self-efficacy (Reid & Levy, 2008), network externalities (Song, Parry, & Kawakami, 2009; Wang, Lo, & Fang, 2008), social image (C.-P. Lin & Bhattacherjee, 2010) etc. In addition, Venkatesh and Davis (2000) proposed TAM 2 in which they investigated perceived usefulness and intention in deeper detail. Later, Venkatesh and Bala (2008) offered TAM 3 in which they added determinants to perceived ease of use along with those identified in previous versions.

Even though TAM has been very useful to IS research community and practitioners, researchers have pointed out problems of over-dependency on a single model (Al-Natour & Benbasat, 2009; Bagozzi, 2007; Benbasat & Barki, 2007; Goodhue, 2007). Bagozzi (2007) argues that most of the studies added predictors of either perceived usefulness (PU) or intention. But only few studies (Agarwal & Prasad, 1999; Karahanna & Straub, 1999; Y. J. Kim, Chun, & Song, 2009) provided a deeper understanding of TAM constructs (Straub Jr & Burton-Jones, 2007). The moderators which qualify the effects of perceived usefulness and ease of use are mostly based on demographic variables. These additions, according to Bagozzi (2007), often lack theoretical insights and solid reasoning for their introduction into the model. He also points to the non-critical approach taken by IS researchers to the proposed relationship between intention and actual use. It has been argued that TAM lacks a goal-oriented approach which should consider technology acceptance/adoption/rejection as a process. Goodhue (2007) points out two ‘blind spots’ in TAM – first, the assumption by TAM oriented studies about the inevitable goodness of additional use of IT and second, the concept of task-technology fit which the models often ignore. Using a similar line of argument, Benbasat and Barki (2007) suggest that TAM centric researches do not provide a complete picture of IT adoption since they leave out a wide range of consequences of IT adoption. In addition, the basic TAM has limited applicability in the constantly changing technological scene and many IS research have not taken account of that fact. It is true that researchers have added new constructs such as security, trust, image etc. to the original model to accommodate the changing technology situations. However,

those might not be enough to understand the constantly evolving acceptance/rejection situations and hence researchers (Bagozzi, 2007; Benbasat & Barki, 2007) insist on deeper understandings of the TAM constructs (PU and PEOU) in the context of new technologies.

Motivation theory has also been widely used for studying user acceptance behaviour (Venkatesh, Morris, Davis, & Davis, 2003). In Psychology, intrinsic and extrinsic motivation are identified separately (Vallerand, 2000). Intrinsic motivation refers to the behaviours that are conducted out of interest for enjoyment. Extrinsic motivation, on the other hand, focuses on accomplishing particular outcomes under certain constraints (Vallerand & Ratelle, 2002). F. D. Davis et al. (1992) applied this understanding in IS context. They conceptualized usefulness as extrinsic motivation and enjoyment as intrinsic motivation and reported positive interactions between these set of constructs. Their study found both usefulness and enjoyment having significant impacts on intention. Venkatesh (1999) conceptualized intrinsic motivation as 'playfulness' which can create positive user perceptions about a technology. He advised to enhance intrinsic motivation component in employee training to influence technology acceptance. Venkatesh and Speier (1999) investigated how employees' moods can initially have an influence on motivation and how that can impact their intention to use and acceptance of a technology. Researchers also used motivation based extensions of TAM to study acceptance of Internet technologies (M. K. O. Lee, Cheung, & Chen, 2005; T. S. H. Teo, Lim, & Lai, 1999) and ERP systems (Hwang, 2005).

Apart from TAM and its extensions, there have been other theoretical understandings which make important contributions to the technology acceptance literature. **Innovation Diffusion Theory** (Rogers, 1983) is another widely used theoretical paradigm for understanding IT acceptance. Rogers (1983) identified five perceived characteristics of innovation (PCI) that affect the rate of diffusion– relative advantage, compatibility, complexity, observability and trialability. Moore and Benbasat (1991) tested these characteristics on personal work stations and developed a measurement instrument. They showed that obsevability should be conceptualized in terms of demonstrability and visibility and also added perceived voluntariness as an important

factor. Later research (Agarwal & Prasad, 1997) tested and confirmed affects of perceived characteristics of innovation on acceptance. Others (Agarwal & Prasad, 1998) added new constructs such as personal innovativeness to the original innovation characteristics. Karahanna, Straub, and Chervany (1999) combined innovation characteristics with belief and attitude based model (TAM) for understanding adoption and continued usage of an IT product (Windows operating system). They found that normative factors highly influence the pre-adoption behaviour intention while attitude affects the post-adoption behaviour. Plouffe, Hulland, and Vandenbosch (2001) compared TAM and PCI to investigate use of smartcard based payment system by merchants and found that PCI explained 12% more variance than TAM.

Another stream of user acceptance research is **Task-Technology Fit (TTF)** perspective which focuses on how the characteristics of organizational information systems get aligned with users' task needs and how that alignment influences user evaluation of the system (Goodhue, 1995, 1998). Task-technology fit is expected to enhance performance (Goodhue, 1995). IS researchers used TTF to investigate wide range of acceptance issues and tried to integrate it with other conceptual frameworks to achieve better explanation of IT utilization. Goodhue and Thompson (1995) proposed a 'technology to performance chain' (TPC) combining utilization based and task fit based models. In later studies, researchers (Dishaw & Strong, 1999; Klopping & McKinney, 2004) used integrated models (TAM and TTF) and modified TTFs (C.-C. Lee, Cheng, & Cheng, 2007) to study different IT systems such as software, e-commerce and mobile commerce activities. Dishaw and Strong (1999) argued that TAM and TTF offer different but overlapping ideas about IT utilization and that the integrated model has better explanatory power. Larsen, Sørebø, and Sørebø (2009) combined TTF and Post Acceptance Model (Bhattacherjee, 2001) to understand continued use of information systems. TTF has also been employed to study group tasks (Zigurs & Buckland, 1998; Zigurs, Buckland, Connolly, & Wilson, 1999) and interpersonal interactions in virtual teams (Maruping & Agarwal, 2004). In all TTF studies, task and its fit with the given system take the central role in understanding IT utilization/acceptance/evaluation. Even though TTF attempts to solve the problem of poor task fit (compared to other acceptance models), Goodhue (2007) rightly points out that most TTF

models are static while tasks are constantly being reshaped in modern world. He suggests that IS researchers should look for ways to redesign tasks and technological systems simultaneously.

Apart from the acceptance models discussed so far, IS research has been using other conceptual frameworks to look into IT acceptance from different angles. For example, Thompson, Higgins, and Howell (1991) utilized **Triandis social psychological model** and developed a model for PC utilization in IS context. They found social factors and three components of expected consequences (complexity of use, job fit and long term consequences) having stronger influence on PC utilization. The results suggest that organizations need to enhance or modify those expectations in order to ensure acceptance of technology (Thompson et al., 1991). In later studies, researchers found that PC experience and access (Al-Khaldi & Wallace, 1999; Thompson, Higgins, & Howell, 1994) have significant influence on PC utilization. Modified Triandis model have also been used to study newer technologies like Internet/WWW (M. K. Chang & Cheung, 2001; Cheung, Chang, & Lai, 2000).

Compeau and Higgins (1995) applied another important stream of behaviour research – **social cognitive theory** (Bandura, 1986) into IS context. According to this theory, behaviour is directed by two cognitive forces – outcome and self-efficacy. Compeau and Higgins (1995) argued that IS research has mostly been concentrating on outcome of behaviour while giving scant attention to self-efficacy. They add computer self-efficacy in the framework of social cognitive theory adapted for IS and find it as an important factor in forming individual behaviour. Encouragement and others' use of technology were also found to be impacting individual's behaviour through their influence on self-efficacy and outcome expectations. In a later study, Compeau, Higgins, and Huff (1999) find self-efficacy to have significant influence on affect, anxiety and use. However, expectation outcome was found to have slight impact on affect and negative impact on use. Social cognitive theory, its extensions and integrations with other theories have been used to understand various technology related issues such as knowledge sharing in virtual communities (Chiu, Hsu, & Wang, 2006), and knowledge management system usage (T.-C. Lin & Huang, 2008) etc.

Other theoretical lenses have also been applied to understand technology acceptance but have not reached a 'normative stage' (Carlile & Christensen, 2005) like the ones discussed above. For example, Hart and Saunders (1997) studied roles of power and trust in the adoption of electronic data interchange systems using **social exchange theory**. H. H. Teo, Wei, and Benbasat (2003) used **institutional theory** to understand adoption of inter-organizational systems. They found that normative pressure in organizations can play an important role in deciding about the technology system. Walden and Browne (2009) developed a **model of observational learning** (based on information cascade model) to understand sequential technology adoption decisions. Al-Natour and Benbasat (2009) proposed an **interaction-centric model**. Hedman and Gimpel (2010) utilized **theory of consumption value** to study the adoption of hyped technologies. Using a grounded theory study, Abraham, Boudreau, Junglas, and Watson (2013) proposed **Four Drive Model** to understand organizational technology adoption. This model is founded on evolutionary psychology compared to social and cognitive psychology perspectives employed by most adoption/acceptance studies.

The above discussion shows that there are multiple theoretical frameworks that can be used to study IT adoption. Hence, IS researchers felt the need to have a unified theory of acceptance which can explicate a better picture rather than snippets offered by many different perspectives. In that effort, Venkatesh et al. (2003) proposed a Unified Theory of Acceptance and Use of Technology (UTAUT) by comparing eight theoretical models and their extensions. Recently, UTAUT 2 was proposed incorporating three new constructs – hedonic motivation, price value and habit (Venkatesh, Thong, & Xu, 2012). However, these integrated theories have also been put under scrutiny. Bagozzi (2007) argues that even though UTAUT is an important contribution, it is a model with 41 independent variables for predicting intentions and at least 8 independent variables for predicting behaviour. Surely, parsimony is being confused and according to Bagozzi (2007), adoption research is in a stage of chaos.

A closer investigation of IS research traditions in the area of acceptance illuminates one critical point; i.e. most of the studies were conducted in organizational/work setting focusing on

the technology use by full / part-time students with job responsibilities (Adams et al., 1992; Agarwal & Prasad, 1997; Compeau & Higgins, 1995; F. D. Davis, 1989, 1993; F. D. Davis et al., 1992; Dishaw & Strong, 1999; Gefen & Straub, 1997; Hwang, 2005; Igbaria et al., 1995; Karahanna & Straub, 1999; Moore & Benbasat, 1991; Thompson et al., 1991). That position was useful when technology use was limited within company premises. However, the recent developments in the personal computing and communication technologies in the form of mobile devices (mobile phone, smartphone, tablets etc.) press us to broaden our view of usage dimensions and contexts. These devices have blurred the contextual and temporal borders of IT use and this merged state has not yet been properly represented in the IS research. It cannot be denied that mobile device adoption has been studied in many different fields such as marketing and consumer research, human-computer interaction along with IS. But, most of those studies still depend either on TAM or its extensions. The next section provides an analysis of such studies to set a background of what this research intends to achieve –

2.1.1 Research on Acceptance of Mobile Phones

The purpose of this research project is to understand acceptance/non-acceptance decisions of smartphone users. Studies have been conducted to investigate mobile phone use and adoption. The main goal of those studies was to provide designers information about user needs. However, rapid changes in the mobile devices pose challenges to researchers to provide relevant information to designers and also to individual consumers who themselves have become producers of knowledge/media due to the increased capabilities offered by these new generation devices (Goggin, 2009; H. L. Kim, Decker, & Breslin, 2009).

TAM and its extensions have been employed to study mobile phone adoption. Kwon and Chidambaram (2000) tested an extension of TAM for cellular phones. Like previous studies, they found user perceptions about usefulness and ease of use to be significantly related with usage motivations. But, they did not find any strong influence of individual differences (age, gender, income and occupation) on user perceptions. Stressing the necessity of understanding

user perspectives for analyzing mobile based communication and commerce, Sarker and Wells (2003) proposed a framework for mobile device adoption that integrates individual user characteristics, task and technology characteristics, mobility, and different usage contexts. Bruner II and Kumar (2005) proposed a modified TAM incorporating a consumer context for handheld Internet devices. They found 'fun' to be an important factor for acceptance and suggested that designers need to enhance ease of use to improve the experience of fun. TAM was further extended in the consumer context by integrating it with Pleasure, Arousal and Dominance paradigm of affect (Kulviwat et al., 2007). Mobile device use has also been studied in the context of least developed regional areas (Meso, Musa, & Mbarika, 2005). The model was an integration of TAM and technology transfer theory and it found cultural context to be influencing the perceptions of usefulness and ease of use. Based on TAM, UTAUT, and Kwon and Chidambaram's model, an integrated model for mobile phone adoption was proposed in a later research (Biljon & Kotzé, 2007). It was an effort to integrate physical, social, mental and technological context of mobile device adoption.

2.1.2 Research on Acceptance of Smartphones

Research efforts have also been extended to examine smartphone use. Aldhaban (2012) explored smartphone adoption literature, provided an important summary of research to date and proposed a research model. Another study by J. V. Chen, Yen, and Chen (2009) analyzed smartphone use by industry workers and employed an integration of TAM, IDT and self-efficacy. The results revealed continued importance of user perceptions, but also suggested a positive relationship of self-efficacy with intention unlike majority of prior research (J. V. Chen et al., 2009). S. H. Kim (2008) introduced two new constructs into TAM (perceived cost savings and company's willingness to fund) and examined the moderating effects job relevance and experience on smartphone use. Teng and Lu (2010) distinguished between adoption and purchase intentions of smartphones. Employing an extension of TAM, they found that even though usefulness and ease of use impact the adoption intention, perceived risk and cost have more influence on purchase intentions. Arruda-Filho, Cabusas, and Dholakia (2010) conducted

an interpretive study on first generation iPhone and found that in addition to the utilitarian functionalities (as championed by traditional IT acceptance models), users highly value hedonic functions such as enjoyment, social status, and playfulness. Early users prefer the convergence of utilitarian functions with the presence of salient hedonic functions. In a later study, Arruda-Filho and Lennon (2011) studied four generations of iPhone and found that later generations do not have the similar following or brand devotions as the first generation products. They argue that newness is more preferred compared to brand names. Using a new approach of tracking smartphone usage with real life data, researchers have also studied users and non-users of smartphone applications (Verkasalo, 2010; Verkasalo, López-Nicolás, Molina-Castillo, & Bouwman, 2010).

Smartphones provide a wider range of capabilities (compared to conventional technologies) that can fulfil many different needs. Consequently, smartphones have been diffused in many sectors. A major research area of smartphone use is the adoption by professionals working in healthcare, academia, etc. (J. V. Chen, Park, & Putzer, 2010; Y. Park & Chen, 2007; Putzer & Park, 2010; Raento, Oulasvirta, & Eagle, 2009). Another stream concentrates on the adoption of smartphones by teenagers and youth (Alt, Seer, & Pal, 2012; Chun, Lee, & Kim, 2012; Rahmati & Zhong, 2012) while a similar stream deals with the older population and the associated digital divide. Few studies analyze everyday use by general users without particular focus on professionals or age groups (Kang, Cho, & Lee, 2011).

2.1.3 Gaps in Smartphone Acceptance Research

Smartphone acceptance / adoption research is following a trajectory similar to that of existing user acceptance research. A detail analysis of current literature on smartphone will attest to this claim. Most of the studies employ TAM, extensions of TAM, UTAUT, or some integrations of TAM, IDT and other constructs. The dependency on these time-tested models is understandable. However, the non-recognition of smartphones as a comprehensive device overarching in everyday life is puzzling. Most researches have viewed the smartphone as a ‘tool’

to achieve some particular task (Aldhaban, 2012). Even though 'task- fit' is an important factor in adoption (as seen from TTF research), the situation with smartphones are quite different since these devices are capable of converging various tasks and environments. This research takes account of both task and non-task related aspects in everyday usage contexts.

Non-users and late adopters are almost non-existent in IS research radar. This practice is quite baffling since more research should be done to understand why these groups are lagging behind. Researchers are calling for more holistic approach in understanding IT acceptance (Aldhaban, 2012) which will focus on use over time and different contexts (Schwarz & Chin, 2007). Smartphone acceptance research needs to recognize this issue. This research addresses that gap by introducing perspectives of both users and non-users.

Past research has added many important concepts to technology acceptance picture. However, most studies include those concepts into an established model in an ad-hoc basis. They cite other separate studies to show the importance of a particular concept for adding value to the selected IT acceptance model. What is missing from those additions is a theoretical underpinning. For example, many studies added fun or enjoyment into TAM. But, most of them adopted a purely ad-hoc approach where there is no theoretical backing about the origin of that concept. A similar trend is visible in smartphone acceptance research. This research aims to address that gap by utilizing concepts from user experience and identity literature with proper theoretical background rather than adding concepts on the go.

IT acceptance research, especially TAM based research, leaves out another important aspect and that is identification with groups. Bagozzi (2007), while arguing for a paradigm shift in TAM research discusses about the difference between social norms and group norms and explains why group based identification can be an important factor for acceptance research. He cites the work of Tajfel (1974) on social identity and directs to the research showing importance of social identity and identification in decision making processes used by small friendship groups, virtual communities, open source software user communities etc. Acknowledging this

gap in acceptance literature, this project aims to expand the boundary of technology acceptance research by utilizing social identity theory and identification issues to understand smartphone adoption.

Next two sub-sections discuss the relevant research on user experience and identification in order to set the background for introducing these two theoretical genres into smartphone acceptance research.

2.2 User Experience with Interactive Devices

User experience (UX) is defined as "a consequence of a user's internal state, the characteristics of the designed system and the context within which the interaction occurs" (Hassenzahl & Tractinsky, 2006, p. 95). UX is also conceptualized as a multidimensional concept that includes perceptions about different product qualities and related emotions (Demir, 2008). Researchers also perceived UX as a total experience consisting of traditional product qualities such as functionality, reliability and new concepts like attractiveness, fun, coolness, brand devotion etc. (Jetter & Gerken, 2006). Experience with a product is a two way transformation process of 'doings' and 'undergoings' until the product and the self reach a harmonious state (Demir, 2008). During the 'doings' stage, the product is transformed with the properties of the user while during the 'undergoings' stage the self is altered by the previous transformations in the product. This understanding reveals that both users and products are important to understand user experience. UX literature (similar to IT acceptance literature) previously emphasized mainly on the functional aspects of an interactive product. After conceptualizing experience (with an interactive product) as a two way transforming process, researchers in the field of human-computer interaction started to focus on both products and users in an integrated manner.

Hassenzahl and Tractinsky (2006) identified three different streams in UX research. One stream concentrates on experience that includes 'beyond functional / instrumental' aspects of an

interactive product, the second stream deals with the affective and emotional responses toward a product while the third perspective conceptualizes experience as a process with distinct start and end. While examining interactive products, researchers broke out of the conventional functionality based approach for understanding user experiences and introduced 'beyond-functional' or non-instrumental qualities of a product into UX picture. Non-instrumental qualities refer to product attributes that go beyond mere functionalities or instrumental values (Mahlke, 2007b). Research effort has been carried out to identify different non-instrumental qualities to understand overall user experience. For example, Alben (1996) indicates 'beauty' while Gaver and Martin (2000) find surprise, intimacy and diversion as important non-instrumental qualities. Aesthetics and symbolism were also dubbed as non-instrumental qualities (Creusen & Schoormans, 2005; Rafaeli & Vilnai-Yavetz, 2004) and Mahlke (2007b) identified motivational aspect as well.

Hassenzahl (2001) suggested that the character of an interactive product is formed based on its attributes – pragmatic and hedonic. A product has pragmatic attributes if it helps users to accomplish their goals efficiently and effectively (Hassenzahl, 2004). Pragmatic attributes are similar to functional / instrumental qualities and focus on utility and usability. These attributes have also been dubbed as ergonomic qualities which focus on goal related functions (Hassenzahl, 2001). In contrast, hedonic attributes are concerned with the 'self' (Hassenzahl, 2004). These attributes realize the need for novelty, change, self-expression, social power / status that can be conveyed by an object (Harbich & Auer, 2005; Hassenzahl, 2001). Hedonic attributes are similar to non-instrumental qualities of a product and can include beauty, surprise, intimacy, fun etc.

Pragmatic and hedonic attributes have distinctive functions to perform. Hassenzahl (2003) identifies '*manipulation of environment'* as the function of pragmatic attributes. The functions of hedonic attributes are – *stimulation, identification and evocation.* Using a two stage user experience model, Hassenzahl (2003) argues that designers provide different attributes into a product and form an intended product character. User experience is a process in which users

discover, use and evaluate that intended product character within specific usage contexts and consequently form an apparent product character.

Product attributes have been playing important parts in usability research under the wing of user experience literature. In contrast, the core focus of IT acceptance has been the perceptions formed by users in different usage conditions. A user experience research perspective can add value to acceptance research by looking at the problem with the lens of product's abilities. It will give a holistic view of the experiences that both users and non-users have with their personal devices and can aid in better understanding of smartphone acceptance.

2.3 Social Identity and Identification

Bagozzi (2007) indicates a concern about a social process that has been broadly overlooked by technology acceptance research and that is identification. Based on the idea of Kelman (1974), identification refers to "the influence based on a self-defining relationship a person has with another person or group" (Bagozzi, 2007, p. 248). Tajfel (1974) identified social identity to explain group related behaviours that are different from intra-individual or interpersonal behaviours. Different research traditions such as sociology, psychology and anthropology investigated identity and identification (Buckingham, 2008). From psychological perspective Social identity theory (Tajfel, 1974; Tajfel & Turner, 1979) is a widely known work which focuses on self-based group identity. Sociological stream focused mainly on role and salient identities. Out of that research tradition, identity theory (Stryker, 1968) has come to the forefront of identity research. Issues like culture, ethnicity, race etc. have been investigated under the umbrella of identity research with a particular take from anthropological perspective (G.-M. Chen, 2009).

Social identity is the result of an identity formation process through which people self-define themselves as a member of a group or community (Hogg & Terry, 2000; Tajfel & Turner,

1979). The process makes a person to hold favourable opinions about in-group[1] members and / or actions of the in-group and discriminatory or unfavourable views about out-groups[2] or members of out-groups. People decide on social identity by comparing the common grounds between self and community. The degree of common characteristics helps people to make decisions about self-associating oneself with the group and its value propositions (Mishra, Anderson, Angst, & Agarwal, 2012).

Social categorization theory (SCT) was developed later to investigate why and how people self-categorize themselves into a social category (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). SCT acknowledges the context-dependent nature of the self-categorization process. Another theoretical framework Common Ingroup Identity Model (CIIM) was developed to understand categorization process. CIIM examines group relations through the lens of salient identities (Gaertner, Dovidio, Bachman, & Rust, 1993). It suggests that salient identities can resolve the tensions arising from the mix of many different identities that people experience in a given situation. Critics of salient identity view argue that the tension and conflict among superior identity and other identities can be solved by giving adequate recognition to lower level identities (Dovidio, Gaertner, & Validzic, 1998; Hornsey & Hogg, 2000). An Integrative Model of Subgroup Relations was developed based on the idea discussed above (Amiot, Sablonnière, Terry, & Smith, 2007).

Apart from these conceptual understandings of identity from the psychological perspective, identity theory (Stryker, 1968) has been one of the widely used theoretical lenses that informed many research studies. The background of identity theory is anchored in sociology. It conceptualizes 'self' as a multi-dimensional concept containing many role identities. Role identities are "self-conceptions, self-referent cognitions, or self-definitions that people apply to themselves as a consequence of the structural role positions they occupy, and through a process of labelling or self-definition as a member of a particular social category" (Hogg, Terry, &

[1] In-group refers to the group the person self-position herself into.
[2] Out-group refers to other competing groups or community external to the in-group.

White, 1995, p. 256). According to identity theory, an individual has a hierarchical selection of role identities to choose from and act upon in a given situation (Brewer, 2001; Hogg et al., 1995; Stryker, 1968).

Overall, identity and identification have rich grounding in academic literature. These concepts were found to be useful in explaining various social issues. But, same is not true for IT acceptance research. The present technological scene has different sides – organization based mandatory use, personal voluntary use and also merged use occurring in both these contexts. The lens of identity theories are capable of providing new understandings in all these situations and it is not desirable to keep such a rich field of work out of the IS boundary.

2.4 User Experience, Identification and Smartphone Acceptance

To summarize the detail literature review and the perspectives discussed in the previous sections, it can be said that the focus of technology acceptance research holds a perception centric view where users are at the core of this perception generating process. These perceptions about usefulness, ease of use, enjoyment etc. have been analyzed from the perspectives of the job at hand, mandatory or voluntary usage environments etc. But, product's ability to influence those perceptions has been sidelined probably because it is so inherently mixed with how users form those perceptions. But, it is important to understand why users / non-users find a product useful or not useful. What attributes does an interactive product offer to users so that they find it easy to use compared to their previous devices or vice versa? This research aims to take a step back and connect user perceptions research with product attributes utilizing ideas extracted from user experience literature. In an similar way, identity issues are not well researched in IT acceptance arena despite its rich history in other academic fields (Mishra et al., 2012). Acceptance of smartphones is not different in this respect. Smartphones are different in many ways from previous organization based fixed systems. However, that difference has not been fully recognized in acceptance models. Most of the studies conducted about smartphones used previous models which were developed in different contexts with different technology systems.

Even though organizational identity has been researched in relation to other contexts, smartphone adoption has rarely been investigated with a deeper focus on its capability to affect individual identity formation process. This research aims to address that gap and provide a better understanding of smartphone adoption.

(This space has been kept blank intentionally)

3.0 Research Methodology

3.1 Research Principle

This research is guided by interpretivism. According to Klein and Myers (1999), IS research project can be interpretive if it assumes that knowledge about reality can be achieved only through examining social constructions such as language, shared meanings, texts / documents, and other artefacts. Interpretive research aims to understand a social phenomenon by analyzing the meanings people associate to the research contexts and this understanding is the guiding force of this thesis.

The underlying principle of this research is hermeneutics which concentrates on interpreting textual materials (Mingers, 2003; Trauth & Jessup, 2000). It provides philosophical underpinnings for interpretivism and also acts as a mode of analysis (Klein & Myers, 1999). In hermeneutics, understanding is achieved through a circle of investigation that moves from the totality of a phenomenon to its parts and then comes back to the whole to resolve any contradiction that arose during the process. Hermeneutics provides the ability to examine and understand social actions as texts. Ricoueur argues that texts reflect social and political action and hence it is possible to investigate social action through the medium of texts (T. Butler, 1998). According to hermeneutics, written texts move through a process of 'autonomization' and take up an existence independent of the author with the possibility of being interpreted in different ways (Myers, 2004). Hermeneutics can take several forms – one form assumes that there is only one true meaning of text intended by the author; other forms take a very different approach by assuming that texts should be interpreted from the reader's perspective while some others move beyond mere interpretation of specific texts and perceive the whole world as text analogues suitable for interpretation (A. S. Lee & Dennis, 2012; Myers, 2004).

IS research has been using hermeneutics for quite some time. T. Butler (1998), Myers (2004), and A. S. Lee and Dennis (2012) provide a rich review of works conducted under

hermeneutic principle. However, it has been argued that IS, as a field of research, has produced only a moderate number of studies employing hermeneutics (Cole, 2005; Cole & Avison, 2007; A. S. Lee & Dennis, 2012). This research aims to add to the repertoire of hermeneutic research in IS. It assumes acceptance of smartphones as a social action which can be studied and understood by analyzing texts.

3.2 Social Constructionism and Symbolic Interactionism

Social constructionism and symbolic interactionism derived from social constructionist research approach guided the studies in this research program. Social constructionism conceptualizes individuals as social actors. It illuminates how social actors construct their realities by creating meanings and producing and reproducing social structures in different contexts (Berger & Luckman, 1966; Edvardsson, Tronvoll, & Gruber, 2010). Berger and Luckman (1966) argue that knowledge is created and disseminated in 'social' situations. Therefore, to understand the constructed realities of individuals one must investigate the contextual experiences as social constructions. It is to be noted that those contextual experiences are products of interactions; hence, reality construction is inherently 'social' (Adoni & Mane, 1984). Constructionist researchers have pointed out the importance of social systems and structures in the process of meaning creation by individuals. However, individuals make choices, adapt to the situation and extract only those cues from the context which match their realities. Therefore, the idea of social construction of meanings and experiences encompasses both human agency and social structure. People make choices, take decisions and construct their realities within the given social and institutional structure (Edvardsson et al., 2010). These structures facilitate sense making by labelling the experiences derived from social interactions.

Social interaction generates human conduct and unfolds in two levels – non-symbolic and symbolic (Blumer, 1969a). The distinguishing factor between non-symbolic and symbolic interaction is the 'act of interpretation' (Blumer, 1969a; Mead, 1934). Symbolic interactionism suggests that individuals make sense of their own realities and surrounding situations by

interpreting social interactions (Blumer, 1969a; Edvardsson et al., 2010; Fine, 1990). Social interaction is a dynamic process which facilitates emergent nature of human conduct (Blumer, 1969c; Fernback, 2007; D. H. Lee, 1990; Schutz, 1967; Shott, 1979). People attach meanings to objects through social interaction and make sense of those meanings by interpretations (Blumer, 1969a; Fine, 1993) Symbolic interactionism also focuses on the concept of 'self' which is an object in every interaction (Denzin, 1969). 'Self' is influenced by the choices made in different contexts and also by the shared meanings created in an interaction (Singelmann, 1972).

The ambiguous nature of communication technologies (such as smartphones) poses challenges to sense-making since they can be understood in multiple ways based on their varied usage dimensions in different contexts (Fulk, 1993). The understandings offered by social constructionism and symbolic interactionism have the potential to illuminate the multiplicity associated with smartphone adoption decisions. To understand different aspects of smartphone adoption decisions, this research uses a multi-method approach which is discussed in the next section.

3.3 Multi-Method Research Strategy

Multi-method research strategy refers to the use of more than one method within a single research program. The triangulation of methods illuminates different aspects of the research phenomenon. Multi-method strategy also offers creativity and expansion in terms of research scope (Tashakkori & Teddlie, 1998). The act of combining can provide completion, enhancement and better understanding in terms of research findings (Bazeley & Kemp, 2012; R. B. Johnson, Onwuegbuzie, & Turner, 2007). There are several reasons for selecting a multi-method approach for this research project –

i. IS, as a research field, has become very diverse and as such it needs to draw from many other disciplines to properly examine human communication (Mingers, 2001). Using multi methods approach allows the opportunity to directly use understandings from different

fields such as technology, psychology and sociology to investigate smartphone acceptance and associated identity.

ii. Combining different research methods into a single program can inform about the research situation in a more complete manner. Even though critics argue that drawing a full picture of a situation is never possible because the real world is more complex than any mixing of methods can ever capture, that should not be a reason for not trying to illuminate different perspectives.

The next section lays out particular research methods that have been followed for four studies constituting this research project.

3.4 Research Methods

Research methods refer to the strategies followed and/or activities carried out during the research process. Research methods include selection, collection, preparation and analysis of data with the conscious acknowledgement of the research paradigm. This research project contains four studies and all the studies use similar type and form of data, though the actual data sets are different.

3.4.1Data

This section discusses the source, form and type of data and provides the rationale behind the selections –

Selection of Data Source

Two websites (www.cnet.com, www.squidoo.com) were used as the data source. These websites host self-reports that people post about different electronic devices. The websites were

selected after careful consideration. Since, the purpose of the research is to explore, describe and understand the reasons and processes involved in acceptance decisions and identity formation by users/non-users of smartphones, the search criteria for data included the following – i) social artefacts produced by users/non-users that are not bounded by the categories imposed by the website/researcher, ii) availability of substantial amount of textual data so that there is a possibility of illuminating any recurring pattern, iii) the website does not require any membership to obtain the data; that is the data are publicly available.

The websites do not share any personal information about posters other than the date they joined the forum. So, no demographic information is available. As for the geographic location, people post on these forums from all over the world. But, most of the reports are from people living in developed countries (from North America, Europe and few East Asian countries).

It is important to note that purposive sampling has been used as the method of data selection. The release dates of the smartphones act as cut-off dates for selecting data. The reason for choosing a cut-off date is to restrict the inclusion of self-reports that were posted before the release of the product when people do not usually have clear idea about the features of the product and therefore, make conjectures about device performance.

Rationale for Using Online Self-Reports

With the advent of smartphones, users have become producers and controllers of information (Verkasalo et al., 2010). With the new capabilities offered by smartphones and social media, providing opinions about any issue has become easier for people. These opinions are spontaneous and are important source of information about any product (Xu, Liao, Li, & Song, 2011). These reports are widely used by potential consumers who compare information posted by people who already accepted / rejected the product (S. Sen & Lerman, 2007). J. Yoo et al. (2010) analyze importance of positive reputation of smartphones and find that consumer self-reports are more effective than conventional expert media reports for smatphone diffusion.

Similar results were obtained from an investigation of external online word-of mouth reports (product reviews, user experiences, opinions etc.) on digital cameras by Gu, Park, and Konana (2012). Word-of-mouth reports hosted on websites external to manufacturers' sites were found to be very influential on purchase decisions of high involvement products. Pehlivan, Sarican, and Berthon (2011) used text mining to analyze reports on Apple's MacBook laptop and find importance of consumer generated ads. Goh, Heng, and Lin (2013) found user generated contents to be demonstrating more impact on consumer purchase behaviour than marketer generated contents. Schindler and Bickart (2012) investigated perceived helpfulness of user reviews and showed that the content and style of actual reviews influence simulated shopping activity.

The results of these studies reveal the importance of online self-reports to potential consumers for decision making. Based on these understandings, it can be argued that these reports must be a repertoire of information about the decision making criteria used by the reporters themselves. This research aims to illuminate those perspectives in the context of smartphone acceptance and associated identity. This research comes from the perspective of the interpretative social constructivism, and natural language based textual self-reports are an appropriate choice for unravelling user / non-user views. The rapid change in usage dimensions of smartphones also requires employment of 'new and unfamiliar methods' (Blythe & Cairns, 2009) and by utilizing a multi-method approach and user generated self-reports this research aims to do exactly that. However, it is important to note that due to the rapid pace of change in the smartphone scenario, the self-report data cannot be exhaustive.

Type and Form of Data

The type of data is secondary and qualitative. The table below shows the data summary –

Table 3.1: *Data Summary*

Study	Title	Data
Study 1	Analysis of acceptance decisions by smartphone users – A qualitative enquiry from user experience perspective	iOS (iPhone) – 361 self-reports, BlackBerry OS (BlackBerry) – 326 self-reports and Android (Samsung Galaxy) – 132 self-reports
Study 2	An Ethnographic Decision Modeling Analysis of Smartphone Acceptance Decisions	iOS (iPhone) – 457 self-reports, (user – 361, non-user – 96) BlackBerry OS (BlackBerry) – 517 self-reports (user – 326, non- user – 191) and Android (Samsung Galaxy) – 144 self-reports (user – 132, non-user – 12)
Study 3	Acceptance of Smartphones: A Qualitative Enquiry from the Perspective of Social Identity Theory	240 user self-reports on iPhone 4
Study 4	Identification with a device: An Interpretive Analysis using Hermeneutic Circle Framework	83 user self-reports on iPhone 4S, 65 self-reports on BlackBerry Bold and 132 self-reports comparing iPhone and Blackberry

Preparation of Data

For each study, textual self-reports were retrieved from the host websites and collected into one master document. After collecting all the textual data and cleaning for obvious spelling mistakes, the data were imported into HyperRESEARCH software. This software allows the researcher to investigate patterns in the data in a case by case basis which suits the form of data and purpose of the studies.

Ethical Considerations

The textual self-reports used in the research project are publicly available. The users have posted their reports on the Internet with the knowledge that other people will read and use those accounts. As an additional cautionary step, no username was included in any document produced in relation to this research project.

3.4.2 Qualitative Content Analysis

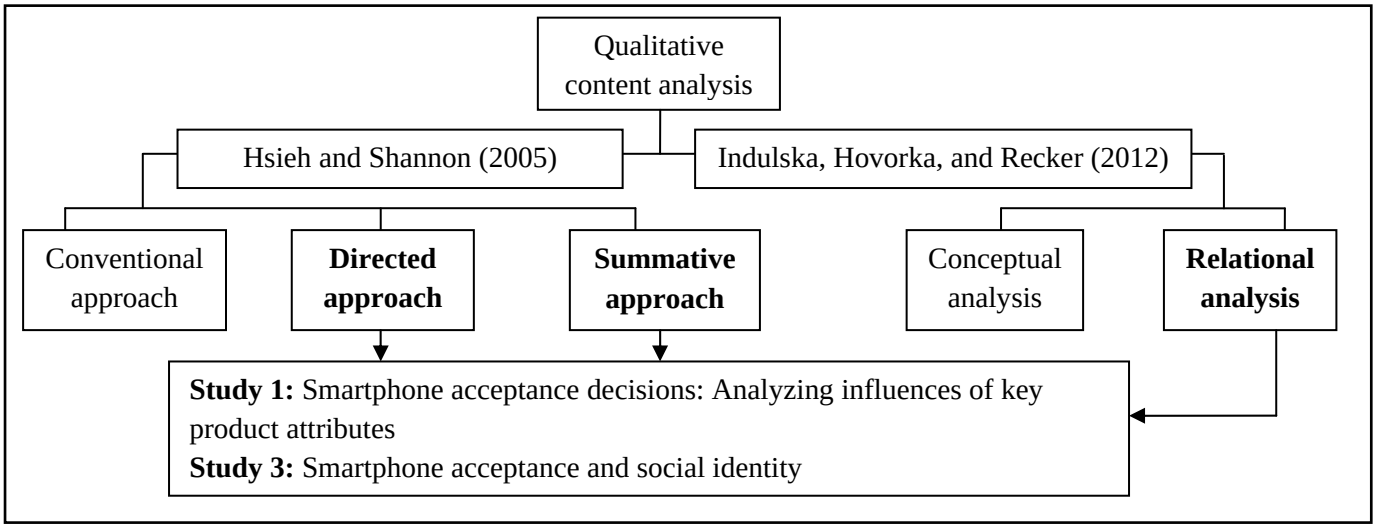
Qualitative content analysis is a semantic analysis that reveals the salient concepts in the text (Indulska et al., 2012). It refers to the analysis of texts in which researchers obtain the categories from the text in an interpretive manner (Mingers, 2003). It allows researchers to make replicable and valid inferences from texts (Krippendorff, 2004). This approach assumes that reality can be interpreted in different ways (Graneheim & Lundman, 2004). Hence, the conscious acknowledgement of the researcher's role and of multiple meanings of text is central in qualitative content analysis.

Qualitative content analysis is in use for a long time to analyze documents, historical records, literature etc. It has a rich history in the field of political science, social psychology, journalism, communication research etc. (Kassarjian, 1977). Consumer research has also been using this method for more than three decades for analyzing advertisements and consumer behaviour. Qualitative content analysis has the capability to generate rich understandings of human experiences within a specific context by allowing deep analysis (Castro, Kellison, Boyd, & Kopak, 2010). It permits researchers to evaluate communications in an unobtrusive manner (Kolbe & Burnett, 1991). Content analysis can also be used as a companion method in a multi-methods research (Kolbe & Burnett, 1991). These advantages make qualitative content analysis an appropriate choice for Study 1 and Study 3 of this research project considering the text based data and the purpose of this research to understand user /non-user experiences with smartphone acceptance. Critiques have pointed out that qualitative approach is weaker since it often depends on a smaller sample. This research uses a large number of self-reports for each study and hence, aims to offer a better understanding. Other critiques argue that qualitative approach does not offer generalizability, reliability and validity of results compared to those of quantitative approaches (Castro et al., 2010). In response, Denzin and Lincoln (1994) point out that those criteria are not always relevant for qualitative research while other researchers (Kaplan & Maxwell, 1994) argue that reliability and validity of qualitative research can be ensured by collecting rich data, triangulating multiple sources of data, attending to conflicting and negative

cases, collecting feedback etc. It is important to note that achieving all the criteria may not be possible given various purposes and perspectives of qualitative research. But, the researcher must acknowledge her role as a research instrument and attempt to adhere to as many criteria as the research design and purpose permit.

Researchers have classified qualitative content analysis into different forms. One classification identifies two forms – conceptual and relational. Conceptual analysis looks for presence, dominance, and centrality of concepts in the text whereas relational analysis accounts for co-occurrence of concepts along with the concept frequency in the body of the text (Indulska et al., 2012). Hsieh and Shannon (2005) identify three approaches – conventional, directed and summative. Conventional approach focuses on direct coding from texts, directed approach uses concepts derived from relevant theories as a guide for preliminary coding, and summative approach employs comparison, frequency counting of concepts followed by interpretations (Hsieh & Shannon, 2005). Study 1 (Analysis Of Acceptance Decisions by Smartphone Users – A Qualitative Enquiry from User Experience Perspective) and Study 3 (Acceptance of Smartphones: A Qualitative Enquiry from the Perspective of Social Identity Theory) of this research project use qualitative content analysis and figure 3.1 shows where these two studies stand in terms of form of qualitative content analysis –

Figure 3.1: Classification of Qualitative Content Analysis and Position of Study 1 And 3



Study 1 and 3 employed relational analysis emphasizing on co-occurrence of concepts. Both studies were informed by directed and summative approaches where primary coding schemes have been derived from relevant theories. Next, frequency counts and co-occurrence of concepts were integrated into interpretive findings. Table 3.2 presents the framework followed in study 1 and 3 to analyze textual self-reports. This analysis approach is informed by the frameworks suggested by Graneheim and Lundman (2004) and deductive category application developed by Mayring (2000) –

Table 3.2: *Content Analysis Framework Followed in Study 1 And 3*

Directed concepts from theory	**Primary codes**	**Meaning units or comments from texts**	**Connected concepts**
Stimulation	Novelty	"There has never been a product like the iPhone that does so much in such a small and elegant package"	Co-occurrence of codes pertaining to stimulation with that of attitude about the device
	Enjoyable device	"Personality and fun into the palm of your hand. The fun factor on this phone is a 10/10"	
Attitude about the device	Positive attitude Negative attitude	A score of 3 or above A score of less than 3	

Both study 1 and 3 followed the above framework. First, relevant concepts were derived from respective theories used in the studies. Then, based on the understandings drawn from the literature, primary codes were established from the texts to represent each concept. Next, meaning units or comments from the reports were coded under primary codes and ultimately the higher level concept. Then, propositions were developed and tested utilizing co-occurrence analysis. It is important to note that the analytical approach of content analysis selected in both these studies emphasizes on the latent contents in the body of the text. This approach facilitates to illuminate the meanings immersed in the text and thus it is appropriate as per the interpretive research paradigm which is the guiding force in this research.

3.4.3 Ethnographic Decision Tree Modeling (EDTM)

Ethnographic decision tree modeling (EDTM) analyzes behavioural decisions or choices made in a specific situation. EDTM assumes that even though there are variations in individual decision makings, groups are likely to follow common decision rules (Beck, 2005; J. Johnson & Williams, 1993). EDTM draws from grounded theory as well as from content analysis (Ryan & Bernard, 2000). It develops and verifies formal decision models to represent decision choices.

Researchers have used EDTMs in diverse academic fields like agriculture, psychology, sociology, health etc. to understand different decision making processes. Studies on decisions about drug users' needle sharing (J. Johnson & Williams, 1993), farmers' choice between organic and conventional production (Fairweather, 1999), decisions about child abuse reporting (Beck, 2000), evacuation decisions in times of hurricane (Gladwin, Gladwin, & Peacock, 2001), treatment seeking decisions of cancer patients (Oh & Park, 2004), decisions about recycling beverage cans (Ryan & Bernard, 2006) are few examples of EDTMs used in research. The seminal work on EDTM was conducted by Gladwin (1989). She lays out the method in detail by identifying the steps needed to be followed by a research which uses EDTM. This method extracts decision criteria from a sample of decision makers and forms "a decision tree, table, flow chart, or set of 'if-then rules' or expert systems" (Gladwin, 1989, p. 8). Then, the preliminary model is tested on a separate but similar sample from the same population. The test provides a success or error rate which indicates the number of decisions accurately captured by the model. The steps for conducting an EDTM based research are as follows –

i. Deciding about the decision to study and decision alternatives,
ii. Deciding about the sample size for a preliminary model,
iii. Obtaining decision criteria from the sample,
iv. Building the preliminary ethnographic model,
v. Building a question list to test the model,
vi. Testing the model on the sample to decide about necessary modifications, and

vii. Testing the model on the full data set.

Use of EDTM in Study 2: Reasons and Framework

Study 2 (An Ethnographic Decision Modeling Analysis of Smartphone Acceptance Using User Self-Reports) employs EDTM as the research method. As mentioned earlier, EDTM has been in use in different academic fields for analyzing decision choices. However, IS has given scant attention to this method even though IS research deals with many decision making problems. The purpose of Study 2 is to understand the smartphone acceptance or non-acceptance decisions through online self-reports. EDTM assumes that individuals make a choice after considering other peoples' opinions (Beck, 2005; J. Johnson & Williams, 1993). As such, EDTM suits the purpose and type of data used in this study. Study 2 follows the framework given below in Table 3.3 –

Table 3.3: *EDTM Framework for Study 2*

EDTM steps	**Use in study 2**
i) Deciding about the decision to study and decision alternatives	Decision to study: Acceptance or non-acceptance of smartphones selected under study (devices operated on iOS, BlackBerry OS, Android)
ii) Deciding about a sample size for a preliminary model	Calculate the sample size for preliminary analysis based on the equation proposed by Ryan and Bernard (2006): Minimum sample size = Minimum cases at each end point * $2^{(\#\ \text{of levels})}$
iii)Obtaining decision criteria from the sample	After calculating the sample size, select reports from each smartphone master document using random numbers.
iv) Building the preliminary ethnographic model	Examine each self-report to identify the criteria the authors mention to support their acceptance or non-acceptance decisions. Build small decision models for each self-report by adding new criterion discovered in following reports. This approach follows the indirect method of model building suggested by Gladwin (1989).
v) Building a question list to test the model	Build a question list using the decision criteria uncovered from the self-reports for each device.

EDTM steps	Use in study 2
vi) Testing the model on the sample to decide about necessary modifications	Test respective preliminary model for each device on the preliminary sample. Prepare separate excel work sheets to tabulate the yes-no answers obtained from testing the reports with the questions list. Calculate accuracy rate of models in capturing acceptance or non-acceptance decisions. Modify the preliminary models if the accuracy rate is lower than the acceptable level suggested by Gladwin (1989)
vii) Testing the model on the full data set	Test the preliminary models on full data sets
Goal of the research: Build a theoretical framework to understand smartphone acceptance based on the EDTM results	

3.4.4 Interpretive Hermeneutic Circle Framework

A hermeneutic circle framework was employed in study 4 (Identification with a device: An Interpretive Analysis using Hermeneutic Circle Framework). Hermeneutics deals with meanings of texts or text analogues and aims to make sense of an object of study (Myers, 2004). Hermeneutics is a broad term which includes phenomenological, constructivist and critical hermeneutics traditions from a philosophical perspective. Phenomenological hermeneutics attempts to provide a reliable description of experiences but does not insert researchers' perspectives whereas constructivist hermeneutics interprets experiences by acknowledging researchers' prior knowledge in the beginning (Cole & Avison, 2007). In contrast to critical hermeneutics which tries to uncover hidden meanings, constructivist hermeneutics attempts to illuminate general everyday meanings that can go unnoticed (Cole & Avison, 2007).

Hermeneutic circle is an important aspect of hermeneutics which assumes that understanding of a research object is possible by moving from the whole phenomenon to its parts and then coming back to the whole. Myers (2004) argues that the core purpose of hermeneutics is to illuminate meanings at different levels. Another important aspect of hermeneutics is the pre-understanding of the researcher about the phenomenon of interest. Unlike approaches under positivist paradigm, hermeneutics claims that understanding cannot be achieved without interpretation and interpretation always starts from prior knowledge about an object of study.

Understanding has been viewed as a productive process where interpretations change with new insights but start with pre-understanding (Myers, 2004). In hermeneutics, written texts can take independent lives from its author and hence, are subject to different interpretations.

Based on the hermeneutic principles discussed above, Cole and Avison (2007) develop a hermeneutic circle framework which is used in study 4. This framework follows the assumptions of constructivist hermeneutics which attempts to develop understanding through a circle of interpretation (of texts) which includes authors' perspectives as well as researchers' pre-understandings. The framework used in study 4 is presented in table 3.4 –

Table 3.4: *Hermeneutic Circle Framework Used in Study 4*

Research phases	**Use in study 4**
Clarifying prejudices	The pre-understandings about technology acceptance are clarified based on exposure to literature as well as prior research outcomes
Constructing the strategy of analysis	The scope of the research is defined by selecting the devices to study and justifying the choice
Collecting data	The data are collected based on the strategy outlined in the previous phase
Analyzing data	Thematic analysis of the data is carried out with conscious acknowledgement of pre-understanding about the phenomenon
Comparing with prior understanding	Comparing the new understandings with prior ones
Summarizing new understanding	Interpretation of findings

In summary, this chapter on research methodology discussed the research principles and methods followed in each of the four studies. It outlined the followings about the research project –

Table 3.5: *Research Methodology Summary*

Topic	**Stance taken in the project**
Research paradigm	Interpretivist
Research principle	Hermeneutics
Research perspective	Social constructionism and symbolic interactionism
Methodological approach	Multi-method research strategy
Research methods	
Data source	Self-reports posted on Internet based platforms
Study 1 and 3	Qualitative content analysis
Study 2	Ethnographic decision tree modeling
Study 4	Hermeneutic circle framework

The next four chapters present each individual study and each research method is discussed in more detail in those separate chapters.

4.0 Study 1: Analysis of Acceptance Decisions by Smartphone Users – A Qualitative Enquiry from User Experience Perspective

Abstract

This study investigates acceptance decisions by smartphone users through the lens of user experience and technology acceptance concepts. Utilizing textual self-reports posted on the Internet by users of three leading smartphone platforms (iPhone, BlackBerry, Android), propositions were tested through a pattern matching procedure. In addition to demonstrating a systematic method of qualitative inquiry, the research shows that pragmatic attributes of new smartphones are important for perceived usefulness by users but not for perceived ease of use. Hedonic attributes expressed as functions of stimulating novel experiences and expressive identification abilities were also found to be important for actual use whereas brand devotion fell short in that respect. Findings of this study suggest that future work on smartphones by practitioners and academics should give importance to product's ability of influence acceptance, rather than focusing exclusively on user personas and perceptions.

Keywords: Smartphones, hedonic attributes, acceptance, actual usage, qualitative inquiry

4.1 Introduction

The trend of mobile communications has shifted toward smartphones. A report by Gartner Research Inc. (2011) shows a 74% increase in the worldwide smartphones sales in the second quarter of 2011 than that of 2010 while the overall sales for mobile phones have increased by 16.5% during the same period. It means that the growth in mobile phone sales has mostly been driven by smartphones. Increasing consumer demand for different technologies converged within a single hyper-personalized device and growing horizon of social networks may play important roles in this escalating demand for smartphones. The interplay among all these factors makes it harder for the producers of smartphones to draw boundaries around any usage dimension. Therefore, this situation demands further research in the area of smartphone acceptance to better understand user experiences. The sales numbers can be an indicator of the success of overall product but to make an improvement over the current products, it is essential to understand the impact of intended product characteristics on the decision making processes of the users. In this paper, I intend to illuminate this problem and the following research questions will guide the investigation – What are the key product attributes that affect the acceptance decisions of smartphone users? How are these attributes related to acceptance decisions?

User experience model (Hassenzahl, 2003) developed in the context of human computer interaction is used as a lens to identify attributes of smartphones. Hassenzahl (2003) identifies two types of product attributes – pragmatic and hedonic. Pragmatic attributes refer to the functional or task-related aspects of a product while hedonic attributes consist of the 'beyond-functional' aspects such as novelty, enjoyment etc. He argues that these product attributes develop the apparent product character intended by the designer. The user gets involved with a product under a specific context and derives pleasure, satisfaction or discontent. Some studies (Bruner II & Kumar, 2005; Mahlke, 2007a; Wakefield & Whitten, 2006) focused on hedonic attributes (of interactive devices) along with pragmatic attributes which had had more attention in the past. But in the changing context of new generation smartphones, there is a renewed need for more empirical research to devise different techniques for analyzing user requirements for

both hedonic and pragmatic attributes and how these attributes influence the ultimate acceptance decisions. This paper investigates product attributes to understand their relation to the user perception factors identified in Technology Acceptance Model, TAM (F. D. Davis, 1989). TAM is a widely used framework for understanding technology adoption and its concepts have been tested over time for different types of technology products.

Using textual data collected from self-reports posted on the Internet, this research focuses on three smartphones running on three different operating systems – iOS (iPhone), BlackBerry OS (BlackBerry), and Android (Samsung Galaxy). Qualitative content analysis is carried out using HyperRESEARCH software. The results show that the function of pragmatic attributes (manipulation of environment) hold a pattern of co-occurrence with perceived usefulness of the product. However, the co-occurrence is weaker with the concept of ease of use which is often thought as an important usability factor. Among the functions of hedonic attributes, stimulation and identification (unlike evocation) portray high co-occurrence patterns with 'attitude' and actual use'. This result indicates that novelty, enjoyment and personalization aspects can play important roles in purchase and usage decisions even if there are no past memories with a brand. These findings have important practical implications in helping the designers and producers to better understand the significance of the product attributes in acceptance decisions.

The rest of the paper is organized as follows – first, relevant researches on technology acceptance and user experience are briefly discussed. Next, the propositions are constructed from the concepts derived from the literature. Then, results are presented with empirical evidences. In the concluding part, contributions and limitations of this research are discussed along with future research directions.

4.2 Technology Acceptance and User Experience – Related Research

Technology Acceptance Model or TAM (F. D. Davis, 1989) was developed from the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and has been in wide use for

understanding acceptance of technology products. The main constructs of this model are perceived usefulness (PU), perceived ease of use (PEOU), attitude, intention and actual use.

One stream of user acceptance research (Adams et al., 1992; Agarwal & Prasad, 1999; Venkatesh, 2000; Venkatesh & Davis, 2000) focused on existing constructs of the model. Others pointed out some limitations and used extensions of the original TAM (Al-Gahtani & King, 1999; F. D. Davis et al., 1989; Dishaw & Strong, 1999; Gefen & Straub, 1997; C.-H. Lin et al., 2007; Malhotra & Galletta, 1999; Mathieson, 1991; Nasco, Kulviwat, Kumar, & Bruner II, 2008). A close analysis reveals that the story of acceptance was told mostly from the perspective of how users perceive functional activities of technical systems. Moreover, most studies were set in mandatory organizational usage environment. What is missing is an analysis of product attributes and how these attributes are related to individual users' perceptions proposed in TAM. User experience literature gives attention to product attributes and can add important dimensions in acceptance research.

Several studies (Demir, 2008; Hassenzahl & Tractinsky, 2006; Jetter & Gerken, 2006; Minge, 2008) illuminate three factors important for understanding user experiences with interactive devices – personalities of users, characteristics of devices, and contexts of use. Some researchers (Hassenzahl & Tractinsky, 2006) view user experience as a consequence of interactions among these three factors. While some others (Demir, 2008; Minge, 2008) consider user experience as a multi-stage process where the product and the users both transform through ongoing connections between them and eventually congeal into a unique harmony. Anttonen and Jumisko-Pyykkö (2008), in contrast, argue for conceptualizing user experience in terms of meaning and affective responses that users attach to technology. Cognitive absorption has also been conceptualized as optimal IT user experience (Deng, Turner, Gehling, & Prince, 2010). Researchers suggest that if users get cognitively immersed in the technology, then this absorption will influence satisfaction and continued usage.

Both human-computer interaction and user acceptance research, in their early stages, have focused exclusively on usability and task related aspects (instrumental) of interactive technology products. Later, with expansions in usage dimensions, researchers shifted their attention and included 'beyond-instrumental' concepts in their analysis. 'Beyond-instrumental' attributes refer to qualities of an interactive product which go beyond the mere functional or instrumental value (Mahlke, 2007b). Continuing investigations in user experience have allowed researchers to unfold some specific 'beyond instrumental' attributes. For example, Alben (1996) identifies 'beauty' as an important 'beyond-instrumental concept while Gaver and Martin (2000) focus on surprise, intimacy and diversion. Rafaeli and Vilnai-Yavetz (2004) propose a model with three distinct dimensions (instrumentality, aesthetics and symbolism) for analyzing an artifact where aesthetics and symbolism both are 'beyond-instrumental' attributes. Creusen and Schoormans (2005) also find aesthetics and symbolism as important beyond-instrumental qualities. They view aesthetics as the pleasure generated from seeing the product. In contrast, symbolism refers to how the appearance of a product conveys messages. As Mahlke (2007a) explains, a product can be perceived as boring, interesting, expensive, fun or cool. In addition to these two widely researched dimensions (i.e. aesthetics and symbolism), Mahlke (2007b) mentions about a third dimension i.e. motivational quality and defines it as the ability of a product to motivate users. Even after some notable contributions in analyzing 'beyond-instrumental' attributes, there is a tendency to deemphasize the role of these attributes (Diefenbach & Hassenzahl, 2008) and therefore, more research is required to fill that gap in the context of new generation smartphones.

Recognizing that gap, Hassenzahl (2001) proposes a user experience model which suggests that distinctive product attributes form the character of an interactive product. He indentifies two types of product attributes – pragmatic and hedonic. A product is perceived as pragmatic (or to possess pragmatic attributes) if it helps users to achieve their goals efficiently and effectively (Hassenzahl, 2004). Hence, pragmatic attributes, similar to instrumental qualities, are associated with the utility and usability of a product. In contrast, hedonic attributes are associated with the 'self', rather than goals (Hassenzahl, 2004). Hedonic attributes of a product

"comprises the fulfilment of the need for novelty and change and the need to communicate and express oneself through objects" (Harbich & Auer, 2005, p. 1129). These attributes can also be viewed as quality aspects "addressing human needs for novelty or change and social power (status)" (Hassenzahl, 2001, p. 483). This paper sets out to investigate what attributes of smartphones shape user attitude and acceptance and utilizes concepts of pragmatic and hedonic attributes.

4.3 Constructing the Propositions

This section develops the propositions utilizing concepts from TAM (F. D. Davis, 1989) and user experience model (Hassenzahl, 2003).

Pragmatic Attributes – Manipulation

Completing a given task through a new technology depends on how users perceive the usefulness (Perceived Usefulness – PU) of the product as well as on how users perceive the amount of effort they need to put in to accomplish the task (Perceived Ease of Use – PEOU). Most research analyzing these two concepts either concentrate on use of technology in a mandatory organizational setting (Adams et al., 1992; F. D. Davis, 1986, 1989; Hu, Chau, Liu Sheng, & Tam, 1999; Igbaria et al., 1995; Venkatesh & Davis, 2000) or see the usage as a result of individual preferences (Agarwal & Prasad, 1997, 1999; Al-Gahtani & King, 1999; Gefen & Straub, 1997; Kulviwat et al., 2007; C.-H. Lin et al., 2007; Malhotra & Galletta, 1999; Pavlou, 2003; Venkatesh, 2000; Yi & Hwang, 2003). Some studies also analyze different aspects of a particular task (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Nasco et al., 2008). On the other hand, less emphasis has been given to product's ability to influence PU and PEOU.

Pragmatic attributes are task-related and they help users to achieve instrumental goals. The function of pragmatic attributes is manipulation of environment (Hassenzahl, 2003). To manipulate the environment, a technology product must provide utility and ways to access that

utility. In the context of product acceptance, TAM suggests that users develop a perception about the usefulness and ease of use of the product before they ultimately decide to accept and use it. Connecting these two ideas, the following relationship can be proposed –

Utility and usability of a product ⟶ Manipulation of environment ⟶ PU and PEOU

Based on this relationship, following propositions are constructed for new generation smartphones –

P1**:** *Pragmatic attributes have positive relationship with perceived usefulness and perceived ease of use.*

P1a: *Manipulation has a positive relationship with perceived usefulness.*

P1b: *Manipulation has a positive relationship with perceived ease of use.*

Hedonic Attributes – Stimulation, Identification and Evocation

Hedonic attributes refer to product features which have no obvious – or at least second order – relation to task-related goals (Hassenzahl, 2001). These attributes do not show a correlation with the perceived effort to complete a task (Schrepp, Held, & Laugwitz, 2006). Hedonic attributes of a product can be associated with the extent of enjoyment or pleasure that product can offer (Hassenzahl, Platz, Burmester, & Lehner, 2000). Hassenzahl (2003) suggests three functions of the hedonic attributes– stimulation, identification and evocation.

Stimulation refers to the ability of an interactive product to provide "new impressions, opportunities, and insights" (Hassenzahl, 2003, p. 5). An interactive product can also possess stimulating hedonic attributes if it provides exciting functionalities, creative presentation techniques (Schrepp et al., 2006), and novel interaction style. *Identification* refers to the ability of an interactive product to support the user's needs to be seen as important by significant others in society and to make a favourable statement (Hassenzahl, 2003, 2004). Identification function also refers to the product's ability to convey an image of the user in social communication mirroring her personality (Evrard & Aurier, 1996). This mirrored personality or positive image

can be achieved by doing something with the interactive device that other people are unable to do or afford but strongly desire (Hassenzahl, et al., 2001). Beauty of the interactive device has also been suggested as an important factor in relation to identification (Hassenzahl, 2004). *Evocation* refers to the ability of a product to stir up memories (Hassenzahl, 2003). A product can be representative of past events, relationships and thoughts (Prentice, 1987). In this respect, evocation is similar to the symbolism aspect of non-instrumental qualities of a product. A product possessing evocation function can stir up the memories through attachment of meanings and association with symbols. For example, good memories with a brand can be evocative and help users accept a future product.

Hedonic Attributes and Attitude

Attitude portrays user's desire level to use a particular system (Malhotra & Galletta, 1999; Mathieson, 1991). Some studies show that users can accept a product not only for task related purposes but also for enjoyment, peer group evaluation (Dickinger, Arami, & Meyer, 2008), social influence and personal goals (Agarwal & Prasad, 1997, 1999; Al-Gahtani & King, 1999; Malhotra & Galletta, 1999). In this context, it can be argued that if new generation smartphones offer adequate hedonic attributes, then users will desire the product more. Hence, I conjecture that there is a relationship among the functions of hedonic attributes of a smartphone and attitude towards the product. The propositions are as follows –

P2: *Hedonic attributes have a positive relationship with user's attitude toward the product.*

P2a*: Stimulation has a positive relationship with user's attitude.*

P2b: *Identification has a positive relationship with user's attitude.*

P2c: *Evocation has a positive relationship with user's attitude.*

Hedonic Attributes and Actual Use

Functions of hedonic attributes (stimulation, identification and evocation) help develop an apparent product character by influencing user perceptions about product features. Apparent product character then moves through different situations with the user and affect behavioural consequences (Hassenzahl, 2003) such as acceptance or avoidance. Hence, it can be argued that functions of hedonic attributes affect actual usage by users. In this respect, following propositions are developed –

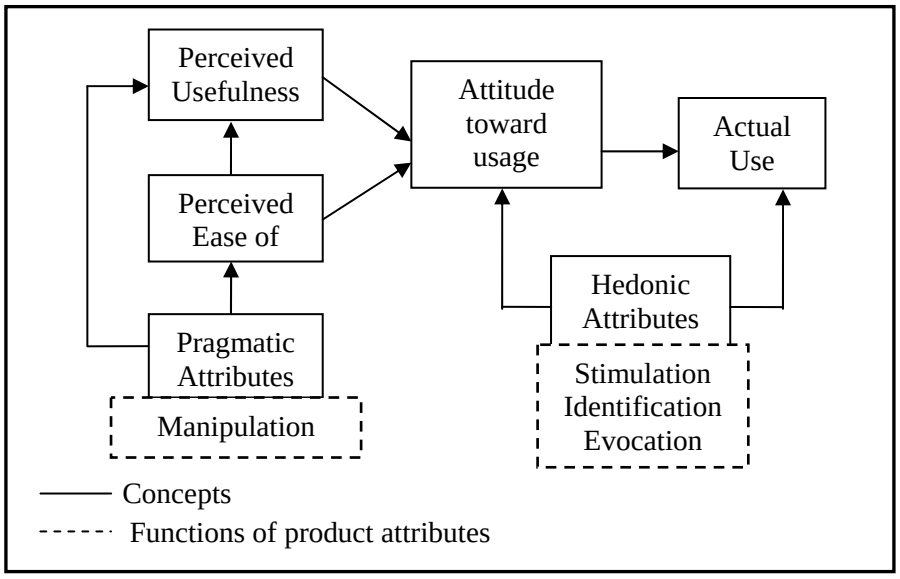
P3: *Hedonic attributes of smartphones have a positive relationship with actual use.*
P3a: *Stimulation has a positive relationship*[3] *with actual use.*
P3b: *Identification has a positive relationship with actual use.*
P3c: *Evocation has a positive relationship with actual use.*

In summary, the basic position of this study is that the pragmatic and hedonic attributes of a technology will have influence on user perceptions and attitude and therefore, will have a relation with actual use. The theoretical framework that will guide the analysis is presented in figure 4.1 –

(This space has been kept blank intentionally)

[3] In the context of this study, positive relationship with actual use means the user has accepted the product i.e. has not returned the product after the trial period. The term 'positive' does not bear any particular direction.

Figure 4.1: Research Framework



4.4 Research Methods

This research utilizes the self-reports posted on a website (www.cnet.com) by smartphone users. The data are publicly available and consist of self-reports on three smartphones running on three separate operating systems – iOS (iPhone – 361 self-reports), BlackBerry OS (BlackBerry – 326 self-reports) and Android (Samsung Galaxy – 132 self-reports). The website does not share any personal information about posters other than the date they joined the forum. Hence, demographic information is not available. As for the geographic location, people post on these forums from all over the world. But, most of the reports are from people living in developed countries (from North America, Europe and few East Asian countries). This geographic distribution of reports was expected since smartphones have not been widely diffused in developing countries yet.

The self-reports are in textual form. There are three reasons for choosing this form and type of data – (1) My intention is to analyze individual experiences with a smartphone and self-reports provide a repertoire of data which can be investigated without being obtrusive. This

notion of unobtrusiveness is important since people can better articulate their interactions with a product when they spontaneously talk or write about it. (2) Unlike an experiment where the participants are given a product for a very short period of time, these reports are based on real situations where users actually have used the product for a relatively longer period and can better convey their acceptance / non-acceptance decisions. (3) Internet buzz is becoming important in diffusion of technology products (Chung, 2011) and analyzing data on new generation smartphone can reveal important user experience issues. No self-report posted before the release date of a device is included in the data set.

Data Analysis

Since the data are textual and qualitative, there is a need to uncover the meanings from the common-sense language of the self-report accounts. This process is important to analyze the accounts through the lens of the chosen theoretical framework. Qualitative content analysis is used for this purpose. Qualitative content analysis refers to a semantic analysis to reveal important concepts from texts (Indulska et al., 2012). Research studies using this technique obtain categories from the texts in an interpretive manner (Mingers, 2003). It is a "research technique for making replicable and valid inferences from texts to the contexts of their use" (Krippendorff, 2004, p. 18). In addition, qualitative content analysis allows the researcher to understand the mental maps of other people within a given situation (Duriau, Reger, & Pfarrer, 2007) which suits the purpose of this investigation. This technique is also able to handle large volume of unstructured textual data and therefore, is an appropriate choice for the type of data used in this study.

After creating three separate projects for each device in HyperRESEARCH software, the data were analyzed following the steps discussed below –

i) Establish primary codes based on the texts to represent the concepts identified in the theoretical framework

If the concepts can be visualized as super nodes, the primary codes can be thought of as sub-nodes for the purpose of analysis. These primary codes are generated from the reports by searching for recurring themes that can be classified under each concept. Concepts identified in the relevant literature were used as lenses for this search.

ii) Examine each case separately to identify meaning units or comments that can be coded under each concept using the primary codes

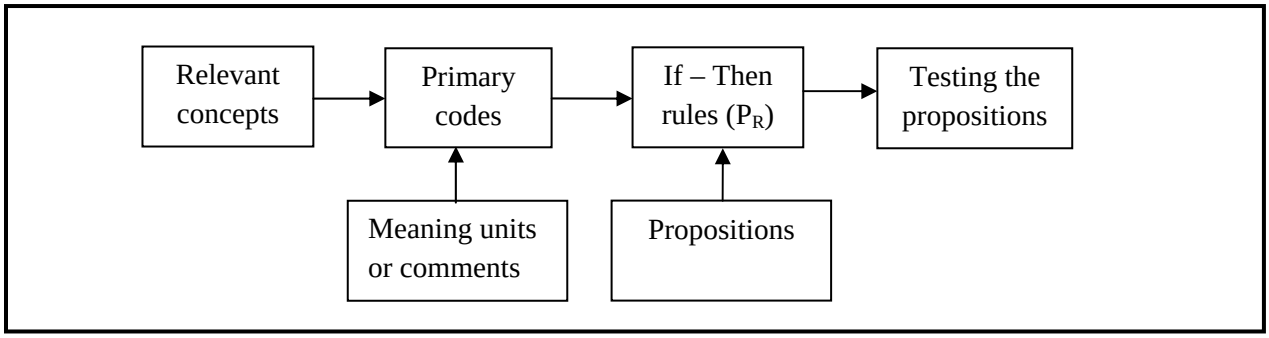
Each self – report is considered as a separate case or unit of study. This process is in line with content analysis where the decision regarding the 'unit of analysis' is important to extract useful information from the text (Krippendorff, 2004; Neuendorf, 2002). This step allows the software to look for the proposition rules (thematic patterns) in each self-report separately.

iii) Establish software-compatible 'if-then' statements using the concepts and primary codes to form the rules (P_R) for thematic pattern matching

Each rule starts with the concepts and ends with the outcome of the proposition which the software processes as a goal. In the final step, the software runs the 'rules' on each case and provides with a result containing how many cases within the project support a proposition. As for the reason behind providing a number for supporting propositions in a qualitative research, I will argue that it is not enough to identify the themes from the texts and provide one or two selected textual quotes to show the relevance or importance of the identified themes. It is necessary to know how many of the users actually talked about the issue to assess whether the theme is actually worthy of being a broader category.

Figure 4.2 below summarizes the data analysis procedure –

Figure 4.2: Data Analysis Procedure



To clarify the procedure further, a sample analysis is provided in appendix 4-A.

4.5 Testing the Propositions

This section presents the findings from proposition testing along with relevant evidences. Following Sarker and Lee (2003), I test the propositions using pattern matching procedure which is a widely used technique in social science (Castells et al., 2007). For this purpose, the propositions are rearranged in the following format –

If the [condition] occurs then the [outcome] is expected to co-occur

The objective is to investigate whether attributes of a new generation smartphone are associated with acceptance. Through qualitative content analysis, I examine co-occurrences of relevant concepts in textual reports. Duriau, Reger & Pfarrer (2007, p.6) point out that "content analysis assumes that groups of words reveal underlying themes, and that for instance, co-occurrences of keywords can be interpreted as reflecting association between underlying concepts". Co-occurrence of condition and outcome in more than 50% of the self-reports for any specific device has been chosen as an acceptable level of support. Choosing 50% as a threshold is a conscious decision to provide a particular level of confidence with the interpretation of findings. It acts as a strainer to divide the widely supported propositions from the ones which are

poorly supported in the data. However, it is important to note that negative cases or the contradictions (revealed by the poorly supported propositions) can also point to interesting phenomena and can be treated with importance in qualitative research.

Manipulation and PU & PEOU

$P1a_R$: If manipulation occurs, then perceived usefulness is expected to co-occur

$P1b_R$: If manipulation occurs, then perceived ease of use is expected to co-occur

Manipulation in the context of user experience refers to the act of using product's functionalities to have an impact on user's environment. Careful analysis of data reveals that the users consistently write about the usage of applications and internet accessibility on smartphones along with the convergence of previously separate technologies on a single device. These comments are often mentioned as premises for a conclusion regarding how these devices have changed the users' management of everyday interactions in public (work) and private spheres (family, friends, social networks etc.). So, these three themes (use of applications, technology integration and internet browsing for information) which can be logically connected to the concept of manipulation of environment in the context of smartphone use are selected as primary codes. Table 4.1 gives a snapshot of the meaning units or comments coded under each primary code –

Table 4.1: *Manipulation of Environment – Primary Codes and Meaning Units*

Primary codes	**Meaning units or comments**		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Use of applications	"App Store is amazing and lots of free apps. Additional apps make it a real Swiss-army knife – incredible how many out, how often refined/improved"	"It is a lot more useful than it used to be. The applications that you can use are on it, the diversity, it works great"	"Enjoying the flexibility of App Store choices and configurability of UI. The new built in media apps are great"

Primary codes	Meaning units or comments		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Technology integration & multitasking	The iPhone overall is a revolution in device convergence and network lifestyle. I no longer need separate phone, ipod, and PDA. Additionally, I no longer need a GPS or laptop most of the time"	"Excellent integration with Facebook, IMAP and POP mail. The streaming TV and radio is flawless and the call quality is plain crisp. For me, best phone ever"	"This phone connects right up with the Bluetooth in my girlfriend's car and it works great with the Bluetooth on our computer as well. The thinness is so easy to hold; it's like having a computer with you"
Internet browsing for information	"Internet surfing is amazing. You can navigate from your car. Imagine having a Wi-Fi connection with you all the time and that is what 3G can give you, once you have it, you cannot give it up"	"I have all my e-mails and messages going to my phone and it keeps me connected on the go. With the apps provided on the Blackberry app world and around the internet this phone can just about do anything"	"Compared to my previous sluggish phone, the SII seems like a laptop unto itself. I use the Wifi hotspot on the tram in Geneva on the way to work all the time"

P1a and P1b conjecture that if the concept of manipulation is grounded in a particular report, then there will be explicit comments about the usefulness and the ease of use of the product. For analyzing the perception of usefulness, I look for explicit comments explaining the usefulness of the device and then code them under the concept of perceived usefulness. For example, in the comment below, the user highlights how the phone meets her/his requirements while alluding to the price of the device (comments pertaining to perceived usefulness are very similar for all three devices) –

— "That really is a rip off, but not enough for me to give up on the fact that the phone met all of my basic needs when none of the others out there did. It really is about what your individual needs are. This phone met mine."

In case of ease of use, a similar procedure was followed. Explicit comments about the perception of user friendliness of the smartphone as a standalone device as well as compared to

other competing devices are coded under PEOU. Examples of such comments are provided below –

— "Amazing ease of use"

— "This is by far the most user friendly interface and web browser I have ever seen. It's easy to scroll, move icons, and navigate in general"

After analyzing all the reports and coding for manipulation, PU, and PEOU, the goal is to test the co-occurrence of these concepts which can be done with the help of the software. For iPhone, 256 reports out of total 361 (about 71%) show co-occurrence of manipulation and PU. The co-occurrence is about 70% (228 report out of 326) for the BlackBerry device and about 50% (67 reports out of 132) for the Android device.

In case of manipulation and PEOU, the co-occurrence rate for iPhone is about 48% (176 reports out of 361), about 42% (136 reports out of 326) for BlackBerry, and about 39% (51 reports out of 132) for the Android device. These results show that P1a survives the empirical testing, but P1b does not.

Stimulation and Attitude

$P2a_R$: If stimulation is present, then the attitude is expected to be positive.

In user experience context, stimulation refers to the ability of a product to fulfil users' needs of personal development and novelty (Hassenzahl, 2003). Analysis of the reports reveals the importance users place on novelty. Novelty takes many forms in the reports – new ways of interacting with the device, new styles of content presentation, new look and design, new abilities given by wide range of applications etc. A significant number of reports contain explicit comments about how users believe that these novel features actually help them grow in their professional lives and sometimes in personal lives as well. I also find special place for the concept of 'enjoyment' in the reports. Users consider the ability of a smartphone to provide

enjoyment and fun as a novel attribute. They frequently compare different smartphones for the level of available 'fun'. In many reports users compare the level of fun provided by a smartphone with their personal requirements and make decisions about ultimate acceptance or return. After matching these themes with the definition of stimulation, some primary codes were selected. Below are some comments that were coded under the concept of stimulation –

Table 4.2: *Stimulation – Primary Codes and Meaning Units*

Primary codes	**Meaning units or comments**		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Novelty	"There has never been a product like the iPhone that does so much in such a small and elegant package"	"It is a lot more useful than it used to be. The applications that you can use on it, the diversity, it works great. It's so much more than I thought possible"	"I was completely blown away by this phone. Not since the iPhone 1 came out, did I feel this way towards a phone. It's just amazing in every sense. So user friendly, so fast, so vibrant. Slim- tiny bundle of huge surprises"
Enjoyable device	"Personality and fun into the palm of your hand. The fun factor on this phone is a 10/10"	"It is a lot of fun to use. It is a pleasure being able to type with bigger keys and having a screen that is a pleasure to look at"	"It is more current and built for the fun and busy adult. I've had a blast playing with this phone for the past week. Screen is a treat to watch"
Personal development	"I NEVER used to text, or send E-mail, from any of my old phones, which had physical keypads, because it took forever to type anything using them. With the iPhone, I type MUCH faster, and do a much better job at it"	"For the first time I love to text and do it often now, much to the surprise of all my friends"	"First smartphone, so I'm on a learning curve...my kids have had them for 5+ years. Now, I even use it for price checking through bar code reader!!!"

In P2a, I conjecture that if a report contains positive and explicit comments about stimulation, then that user will hold a positive attitude about the phone. Each report has a rating ranging from 1 to 5, 1 being the worst and 5 being the best. I use this rating as a proxy for attitude and divide the range into two separate categories – positive and negative attitude and use rating 3.0 as a cut-off point. Reports rating a device with a score of 3.0 or more have been categorized under 'positive attitude' while reports with ratings of less than 3.0 have been put in the 'negative attitude' category.

Running the proposition rules in the software derives the following results. For iPhone, about 78% of reports (281 reports out of 361) show co-occurrence of stimulation and positive attitude. In case of BlackBerry, the co-occurrence rate is about 79% (257 reports out of 326) while for the Android device, the rate is about 61% (80 reports out of 132). Hence, P2a passes the threshold for acceptable empirical support.

Identification and Attitude

$P2b_R$: If identification is present, then the attitude is expected to be positive.

People living in a society hold multiple identities and a person may identify with the values of different groups and decide to embrace the affiliations (A. Sen, 2006). These decisions are made based on the priorities a person attaches to each identity. Many aspects of our social life possess the potentials to give rise to identities which are not limited to only broad political, religious or cultural grounds. They can also extend to the level of everyday living. People can identify themselves with organizations, professional groups, communities etc. This situation reveals how encompassing the fact of identification can be in social settings. The identification with a particular product / product groups is not different. Identification, from the user experience perspective, refers to the ability of an interactive product which supports the user's need of expressing herself through a product (Karapanos, Hassenzahl, & Martens, 2008; S. Lee, Ha, & Widdows, 2011) or the need of being recognized in the eyes of the other significant

members in relevant social settings (Hassenzahl, 2003; Hassenzahl, Diefenbach, & Göritz, 2010) Identification with a product may also help to build a favourable image to a group of preference by mirroring one's personality (Evrard & Aurier, 1996).

From user experience literature, I find three factors relevant with the identification ability of a product. These factors provide a lens to examine the reports. The analysis finds a good deal of comments emphasizing on the ability of the smartphones to become a truly personalized communication and media device through diverse customization options. Comments regarding popularity and style of the device which help the owners to convey a favourable impression also illuminate understanding about identification. I also find explicit comments on beauty of the design and the interaction style which help users to associate with their device. Followings are examples of some comments that were coded for 'identification ability' –

Table 4.3: *Identification – Primary Codes and Meaning Units*

Primary codes	**Meaning units or comments**		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Personalized device	"It has a lot of great programs that can entertain you while you are waiting for your emails to come through so many customizations. It is a lifestyle device"	"If you play with the settings to get it to mesh with your style you will absolutely love it. Fairly easy to customize"	"I love Android phones, I can customize it the way I want and I got more option than I know what to do with it. Enjoying the flexibility of App Store choices and configurability of UI.I have homemade ringtones"
Popular /image	"Attracts a lot of attention; Took a friend to an appointment and had it out in the waiting room, and everyone was like "oooooo, ahhhhhhh!" very satisfying."	"People envy you for having it. The "cool" factor and it is stylish too"	"The tilt to zoom option is a cool trick to show off. The touch is amazingly cool and you could just glide through the screens and pages. Mind blowing awesomeness."

Primary codes	Meaning units or comments		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Beauty	"The design and form factor is sleek. It's a very good looking phone with great applications"	"The phone is sophisticated and sleek looking. The shiny display caught my attention and motivated my purchase. Beautiful bright screen"	"The phone is just beautiful the 4.5 screen is just so bright"

As per P2b, I want to check if a pattern of co-occurrence of identification and positive attitude is present in the data and if that pattern can survive threshold of empirical evidence. For iPhone, 78% of reports (281 reports out of 361) show co-occurrence of identification related codes and positive attitude rankings. For BlackBerry, the rate is about 51% (166 reports out of 326) while for the Android device, it is about 55% (72 reports out of 132).

Evocation and Attitude

$P2c_R$: If evocation is present, then the attitude is expected to be positive

The idea of evocation is related to everyday lives. Every one of us can associate some good or bad memories with places, products, food, music, odours etc. From user experience perspective, evocation refers to the ability of an interactive product to stir up good memories of the users (Hassenzahl, 2003). Analysis of relevant literature reveals two important factors that I look for in the reports to use as primary codes for evocation – brand loyalty and addictive ability. It can be argued that if a product is associated with a brand name that consumers value from past experiences, then it is possible for the product to stir up good memories. For example, if a person has been a fan of Apple products in the past, it is possible that the Apple brand name connected with iPhone will hold an evocative ability by reminding past experiences with the brand. In case of being an addictive device, if a smartphone has this ability then it can arouse favourable interaction memories from the trial and pre-acceptance periods and thus influence the decision

making process about ultimate acceptance. Below are some examples of comments coded under evocation –

Table 4.4: *Evocation – Primary Codes and Meaning Units*

Primary codes	**Meaning units or comments**		
	iOS (iPhone)	**BlackBerry OS (BlackBerry)**	**Android (Samsung Galaxy)**
Brand loyalty	"I did say I was an Apple fan boy and there are lots to love about the phone"	"This is my 3rd Blackberry and I am a dedicated user! This is something that I could enjoy and use for work as work requires Blackberry use! It was a win-win situation for this Blackberry Girl!"	----
Addictive device	"Can't live without it. Too addictive!"	"Over three months with the phone and I have to say it has really grown on me. Having never owned a smart phone before I can't image now how I ever got by without one. It is always near me and I use it constantly"	"I can't be without it must be with me at all times otherwise I'll feel down"

P2c conjectures that if a report contains explicit comments about evocation, then the user is expected to have a positive attitude about the device. The result for co-occurrence check demonstrates that for iPhone, 24% reports (86 reports out of 361) show a co-occurrence of evocation related codes and positive attitude. For BlackBerry device, the rate is similar, i.e. 25% (83 reports out of 326). However, for the Android device, the co-occurrence rate is only 1.5% (2 reports out of 132). Overall, P2c does not survive the acceptable level of empirical support in the data.

Stimulation and Actual Use

$P3a_R$: If stimulation is present, then actual use is expected to be positive.

Along with the aforementioned propositions regarding the association of hedonic attributes and attitudes, this study intends to see whether there is a relationship among these attributes and ultimate acceptance by the users after trial period. P3a conjectures that if users explicitly comment on stimulation related concepts, then they ultimately accept the phone. After analyzing each report separately, I code them as either positive or negative in terms of actual use based on overall idea of the comments. As primary codes I use explicit comments about keeping or returning the phone which are abundant in the reports.

The pattern matching test shows 72% co-occurrence rate (259 reports out of 361) between stimulation related codes and actual use of iPhone. While, For BlackBerry, the rate is about 83% (270 reports out of 326) and for Android it is about 60% (79 reports out of 132). Hence, P3a has sufficient empirical support in the data.

Identification and Actual Use

$P3b_R$: If identification is present, then actual use is expected to be positive.

P3b conjectures that if a report has comments about the identification related codes, then the user is expected to actually use the phone. After testing for pattern matching, the findings are as follows – iPhone has 75% (270 reports out of 361) co-occurrence of identification related codes and actual use. The rate for BlackBerry device is about 56% (182 reports out of 326) while it is 55% (72 reports out of 132) for the Android device. Hence, P3b survives the test for acceptable level of empirical support.

Evocation and Actual Use

$P3c_R$: If evocation is present, then actual use is expected to be positive.

This proposition intends to understand whether the evocative ability of the selected devices is able to influence actual usage. Each report was coded according to the primary codes established for evocation. Actual usage was also identified from explicit comments about accepting or returning the phone. The pattern matching test provides 23% co-occurrence rate (83 reports out of 361) between evocation related codes and actual use of iPhone. While, For BlackBerry, the rate is about 26% (84 reports out of 326) and for Android it is about 1.5% (2 reports out of 132). Hence, P3a does not have sufficient empirical support in the data.

Table 4.5 below summarizes the findings –

Table 4.5: *Summary of Findings*

Proposition	**Co-occurrence rate of concepts**			**Support in the data**
	iPhone	**BlackBerry**	**Android**	
P1a: Manipulation has a positive relationship with perceived usefulness	71%	70%	50%	Supported
P1b: Manipulation has a positive relationship with perceived ease of use	48%	42%	39%	Not supported
P2a: Stimulation has a positive relationship with users' attitude toward usage	78%	79%	61%	Supported
P2b: Identification has a positive relationship with users' attitude toward usage	78%	51%	55%	Supported
P2c: Evocation has a positive relationship with users' attitude toward usage	24%	25%	1.5%	Not supported
P3a: Stimulation has a positive relationship with actual usage	72%	83%	60%	Supported
P3b: Identification has a positive relationship with actual usage	75%	56%	55%	Supported
P3c: Evocation has a positive relationship with actual usage	23%	26%	1.5%	Not supported

4.6 Discussion & Conclusion

The findings show that both pragmatic and hedonic attributes play important roles in acceptance of new generation smartphones. However, all functions of these attributes do not demonstrate expected level of support with traditional technology acceptance concepts. Users perceive their smartphones as useful if these devices provide capabilities to manipulate the environment (Hazra, 2009). But, quite unexpectedly, PEOU does not show an acceptable level of co-occurrence with manipulation function for any of the three devices. iOS users show highest level of perception for ease of use while Android users show the least. It could mean that the users reporting for Android are more tech savvy and do not have similar perception about ease of use. Some studies (Al-Gahtani & King, 1999; Bruner II & Kumar, 2005) find 'ease of use' to be related to enjoyment or fun. Overall, smartphone users are more technically advanced and hence, may have different evaluation criteria for PEOU. Further investigation is needed to illuminate the whole picture.

In case of hedonic attributes, stimulation function demonstrates high co-occurrence patterns with both positive attitude and actual use. iOS and BlackBerry devices lead in providing novel and enjoyable experiences, but the Android phone is not far behind. In case of all three devices, it becomes clear that users value stimulating experiences for ultimately accepting a product. Identification function also shows acceptable level of co-occurrence patterns with attitude and actual use. Among other identification factors, 'beauty' of the device came up frequently for all three devices as explanations for the choice of device. This results seemingly contradict with the findings reported by Diefenbach and Hassenzahl (2009). They find a 'beauty dilemma' as people value beautiful object but may not purchase because it is hard to justify beautiful object over utilitarian one. Karapanos et al. (2008), on the other hand, find beauty judgments to be influenced by stimulation. These contrasts in findings point to the need of further in-depth research to understand identification.

The level of identification with devices reveals interesting differences among these three leading smartphones. iPhone is way ahead compared to other two devices in this respect. It means that iPhone users highly value their phone as an expressive object for portraying individual identity as well as social image. Interestingly, this identification cannot be a related to brand devotion only as can be seen from the results of evocation related propositions. Evocation function expressed by brand devotion and addictive ability of these phones shows very low level of empirical support in the data. Arruda-Filho and Lennon (2011) also demonstrate similar findings when they investigated brand devotion among iPhone users after the release of latest iPhone. The higher co-occurrences of stimulation and identification with attitude and actual use along with lower rate for evocation suggest that people care more about novel, enjoyable and expressive attributes. Promoting brand name is important to ensure the continuous presence in the current and future users' radar, but it may not be enough to hold on to a leading position in the market.

This paper makes three important contributions – first, it exhibits the importance of stimulating novel experiences and expressive identification related attributes that are highly valued by smartphone users even in the absence of explicit brand devotion. Second, it reinforces the significance of the pragmatic attributes in acceptance decisions while pointing out the need for new conceptualization for PEOU in the context of new generation smartphones. Third, the research demonstrates a systematic approach for investigating user experience and acceptance utilizing Internet based textual data.

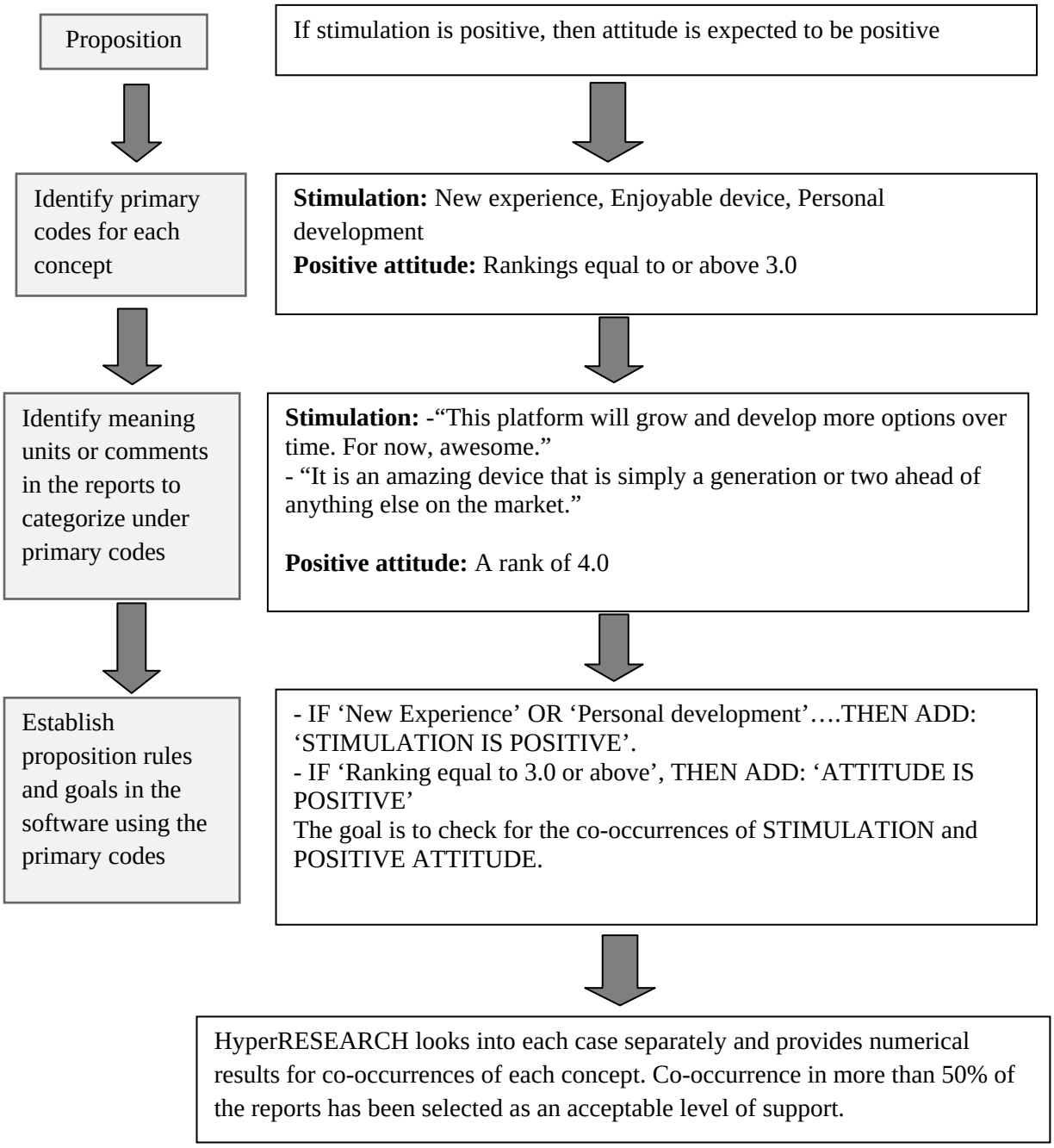
This study has two key limitations. First, reports obtained from online source have the possibility to be generated from a group of people who are proficient with these technologies and actually want to post their experiences. Thus, this choice of data leaves out people who do not post online. However, many people read these reports before making purchase decisions even though they do not post about their own experiences. This makes online self-reports very important source of information which must be utilized in IS research. Second, most of the posters in the data set are from developed countries and hence further research is needed to apply

these findings in different contexts such as in developing countries. Future research can focus on the interactions between pragmatic and hedonic attributes (if any) to better understand the blurring usage boundaries and how that interaction affect acceptance. More studies should be done to understand acceptance of smartphones in specific work and family contexts. This focused approach may uncover completely new factors that people consider in particular situations.

(This space has been kept blank intentionally)

Appendix 4-A

An Example of Data Analysis Procedure (adapted from Hazra (2009))



5.0 Study 2: An Ethnographic Decision Modeling Analysis of Smartphone Acceptance Decisions

Abstract

This study sets out to investigate acceptance and non-acceptance decisions about three different smartphones in the context of individual use. Smartphones are reshaping how we communicate and compute in this time of constant connection and hence, it is important to understand how people make decisions to accept these new generation devices. Utilizing self-reports posted online, I develop Ethnographic Decision Tree Models (EDTM) to understand the acceptance or non-acceptance decisions. Based on the results obtained from three EDTMs, an integrated theoretical model is formulated. The theoretical model can be useful for future studies to understand acceptance decisions of new generation mobile computing devices. Theoretical contributions, practical implications and future research directions are discussed.

Keywords: user acceptance, smartphones, ethnographic decision tree modeling

5.1 Introduction

Consumers are continually being empowered by technology innovations and smartphones can be viewed as expressions of enhanced consumer choice. Consumers now place more importance on overall personal experience (Prahalad & Krishnan, 2008) and thus designers face greater challenge to continually develop innovative and more customizable products. The convergence of various capabilities into a single device also presents significant challenges to designers, marketers and consumers (P.-C. Chang, 2010) by influencing the way people interact with new products. It changes individual user experiences and makes the task of predicting usage dimensions for new generation products difficult (Bruner II & Kumar, 2005). Therefore, it becomes important to investigate user acceptance of these new generation devices since they are very different from previous technologies. A careful observation of self-reports posted to online forums reveals that users are not always happy with their device. However, despite the dissatisfaction showed by many users, the sales numbers of new generation smartphones is growing at a rapid pace. According to Gartner Research Inc. (2011), worldwide smartphone sales grew by 74% in the 2nd quarter of 2011 than that of 2010. These variations point to the need to investigate how users accept new generation smartphones.

IS literature has long been trying to explain why and how people adopt technology products and the contribution of Technology Acceptance Model (TAM) proposed by F. D. Davis (1989) in that respect is great (Goodhue, 2007). The main thesis of TAM is that users' perceptions about usefulness and ease of use of a particular system influence the intention of using a technological system. Many studies have validated TAM by investigating different technologies (Adams et al., 1992; Castañeda et al., 2007; F. D. Davis, 1993; F. D. Davis et al., 1989; Gefen & Straub, 2000; Igbaria et al., 1995; Lu et al., 2003; N. Park et al., 2009). Many others have extended TAM with several important constructs (Agarwal & Prasad, 1999; Al-Gahtani & King, 1999; F. D. Davis et al., 1992; J. Kim & Forsythe, 2008; Kulviwat et al., 2007; C.-P. Lin & Bhattacherjee, 2010; Malhotra & Galletta, 1999; Song et al., 2009; Venkatesh, 2000). However, most of those studies focus on organizational setting with office productivity

tools (Al-Natour & Benbasat, 2009). New generation smartphones are different and blur spatial and temporal boundaries of work and personal spheres due to their portability and capabilities. It has been argued that people adopt this type of new and hyped technologies for not only functional or job-related reasons, but also for their hedonic capabilities (Hedman & Gimpel, 2010). But, IS literature has not been keen on using new theoretical lenses or approaches to investigate the adoption of these new generation smartphones. Most of the recent studies keep on using the basic TAM for understanding these new and different technologies, even though many researchers have pointed out the problems with becoming overly dependent on TAM (Bagozzi, 2007; Benbasat & Barki, 2007; Goodhue, 2007). Responding to that call of broadening the understanding of technology adoption, some researchers (Hedman & Gimpel, 2010; Turel, Serenko, & Bontis, 2010) utilized Theory of Consumption Values to understand adoption of hedonic digital artefacts. However, more research is needed to understand the complete picture of smartphone adoption and this paper intends to do so by conceptualizing adoption decision as a process.

Adoption decision as a process, as conceptualized in this study, means that the users or non-users of a technology system move through specific assessment points while making the ultimate decision of accepting or not accepting that system. The decision paths depend on the type of users they have been before with other similar systems and their expectation level from the new system. This study aims to explore the assessment points mentioned by users and non-users of three different smartphones run on three separate platforms – iOS, BlackBerry OS and Android. For the purpose of formulating the decision paths, this study utilizes Ethnographic Decision Tree Modeling (EDTM). Though EDTM has long been in use in medical and other social science research (Ryan & Bernard, 2006), it has rarely been utilized in Information Systems to analyze technology acceptance decisions (Hazra, 2009). EDTM allows the researcher to analyze every decision point and then develop important ones into higher level categories. The data are collected from self-reports posted to online forums. The data are in textual format where the reporters describe why they accepted or returned the device. These reasons are appropriate

for the purpose of this study which needs to illuminate the assessment points. The contents are analyzed using the HyperRESEARCH software and MS Excel.

The results show both instrumental attributes (such as availability of applications, increased functionalities) and hedonic attributes (such as identification, enjoyment, fun) as important decision points. Nomadic ability expressed through battery life stands out from all other functional abilities. Similarly, identification and personalization are revealed as important decision points for all three devices. The fundamental contribution of this study is the development of a theoretical framework from the decision points derived from the reports. Second, it demonstrates how EDTM as a research method can be used to investigate IS related problems.

The paper is organized in following sections – first, relevant literature on user acceptance is discussed. Next, data collection and data analysis procedure are explained in detail. Then, an integrated framework is proposed with theoretical elaboration. The concluding section discusses the contributions, implications, limitations and future research directions.

5.2 Relevant Literature

User acceptance of technology is considered to be a mature area of investigation in IS (Venkatesh et al., 2003). Acceptance has been measured in terms of many outcomes – intention to use, actual usage, satisfaction, task-fit etc. The contexts of these studies include individual adoption measured by intention or organizational adoption of a particular system measured by implementation success. Voluntary or mandatory usage of technologies often surfaced as sub-contexts.

IS researchers has used many theoretical frameworks to understand user acceptance. TAM (F. D. Davis, 1989) is the most widely used framework which focuses on individual acceptance. The original model proposes that users' perceptions about usefulness and ease of use

of the system moderated by the attitude impact the intention/actual use. As mentioned in the opening section, many studies have been conducted to date to validate TAM for different technological systems. However, most of those studies investigated organizational side of adoption (Al-Natour & Benbasat, 2009). Many others extended TAM to include other important variables such as perceived enjoyment (F. D. Davis et al., 1992), task-technology fit (Dishaw & Strong, 1999), gender differences (Gefen & Straub, 1997), intrinsic motivation (Venkatesh, 1999), social influence (Malhotra & Galletta, 1999), enjoyment and learning goal orientation (Yi & Hwang, 2003), technology readiness (C.-H. Lin et al., 2007), pleasure-arousal-dominance (Kulviwat et al., 2007), technology anxiety and innovativeness (J. Kim & Forsythe, 2008), trust and computer self-efficacy (Reid & Levy, 2008), network externalities (Song et al., 2009; Wang et al., 2008), social image (C.-P. Lin & Bhattacherjee, 2010) etc. In addition, Venkatesh and Davis (2000) proposed an extended model (TAM2) which included social influence and cognitive instrumental processes. Later, Venkatesh and Bala (2008) extended that model (TAM3) to understand managerial decision making about interventions that lead to acceptance.

Even though most studies investigating technology acceptance employed either TAM or some extensions of TAM, some researchers explored other routes in terms of theoretical models. Innovation diffusion theory (Rogers, 1983) has been a top choice after TAM. In addition to the basic innovation characteristics, researchers added perceived voluntariness (Agarwal & Prasad, 1997) and perceived innovativeness (Agarwal & Prasad, 1998), compared pre and post adoption beliefs and attitudes (Karahanna et al., 1999) and compared perceived characteristics of innovation with TAM (Plouffe et al., 2001). Some studies (Compeau & Higgins, 1995; Compeau et al., 1999) used social cognitive theory and incorporated self-efficacy and outcome expectations into the acceptance picture. Others used task-technology fit (Goodhue, 1998), Triandis model or extensions (M. K. Chang & Cheung, 2001; Thompson et al., 1991), institutional theory (H. H. Teo et al., 2003) and theory of consumption value (Hedman & Gimpel, 2010). To synthesize different models, Venkatesh et al. (2003) reviewed eight user acceptance models and proposed a Unified Theory of Acceptance and Use of Technology (UTAUT). Recently, Venkatesh et al. (2012) updated the original UTAUT and proposed a

second version (UTAUT2) incorporating three new constructs – hedonic motivation, price value, and habit.

Researchers also called for moving beyond outcome centric models and in that effort, Al-Natour and Benbasat (2009) proposed an 'interaction-centric model' where they argued that technologies are social actors and hence technology acceptance should be analyzed from the perspective of interactions among these systems and user beliefs held in the past which affect future decisions. To break from the tradition of cognitive psychology which is the basis for most technology acceptance models, Abraham et al. (2013) conducted a grounded theory study through the lens of evolutionary psychology using four-drive model. They argued that evolved psychological mechanisms should be included in the traditional acceptance models.

Overall, technology acceptance is a comparatively mature field in IS as made clear by the above discussion. Then again, the rapid changes in the area of personal technological devices and their capabilities call for more individual-centric research given that most of the earlier studies are set in organizational contexts with mandatory technology use. Smartphones are very different from earlier technologies in terms of their relative advantage with portability and enhanced usage dimensions. The emergence of social networking in the smartphone arena can also influence acceptance decisions. Therefore, there is a need to investigate what smartphone users can inform us about the technology acceptance in this new and changed time of communication.

Most research studies discussed earlier used a deductive approach to investigate user acceptance decisions through questionnaire survey. Abductive approach of theory building has not yet set a strong foothold in this area of IS research. The purpose of this study (to analyze decision points by individual users and non-users from their own reports) suits the abductive approach. Given the constant changes in the technology scene, it is time to reshape our theoretical understandings. This paper investigates extended use of the devices under individual usage contexts. Brief use in a store is different from ultimate acceptance of a product and hence has not been included in this analysis.

5.3 Research Methods

This section documents the data collection, preparation and analysis techniques followed in this study.

5.3.1 Data

The dataset consists of textual self-reports posted by users and non-users[4] of three smartphones – iPhone 3GS (iOS), BlackBerry Bold (BlackBerry OS), and Samsung Galaxy II (Android). The total number of self-reports in the dataset is 1118 with 457 reports on iPhone, 517 on BlackBerry, and 144 on Samsung Galaxy II. The reports were collected from www.cnet.com and no report posted before the device release dates was included in the data.

The reasons for using self-reports as data source are as follows – a) the nature of the data suits the research purpose i.e. to understand the acceptance decisions through an abductive approach, (b) people better articulate their interactions with a product when they spontaneously talk or write about it, (c) unlike an experiment where participants are given a product for a shorter time period, these reports are based on real situations where the reporters have actually used the product for a relatively longer period and thus can better express the reasons behind the acceptance / non-acceptance decisions, d) online reports are increasingly being used by other people to gather information before making purchase decisions. This action of observational learning reduce uncertainty and complexity in technology adoption (Walden & Browne, 2009). Hence, self-reports can be very useful in uncovering important information for future decision making.

The dataset contains reports from both users and non-users. When analyzing acceptance decisions, it is equally important to include late adopter/non-users even though they are usually ignored by most technology research (Verdegram & De Marez, 2011). Technology acceptance

[4] Non-users refer to people who have examined the product during the trial period, but later returned it.

has many sides and leaving a broad section (late adopters or non-users) out of the analysis will not help in understanding the whole situation. Moreover, it is important for designers and marketers to know the reasons behind non-adoption if they want to target that section of late adopters/non-adopters which is often greater than that of early adopters (Verdegram & De Marez, 2011).

5.3.2 Ethnographic Decision Tree Modeling (EDTM)

A qualitative research software (HyperRESEARCH) was used for the purpose of data analysis. Three separate studies were created for three selected devices and each self-report was considered as a separate case. I selected Ethnographic Decision Tree Modeling (EDTM) as a research method which is appropriate for the purpose of this study and the nature of data. EDTM focuses on developing and verifying a model of choice in order to make a particular decision (Beck, 2005). This method gathers the decision criteria from decision makers themselves and forms "a decision tree, table, flow chart, or set of 'if-then rules' or expert systems" (Gladwin, 1989, p. 8). Then the model is tested on a separate but similar sample from the same population and a success or error rate is obtained.

Gladwin (1989) laid out the specific steps of EDTM. I followed the steps below to analyze the data – (I) Deciding about the decision to study and decision alternatives, (II) Deciding about a sample size for a preliminary model, (III) Obtaining decision criteria from the sample, (IV) Building the preliminary ethnographic model, (V) Building a question list to test the model, (VI) Testing the model on the sample to decide about necessary modifications, and (VII) Testing the model on the full data set.

I. Deciding About the Decision to Study and Decision Alternatives

This paper aims to analyze the decision making process that a person follows while deciding about either accepting or rejecting a smartphone. Therefore, the decision alternatives are –

(Accept the device; does not accept the device)

II. Deciding About a Sample Size from the Data Set

Beck (2005) argues that while building an EDTM, it is difficult to define what an acceptable sample size is. Ryan and Bernard (2006) show a method for selecting a minimum sample size which I follow in this research. Preliminary screening of the reports reveals that people mention at least three or four reasons for accepting or not accepting a particular device. Therefore, to account for all the reasons, I want to build preliminary models (for each device) that will have at least five layers. I want to have at least one report for each decision criteria with two (yes-no) decision options. Using the formula proposed by Ryan and Bernard (2006) and considering the required five layers of decision criteria, the minimum sample size becomes –

$$\text{Minimum sample size} = \text{Minimum cases at each end point} * 2^{(\#\text{ of levels})}$$
$$= (1*2^5) = 32$$

It is important to note that perfect division is rare in case of ethnographic models and therefore, having a safety stock is necessary (Ryan & Bernard, 2006). Hence, I choose 50 reports for each device using random numbers.

III. Obtaining Decision Criteria from the Samples

First, from the 50 reports for each device, the reasons people mention for accepting or not accepting are identified. I keep a record of the sequence of those reasons for developing the

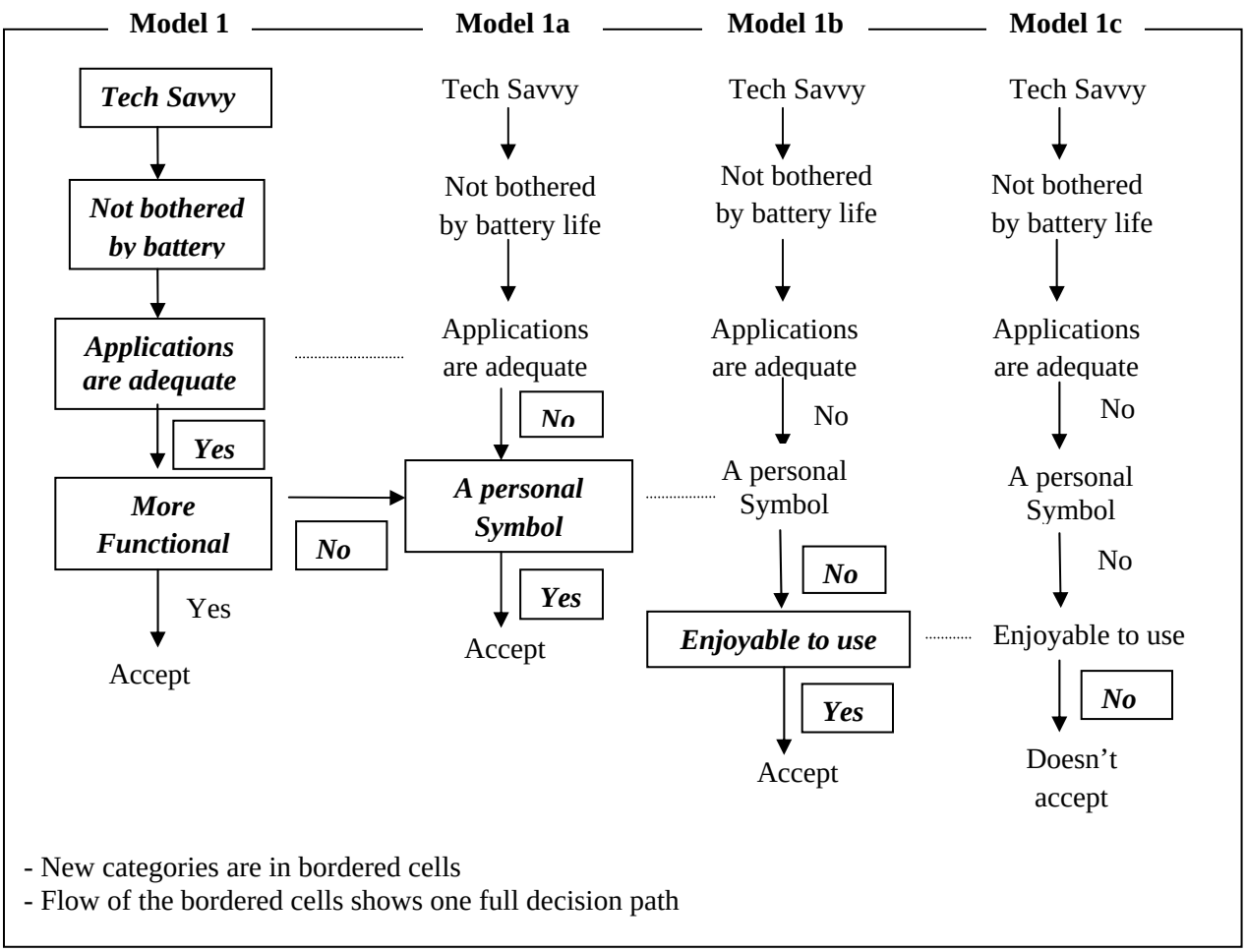
preliminary decision paths. Some of the reasons mentioned in the reports are given below in Table 5.1 (in no particular order) –

Table 5.1: *Reasons Given for Accepting or Not-Accepting a Smartphone*

Reasons for accepting			**Reasons for not-accepting**		
iPhone	**BlackBerry**	**Samsung Galaxy SII**	**iPhone**	**BlackBerry**	**Samsung Galaxy SII**
Lots of applications	Great email capabilities	Faster operation	Very poor battery life	Poor battery life	Battery not good enough
Technology integration	Good for advanced users	Good personalization	Not a good basic phone	Poor sound quality	Camera becomes shaky
Enjoyable to use	Good business device	Good battery life	Lacks essential features	Not user friendly	Gets hot quickly
I want the newest product	Enjoyable device	Durable and lightweight	Apps are controlled	Inadequate applications	Unnecessary applications
Easy to use	Durable	Nice camera	It is expensive	It is very slow	Bad GPS
Amazing touchscreen	It's an adult phone	Tap to focus option	Frequent drop calls	Hard to type on	Backside is plastic
It's cool to have one	Enhanced security	Technology integration	Limited functionality	Takes time to get used to	Has bugs
Fun	Global use	Good camera	It freezes	Expensive	
Personalization	Keyboard	Great screen	Not reliable	Drops calls	
It's beautiful	Big screen	Multitasking	Fragile	Small memory	
Intuitive interface	Good software updates	Intuitive device	No sliding keyboard	Not enough improvement	

Next, these reasons are grouped into decision criteria. For example, 'fun' and enjoyable device' are put under 'enjoyable to use' category. For model building, I use the indirect method proposed by Gladwin (1989). According to Ryan and Bernard (2006), this iterative procedure is less formal and it follows principles of analytic induction. Figure 5.1 shows how one branch of decision path for iPhone is developed through indirect method. First, one simple preliminary model (Model 1 in figure 1) is built from one report. Then new decision points are added to the model whenever the reports under investigation do not meet a criterion but propose a new one (Model 1a, 1b and 1c in figure 1). Finally, all the decision points are combined into a complete model.

Figure 5.1: Indirect Method of Model Building



From the iterative decision paths, I develop preliminary models (as depicted in figures 5.2, 5.3 and 5.4) for each device using samples of 50 reports for each one –

Figure 5.2: Preliminary EDTM (iOS – iPhone)

Decision Alternatives: Accept the Device; Doesn't Accept the Device

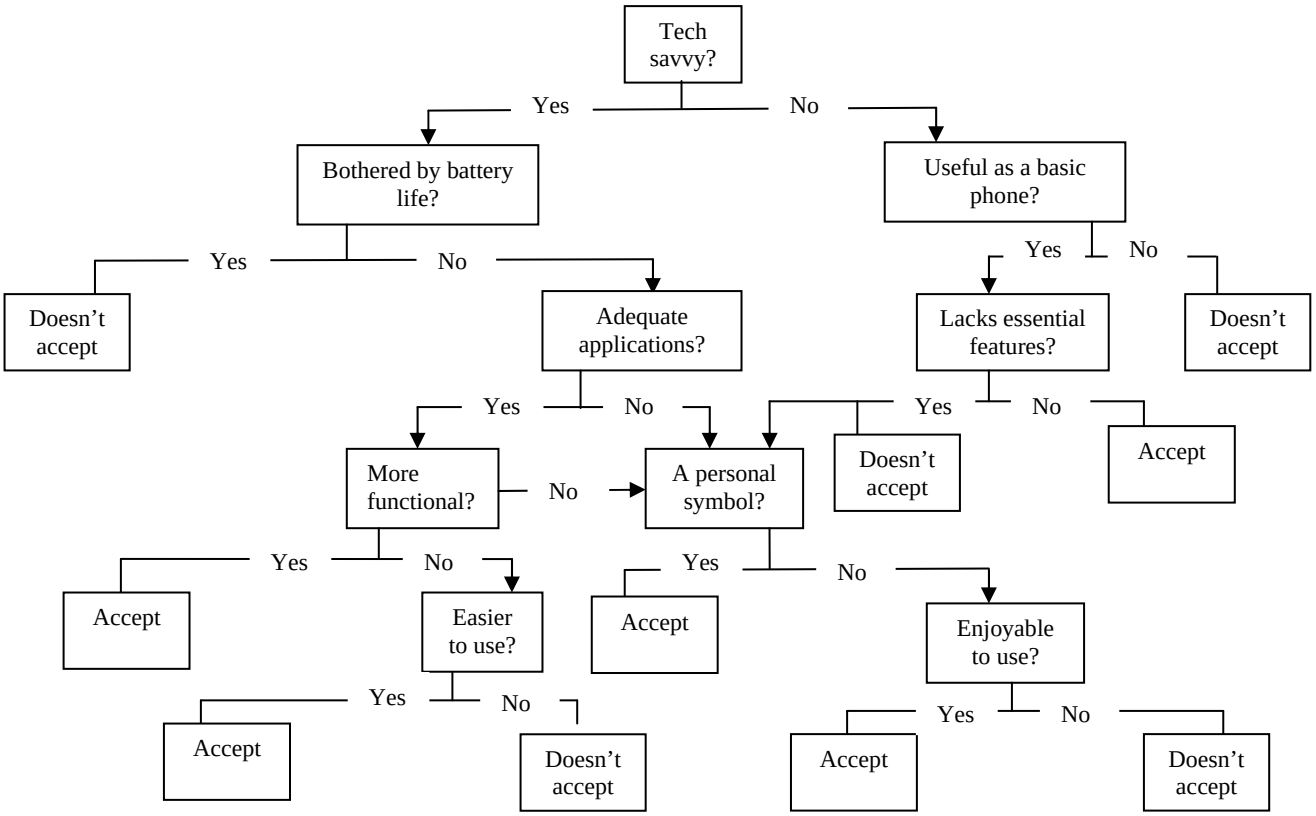
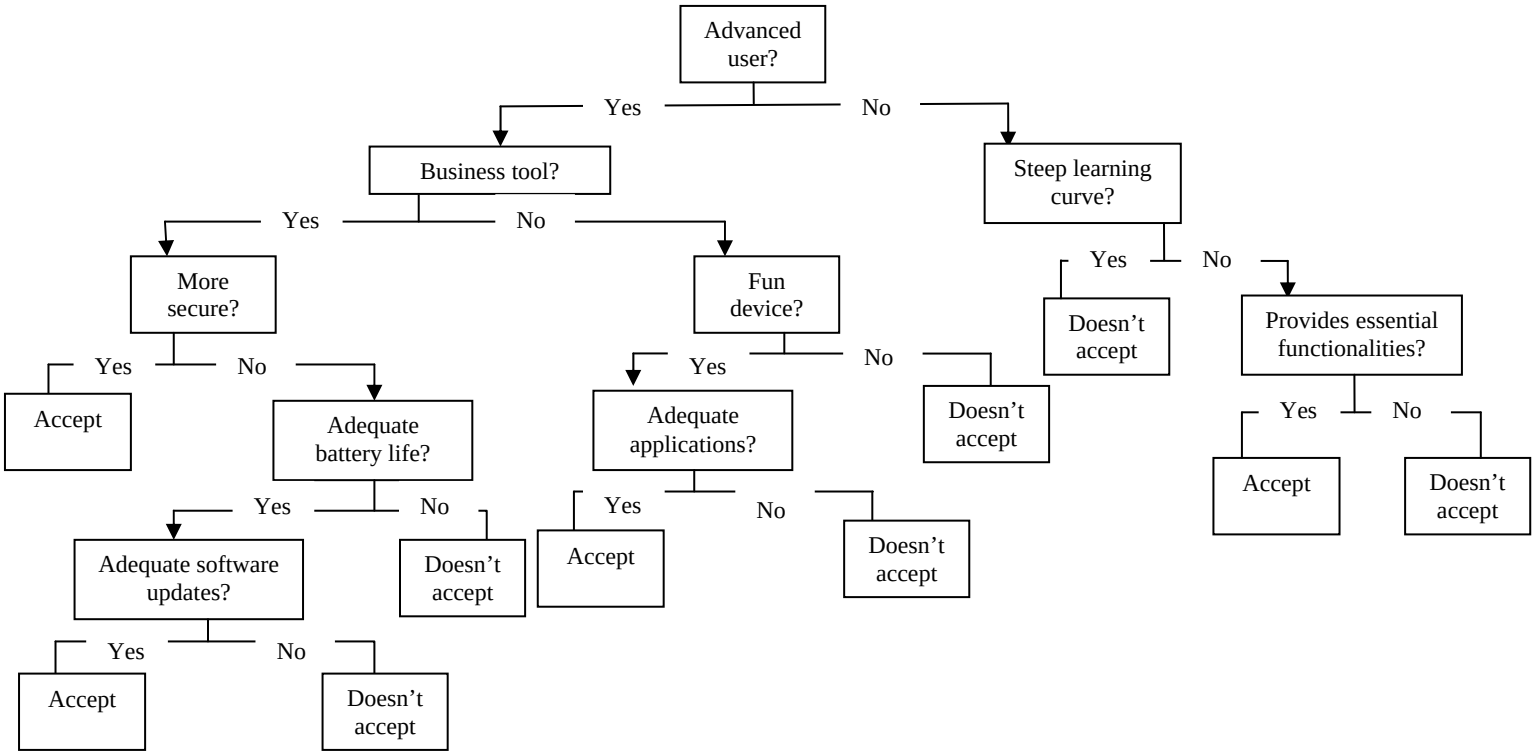


Figure 5.3: Preliminary EDTM (BlackBerry OS – BlackBerry)

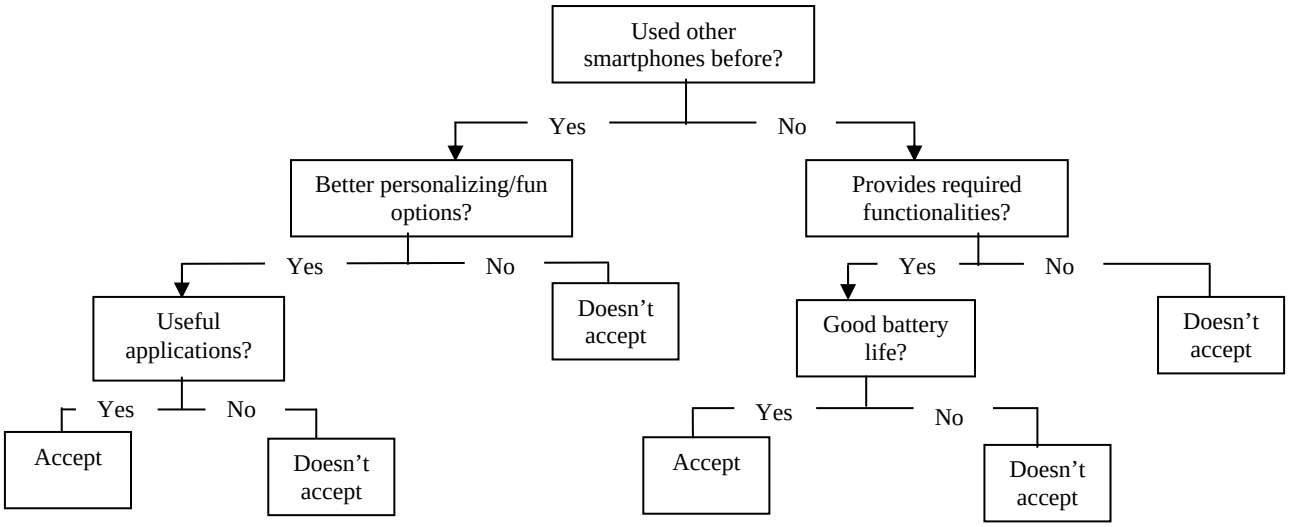
Decision Alternatives: Accept the Device; Doesn't Accept the Device



(This space has been kept blank intentionally)

Figure 5.4: Preliminary EDTM (Android – Samsung)

Decision Alternatives: Accept the Device; Doesn't Accept the Device



At this stage, all the reports are coded based on the decision criteria using HyperRESEARCH software. To ensure a reliable coding process, operational definitions are developed for each concept which are provided in appendix 5-A with examples from the comments as verbatim justifications. Operational definitions are formulated to ensure systematic categorization of the data.

V. Building Question Lists to Test the Models

As a next step, I build question lists for each of the three devices. The questions are formed based on the decision criteria. Table 5.2 contains the question list –

Table 5.2: *List of Questions for Testing EDTMs*

Factual Question		
Is the reporter actually using the product?	Yes -------	No -------
Decision Criteria (Yes -1; No- 0)		
iOS	**BlackBerry**	**Android**
1. Does the reporter mention herself as tech savvy?	1. Does the reporter mention herself as an advanced user?	1. Did the reporter use other smartphones before?
2. Is the device useful as a basic phone?	2. Does the device have a steep learning curve?	2. Does it provide essential functionalities?
3. Does the phone lack other essential features?	3. Does the device provide essential functionalities?	3. Is the battery life adequate?
4. Is she bothered by the battery life?	4. Is it a business tool?	4. Does it provide better personalizing options?
5. Does the device offer adequate applications?	5. Is it a fun device?	5. Does it offer adequate applications?
6. Is the device more functional?	6. Does it offer adequate applications?	
7. It is easier to use?	7. Is it more secure?	
8. Is it being considered as a personal symbol?	8. Is the battery life adequate?	
8. Is it enjoyable to use?	9. Are the software updates adequate?	

VI. Testing Preliminary EDTMs on the Samples (To Modify if Necessary)

The goal of testing the preliminary models on the samples is to see whether the models can reach the decisions made in the reports at an acceptable level. Gladwin (1989) suggests a success rate of 85%-90% for the final model as an acceptable level of accuracy. This test of the preliminary model is necessary to determine whether there is any need to modify the model to capture more information.

Testing the preliminary model for iPhone using the question list gives an accuracy rate of 82.14%. It means that the model can accurately reach the decisions made in 82.14% of the total 50 reports. I use an Excel worksheet to keep track of the number of reports falling under each category along with the frequency counts provided by the software. In an excel worksheet, each response under each decision criteria were tabulated as either ‘1 for Yes’ or ‘0 for No’. I record

an error at each decision point for the number of times the model fail to capture the actual decision.

Preliminary EDTMs for BlackBerry and Samsung devices are tested in the same way. They provide an accuracy rate of 88% and 80% respectively. Since the accuracy rates of the initial models are relatively high; I decide to test the models on full data set without further modifications. Appendix 5-B presents the decision tree models with the preliminary test results. In the following section, I explain the test results only for the full data sets to avoid repetition.

VII. Testing the EDTMs on Full Data Sets (Results)

As the preliminary models provide high enough accuracy rates, each EDTM model was tested with respective full data set. This section discusses the results for each model in detail –

iPhone (iOS Device)

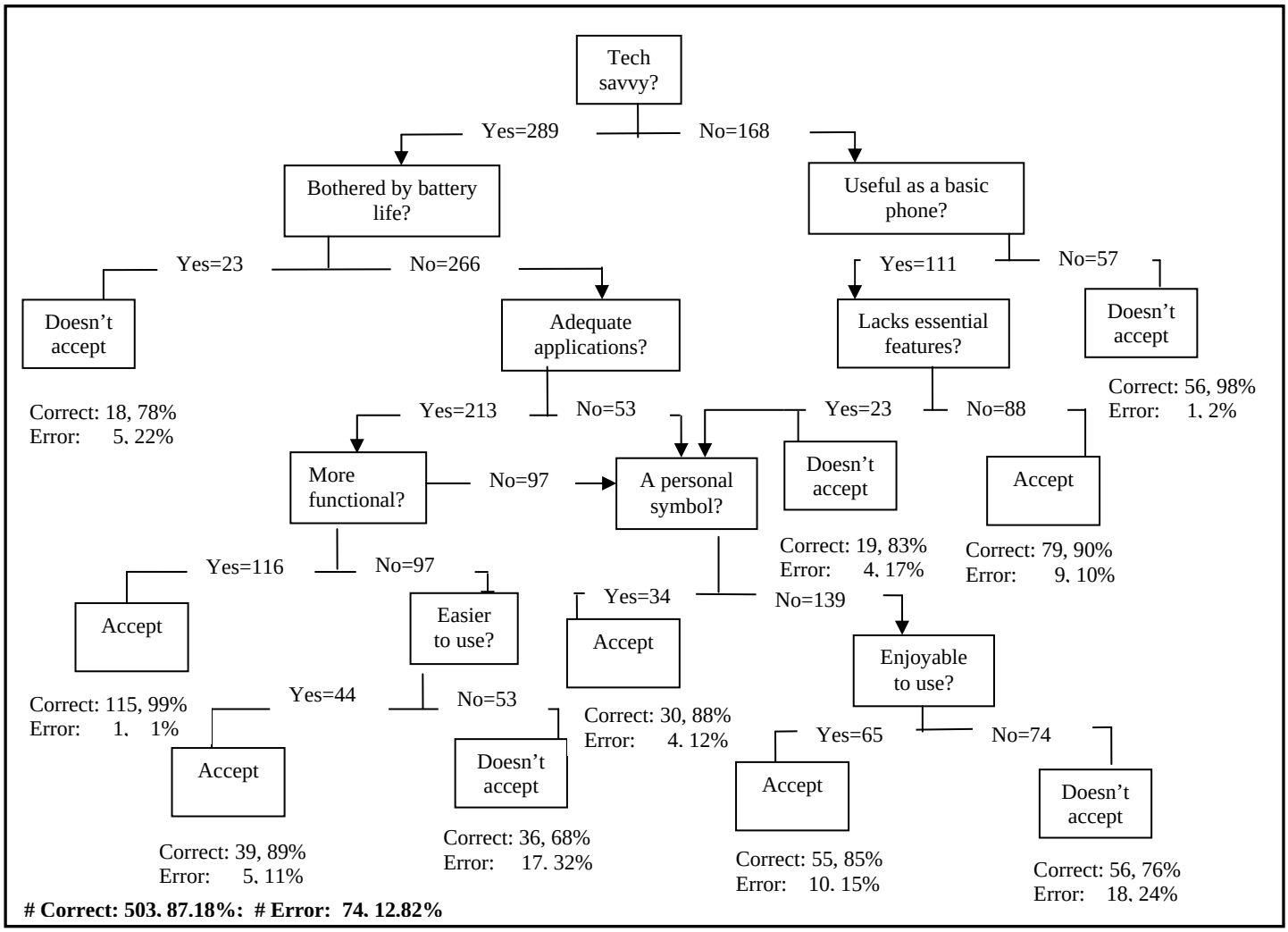
The EDTM model for iPhone was tested with the 457 reports as demonstrated in figure 5.5. For testing, I start with the 1st question from the list. Out of 457 reports, 289 are from 'tech savvy' persons while 168 are from people who label themselves as 'not tech savvy'. Assuming that everyone who is 'tech savvy' accepts the phone and that everyone 'not tech savvy' does not accept the phone produces 72 errors : 217 corrects (25% : 75% of 289 cases) on the 'Yes' branch and 83 errors : 85 corrects (49% : 51% of 168 cases) on the 'No' branch. The total number of error is 155 and the accuracy rate is 66% i.e. 302 correct out of 457 cases.

Moving to the right hand branch of the 1st criterion, presuming that a person does not accept the device if s/he is not tech savvy produces 85 correct answers out of 168. So, this criterion alone produces correct answers in 51% of the cases. After asking the 2nd and 3rd questions the rate of correct answers improves to 91.7%. The question about whether iPhone is perceived as a useful basic phone (2nd decision criterion) produces 29 errors : 82 corrects (26% :

74% of 111 cases) on the 'Yes' branch and 1 error : 56 corrects (1.8% : 98.2% of 57 cases) on the 'No' branch, for a total of 30 errors and an accuracy rate of 82% i.e. 138 correct cases out of 168.

The 3rd decision criterion asking about the essential features of the phone generates 4 errors : 19 corrects (17% : 83% of 23 cases) on the 'Yes' side and 9 errors : 79 corrects (10% : 90% of 88 cases) on the 'No' branch, for a total of 13 errors and an accuracy rate of 98 out of 111 cases or 88%. Overall, the addition of the 2nd and 3rd decision criteria produces an accuracy rate of 91.7% which means 14 errors out of 168 cases.

Figure 5.5: Test of iPhone EDTM on Full Data Set (457 Cases)
Decision Alternatives: Accept the Device; Doesn't Accept the Device (iOS – iPhone)



On the left hand branch of the model (from the first criterion), adding the 4th decision criterion which asks about the quality of battery life generates 5 errors : 18 corrects (22% : 78% of 23 cases) on the 'Yes' side and 55 errors : 211 corrects (21% : 79% of 266 cases) on the 'No' side, for a total of 60 errors and an accuracy rate of 79% (229 correct out of 289 cases).

The 5th question asks about the adequacy of applications and produces 41 errors : 172 corrects (19% : 81% of 213 cases) on the 'Yes' branch and 38 errors : 15 corrects (72% : 28% of 53 cases) on the 'No' branch. Overall, it generates 79 errors in total which lead to an accuracy rate of 187 out of 266 cases or 70%.

The 6th question is about the functionality of the phone which produces 1 error : 115 corrects (0.86% : 99.14% of 116 cases) on the 'Yes' side and 58 errors : 29 corrects (60% : 40 % of 97 cases) on the 'No' side, for a total of 59 errors and an accuracy rate of 72% i.e. 154 corrects out of 213 cases.

The 7th question asks about the 'ease to use' that reporters associate with the device. It gives 5 errors : 39 corrects (11% : 89% of 44 cases) on the 'Yes' branch and 17 errors : 36 corrects (32% : 68% of 53 cases) on the 'No' branch, for a total of 22 errors and an accuracy rate of 77% which means 75 corrects out of 97 cases.

The 8th question asks whether the reporter regard the phone as a personal symbol. This decision criterion generates 4 errors : 30 corrects (12% : 88% of 34 cases) on the 'Yes' side and 71 errors : 68 corrects (51% : 49% of 139 cases) on the 'No' branch, for a total of 75 errors. The accuracy rate is 57% i.e. of 98 corrects out of 173 cases.

The 9th question asks whether the reporter perceives the device as enjoyable. The analysis shows 10 errors : 55 corrects (15% : 85% of 65 cases) on the 'Yes' branch and 18 errors : 56 corrects (24% : 76% of the 74 cases) on the 'No' branch, for a total of 28 errors. The accuracy rate is 80% i.e. 111 corrects out of 139 cases. Overall, the left hand branch of the model with the

additional decision criteria produces 60 errors i.e. a success rate of 79%. With a single decision criterion (tech savvy), the success rate was about 66%. Hence, the extensions provide greater insights into the decision making process. The full model produces 503 correct answers out of 577 cases (the number of cases is more than 457 since the 8th decision criterion is connected with 3 paths). Therefore, the accuracy rate is about 87.18% which means that the EDTM model can successfully reach 87.18% of the decisions made in the reports. The success rate increases from 82.14% to 87.18% after testing the model on full data set. Gladwin (1989, p. 49) mentions that "if the decision model successfully predicts 85%-90% of the choices of the individuals in a group, it is assumed to be an adequate model of the individual decision process for that group of individuals." and iPhone model meets the threshold.

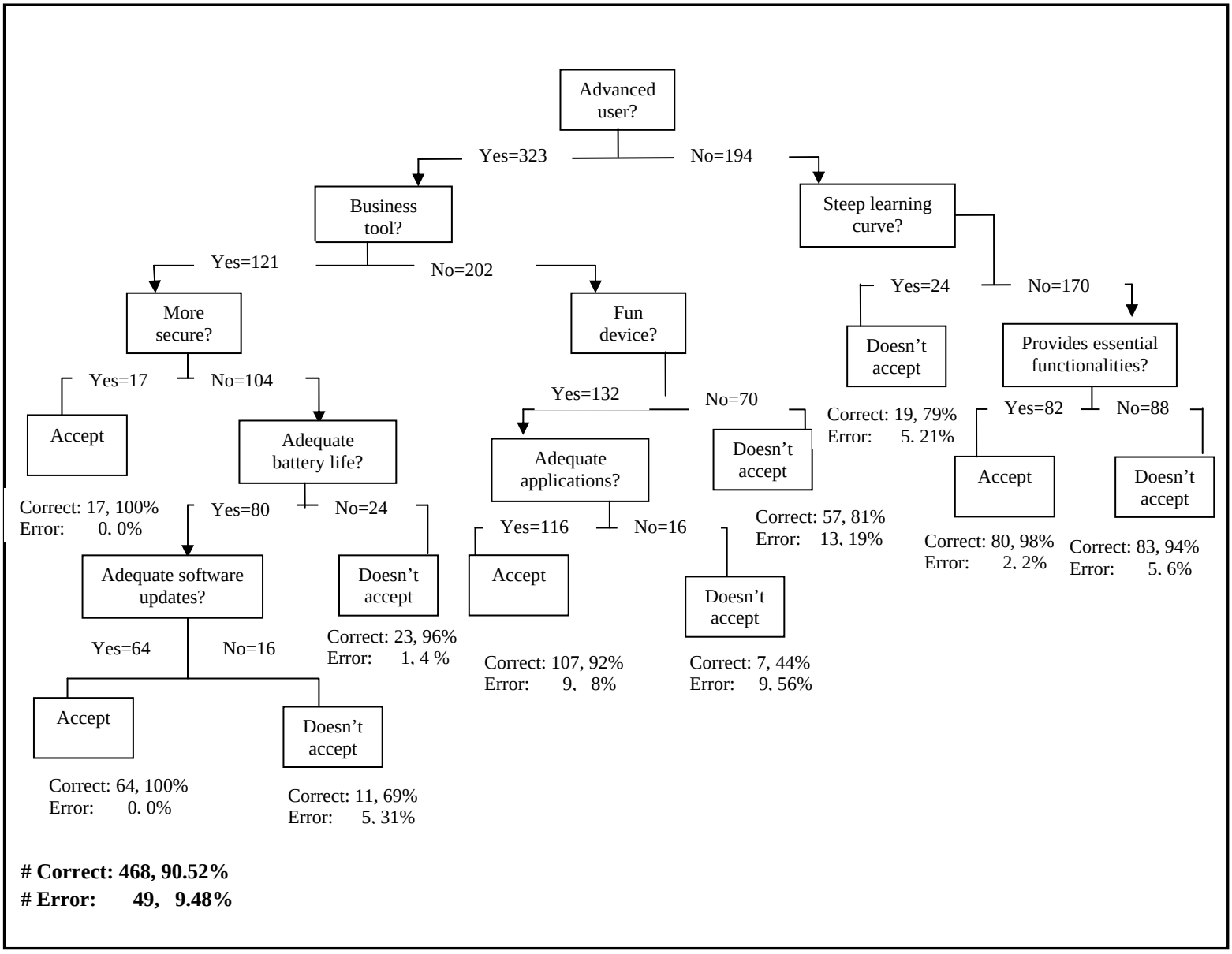
BlackBerry (BlackBerry OS Device)

Figure 5.6 shows the results for the BlackBerry device. The EDTM is tested with 517 cases in the data set. Starting with the 1st question, 323 cases out of 517 are categorized under 'advanced users' and 194 under 'not advanced users'. The categorizations are done based on relevant comments. If every advanced user accepts the device and vice versa, then 1st question produces 108 errors: 215 corrects (33%:67% out of 323 cases) on the left hand branch and 90 errors: 104 corrects (46%:54% out of 194 cases) on the right hand branch. The accuracy rate comes to 319 out of 517 i.e. 62%.

The 2nd question is about the learning curve associated with the device. It produces 5 errors : 19 corrects (21% : 79% of 24 cases) on the 'Yes' side and 85 errors : 85 corrects (50% : 50% of 170 cases) on the 'No' branch, for a total of 90 errors and an accuracy rate of 103 out of 193 cases or 53%. The 3rd question asks about the essential features of the phone and whether these features are adequate for acceptance. It produces 2 errors : 80 corrects (2% : 98% of 82 cases) on the 'Yes' branch and 5 errors : 83 corrects (6% : 94% of 88 cases) on the 'No' branch, for a total of 7 errors and an accuracy rate of 163 out of 170 cases or 96%. The addition of two more decision criteria produces 12 errors out of 194 cases, or an accuracy rate of 93.8%. Adding

the 4th decision point, that is, asking whether the advanced users perceive BlackBerry as a business tool produces 34 errors : 87 corrects (28% : 72% of 121 cases) on the 'Yes' side and 129 errors : 73 corrects (64% : 36% of 202 cases) on the 'No' side, for a total of 163 errors and an accuracy rate of 49.5% i.e. 229 corrects out of 323 cases.

Figure 5.6: Test of BlackBerry EDTM on Full Data Set (517 cases)
Decision Alternatives: Accept the Device; Doesn't Accept the Device (BlackBerry OS – BlackBerry)



The 5th question is about the fun aspect of the device. It generates 16 errors : 116 corrects (12% : 88% of 116 cases) on the ‘Yes’ branch and 13 errors : 57 corrects (19% : 81 % of 70 cases) on the ’No’ side, for a total of 29 errors and an accuracy rate of 86% i.e. 173 corrects out of 202 cases.

The 6th question asks whether the reporter finds the applications provided by the device adequate. It results in 9 errors : 107 corrects (8% : 92% of 65 cases) on the ‘Yes’ branch and 9 errors : 7 corrects (56% : 44% of the 74 cases) on the ‘No’ branch, for a total of 18 errors and an accuracy rate of 86% which means 114 corrects out of 132 cases.

The 7th question is about the perception of security of the device. It produces 0 errors : 17 corrects (0% : 100% of 17 cases) on the ‘Yes’ branch and 70 errors : 34 correct (67% : 33% of 104 cases) on the ‘No’ branch generating 70 errors in total. The accuracy rate is 42% i.e. 51 corrects out of 121 cases.

The 8th question asks whether the battery life is good enough for acceptance. It produces 11 errors : 69 corrects (14% : 86% of 80 cases) on the ‘Yes’ branch and 1 errors : 23 corrects (4% : 96% of 24 cases) on the ‘No’ branch i.e. 12 errors in total. The accuracy rate is 88% which means 92 corrects out of 104 cases.

The 9th criterion asks whether the reporter finds the software updates adequate for acceptance. It generates 0 errors : 64 corrects (0% : 100% of 64 cases) on the ‘Yes’ branch and 5 errors : 11 corrects (31% : 69% of 16 cases) on the ‘No’ branch, for a total of 5 errors and an accuracy rate of 94% i.e. 75 corrects out of 80 cases. On the whole, the left hand branch of the model produces 37 errors leading to a success rate of 86%.

With only one decision point (advanced user), model success rate was 62%. After adding eight more decision points, the complete model has 468 correct answers out of 517 cases.

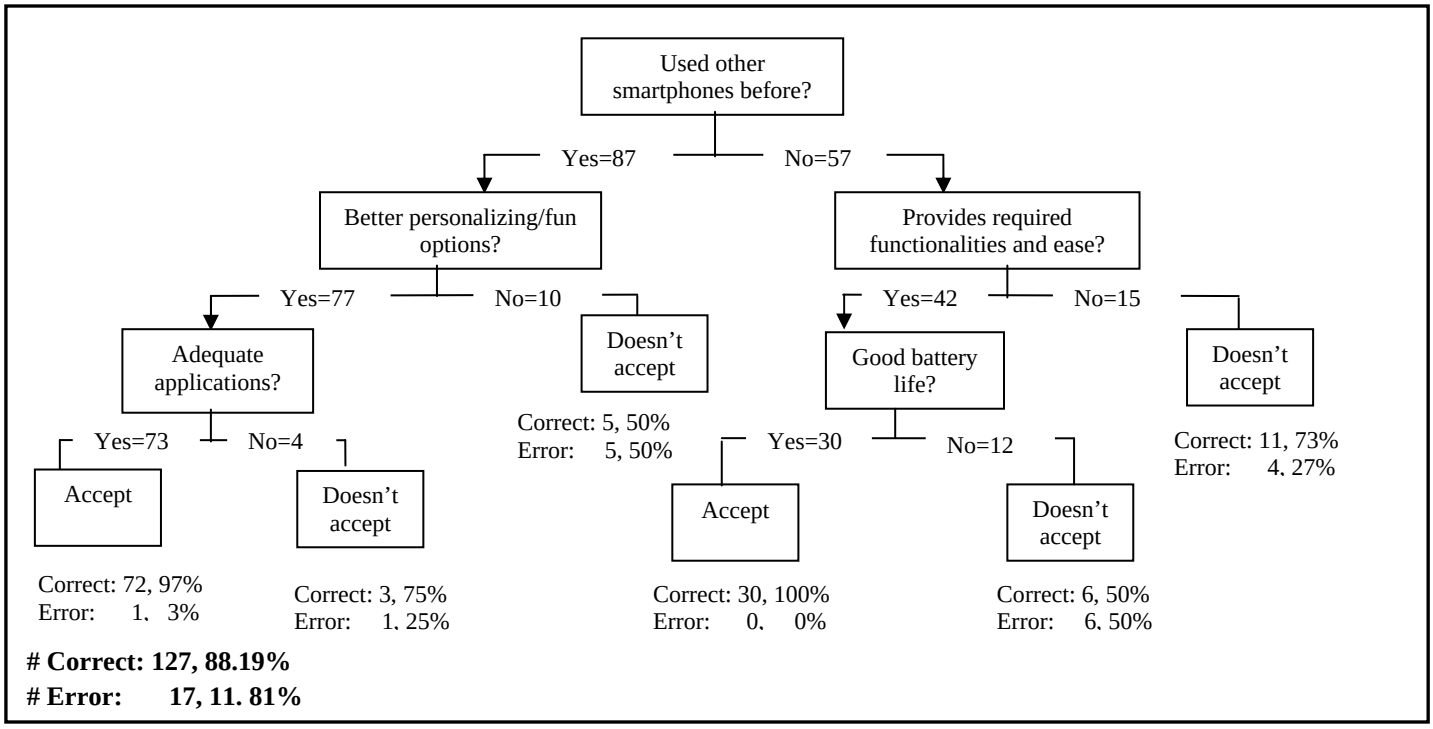
Therefore, the success rate is about 90.52%. It means that the BlackBerry EDTM can successfully reach 90.52% of the decisions made in the reports.

Samsung Galaxy II (Android Device)

EDTM model for the Samsung device is tested on 144 cases and figure 5.7 shows the results. The 1st question asks if the reporter have used other smartphones before. The model starts with this decision point because preliminary screening before building the model revealed that people reporting on this device often start their account with this criterion. Asking this question and assuming that people who have used other smartphones before will accept this device and vice versa produces 9 errors:78 corrects on the left hand branch (10%:90% out of 87 cases) and 43 errors:14 corrects on the right hand branch (75%:25% out of 57 cases). In total, this one point model gives an accuracy rate of only 64%. It shows the need for adding more decision points. The 2nd question asks whether the functionalities and ease provided by this device are enough for acceptance. Assuming that people answering with 'Yes' accept the product and vice versa, provides an accuracy rate of 88% (50 corrects out of 57 cases). The 'Yes' branch produces 3 errors: 39 corrects (7%:93% out of 42 cases) and the 'No' branch produces 4 errors: 11 corrects (27%:73% out of 15 cases).

(This space has been kept blank intentionally)

Figure 5.7: Test of Samsung EDTM on Full Data Set (144 cases)
Decision Alternatives: Accept the Device; Doesn't Accept the Device (Android – Samsung)



The 3rd decision point is about the adequacy of the battery life and it generates 0 errors: 30 corrects in the 'Yes' side (0%:100% out of 30 cases). In the 'No' branch, this question produces 6 errors: 6 corrects (50%:50% out of 12 cases). Hence, the accuracy rate of this criterion is about 88% (36 cases out total 42). Taken as a whole, adding these two decision points at the right side of the 1st decision points produces an accuracy rate of about 82% (47 out of 57 cases).

On the left hand side, 4th question about the level of personalization and fun options in comparison with other devices produces 4 errors: 73 corrects (5%:95% out of 77 cases) on the 'Yes' branch and 5 errors: 5 corrects (50%:50% out of 10 cases) on the 'No' branch. The accuracy rate provided by this point is about 90% (78 out of 87 cases).

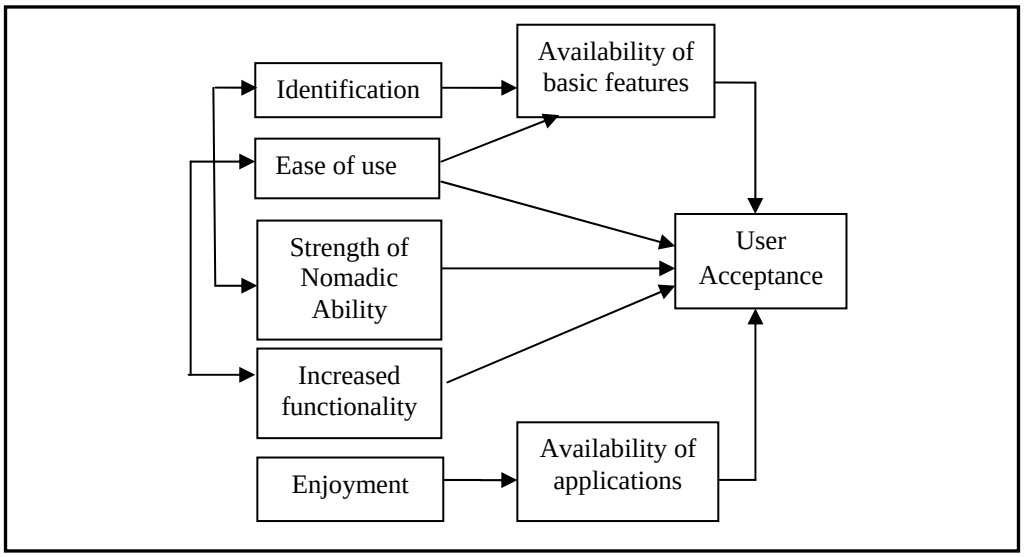
The 5th question asks whether the level of applications offered and accepted by this device are adequate for acceptance. On the 'Yes' side, it produces 1 error: 72 corrects (1%:99% out of 73 cases). While on the 'No' side, the question produces 1 error: 3 corrects (25%:75% out of 4 cases). The accuracy rate for this criterion is about 97% (75 out of 77 cases). On the whole, the left hand branch produces an accuracy rate of about 92% i.e. 80 corrects out of 87 cases. Therefore, the complete Samsung EDTM model produces 127 corrects in reaching the acceptance/non-acceptance decisions out of 144 cases in total. The accuracy rate is about 88.19%.

For all three devices, the accuracy rates of the models fall within the acceptable level suggested by Gladwin (1989). Hence, I argue that these EDTMs provide a solid basis for developing a model of smartphone acceptance through an abductive approach and it is presented in the following section.

5.4 Theoretical Discussion of Findings

The purpose of this research is to provide a better understanding of smartphone acceptance decisions. Both user and non-user accounts have been useful in this respect to uncover important issues. Some decision points that have come out as important for accepting new generation smartphones are not new. The results of the EDTM models clearly show that task related device functionalities are very important. Enjoyment or fun has also emerged as an important decision point, but this criterion is not unrelated to required functionalities. Often non-users argue that even though the device is full of fun activities, it does not fulfil their task-related requirements. Apart from the usual constructs (usefulness, ease of use and enjoyment) uncovered by previous studies, this research sheds light on two relatively new decision points – identification and strength of nomadic ability which will be discussed shortly. Figure 5.8 shows the theoretical model developed from the EDTM results –

Figure 5.8: Theoretical Model Developed on the Basis of EDTMs



5.4.1 Identification and Acceptance

EDTM models reveal that users want to express their personalities through a device. For some users their smartphones are personal symbols representing the identities they want to project. This identity labelling ranges from technology savvy to work oriented to fun driven. Non users often make comments how a particular device does not go with who they are and why it is not possible for them to use it even the device is perfect from other perspectives. However, it is clear from the decision models that the ability of the device to perform the basic needs (clear phone calls, quick texts, battery life etc.) is important before users attach a deep connection through identification and personalization. Decision points relating to personalization, personal symbols and image (tech savvy, advanced user, business user etc.) can be broadly categorized under identification. Following are examples of some identification related comments –

Construct	**Relevant quotes**
Identification	- “It’s what’s on style and it’s a step up for me.” - “Great phone for a person on the go like me!!! this is by far the most 'happening' thing out there” - “Nice phone, yes, the cool factor is out of this world. It’s just me”

In the EDTM model for iPhone, 168 cases move through the 'useful as a basic phone' node. 57 of those 168 cases have explicit comments about users not being happy about the performance of the device as a basic phone. In 56 of those 57 cases (about 98%), the reporter returned the phone. Only those users who were content with the basic services moved to the next node about 'personal symbol' or identification. In 78% of the cases which move through the 'personal symbol' node and contain positive comments about the phone's ability to provide identification attributes, users ultimately accept the phone. These findings allow to set out the following proposition –

*P1***:** *When the device offers identification attributes, then the users are more likely to accept it given the availability of the basic features*

The user experience literature also finds identification as an important concept while dealing with interactive products. Hassenzahl (2003, 2004) defines identification as the desire of an individual to be seen as important by significant others in the society. Schrepp et al. (2006) also suggest that a person tries to express her personality through a product. In other words, an interactive product needs to convey a positive image of its user. This image plays an important role in social communication through mirroring the user's personality (Evrard & Aurier, 1996; C.-P. Lin & Bhattacherjee, 2010). This distinct 'personality' can be expressed through either being expert in something that other people are unable to do or possessing something that others are unable to afford but strongly desire (Hassenzahl, Beu, & Burmester, 2001).

5.4.2 Ease of Use, Availability of Basic Features and Acceptance

Ease of use is another factor that appears in the EDTMs in the form of different decision points. For example, 'ease of use', 'learning curve' etc. all fall under this category. For all three devices, most reporters who find their smartphones not easy to use or not user friendly do not accept the product in the end. The EDTMs show that ease of use is closely connected to the availability of the basic features that people expect to be present in a communication device. If

those preliminary functions such as call quality, quick texting, reliable emails etc. are not supported properly, then many of the reporters do not find the device user friendly or easy to use. Below are some comments that are coded under ease of use –

Construct	Relevant quotes
Ease of use	-"Has big visuals, easy functions, convenient to carry, clear sound communications, very easy to learn to use things that are on the phone" - "It is one of the most user-friendly phones. I purchased my brother one as well and he has moderate cerebral-palsy and he functions it with no problems at all, where as he cannot function other, more basic phones"

The observations noted above lead to the following proposition –

P2: When the device offers ease of use given the availability of basic features, users are more likely to accept the device.

Ease of use has been a widely researched concept in the area of technology acceptance. It was introduced in TAM by Davis (1989). Since then many researchers (Adams et al., 1992; Dickinger et al., 2008; Gefen & Straub, 2000; Igbaria et al., 1995; Kulviwat et al., 2007; Venkatesh, 2000; Venkatesh & Davis, 2000) used this concept to analyze user acceptance decisions and found its significance. Bruner II and Kumar (2005) relate ease of use with fun. Even though I do not find significant number of cases that mention ease of use as an antecedent of fun or enjoyment, I do observe a co-occurrence of availability of basic features and ease of use. This observation may suggest a shift in the concept of 'ease of use' which can be pursued in future research.

5.4.3 Strength of Nomadic Ability and Acceptance

For all three devices, battery life has been an important decision point in the EDTMs. Majority of the reporters who comment on poor battery life returned the device after the trial period i.e. they did not accept the product. Most people who were content with the battery life either moved on to other decision points or accepted the device. From this knowledge, it can be

argued that users and non-users place enormous importance on the nomadic ability provided by their smartphones. Some argue that they are paying the premium price of smartphones in order to have that uninterrupted portability without having to carry a charger everywhere or charge the device every day. So, it was no surprise that some of the reporters mention battery life as the only decision point. Some examples of comments are provided below –

Construct	Relevant quotes
Strength of nomadic ability	- "First the battery was bad really bad. After 2 hours of on & off usage you're in trouble." - "The battery life is really horrible. I'm a producer and run a studio but when I'm using the iPhone for business including product research, emails, texting, etc. I can get a maximum of 2-3 hours of usage. (my old Sony Ericson was approximately 1.5 days of heavy usage)" - "Samsung nailed it, great battery life. I don't need the car charger anymore"

The analysis reveals that users do not consider the smartphones as a simple communication device. It is an extension of their self and they expect it to help and even improve their performances in the work or social settings. Consequently, the battery life supporting the 'always on' perception has become very important in carrying out those expected activities smoothly. From these findings, I propose the following proposition –

P3: When the strength of nomadic ability is higher, then the users are more likely to accept the device.

This finding reaffirms the claim by the nomadic computing literature that computing and communicating have become portable and have caused a paradigm shift in how we interact with new technologies (Kleinrock, 1995). This feature of portability has been termed as 'nomadicity'. Kleinrock (2003) defines nomadicity as the required level of system support that a nomad user needs for accessing a wide range of capabilities and services in a clear and convenient manner. The analysis shows an interaction between the 'strength of nomadic ability' and 'identification'. Users, who identify themselves as very mobile and constantly accessible, consider battery life to

be very important to maintain that identity. This is a key factor that the user acceptance literature needs to investigate in future to understand acceptance of new mobile computing devices.

5.4.4 Increased Functionalities and Acceptance

Reporters put great emphasis on the functionalities their device is able to provide. They often compare these functionalities with devices they used before. Many go to the extent of comparing it with other people's devices and how their choice gives them an edge over their friends/family and colleagues. It is interesting to note that functionality related comments often co-occur with technology integration / convergence capabilities offered by smartphones. Below are some comments coded under functionalities –

Construct	Relevant quotes
Increased functionalities	- "I never thought I would be able to carry my personal computer around with me on a daily basis, but that is exactly what my iPhone allows me to do." - "I never was the kind of person who would play games or browse the internet on my blackberry. The nature of this device means that you WILL use those apps for games, knowledge, news, language translation, directions, etc. This is an EXTREMELY useful and useable device" - "Can do things with this phone that no other phone can do"

For iPhone, 213 reports enter 'more functional?' node and 116 have positive comments about increased functionalities. Out of 116, 115 (about 99%) cases result in acceptance. In case of BlackBerry, 170 cases entered 'functionality' node with 88 cases on 'Yes' side with 94% accuracy rate in acceptance. In contrast, 94% of cases on the 'No' branch rejected the device. For Samsung device, 42 reporters passed through 'increased functionality' node. There were 15 cases where people did not find the device more functional than their previous devices. Out of those 15, 11 cases (about 73%) did not accept the device. Out of 42 cases where reporters were happy with the functionalities, 30 reporters (about 72%) accepted the device given that they were also satisfied with the battery life. Based on these findings, the following proposition is proposed –

P4: When the device offers increased functionalities, the users are more likely to accept the device.

The concept of 'increased functionality' is similar to that of 'perceived usefulness' – a widely analyzed concept in the technology acceptance literature. Many research studies (F. D. Davis, 1986, 1989; Dickinger et al., 2008; Karahanna & Straub, 1999; Venkatesh & Davis, 2000; Yi & Hwang, 2003) test the impact of perceived usefulness on users' attitudes and use of technology. Most of these studies find it as a significant concept. However, in this study, I find that users are more concerned about a *relative usefulness*; they demand a better device in respect to what they have been using in the past or what other people in their relevant communities have been using.

5.4.5 Enjoyment, Availability of Applications and Acceptance

In line with previous studies, this research finds that people form perceptions about the level of enjoyment provided by their smartphones. It has been observed that before people move to enjoyment related comments, they often make a decision about whether the device provides adequate applications. Interestingly, some people conceptualize enjoyment beyond what we generally understand as 'fun' activities. They often label the satisfaction of accomplishing an intended task properly as enjoyment. This finding suggests that acceptance constructs are not really one-dimensional. Below are some quotes coded under enjoyment (from 'fun device', enjoyable to use' decision points).

Construct	Relevant quotes
Enjoyment	- "This thing makes cell phones fun again. My phone always has something new and exciting." - "Bring on the airport delays, long lines and waiting rooms I will never be bored again or not know what is being played on the radio. I'm having so much fun with this thing I forget sometimes it's also a pretty good phone too."

For both iPhone and BlackBerry device, enjoyment node has been an important one to get to ultimate acceptance. Most of the reporters who commented on being satisfied with

enjoyment level ultimately accepted the device. In case of BlackBerry, 202 reporters did not think the device as business tool and when they found it lacking in 'enjoyment' aspect, most of them did not accept the device. However, people who found it to be enjoyable added an additional decision point about the adequacy of applications. In case of iPhone, users were ready to sacrifice some essential features since the device provides a heightened level of enjoyment from their perspectives. In this respect, the following propositions are suggested –

P5: When the device offers more enjoyment and adequate applications, then the users are more likely to accept the product even if the device lacks some other essential features.

Consumer acceptance literature also stresses the importance of fun or enjoyment. Many research studies (Al-Gahtani & King, 1999; Bruner II & Kumar, 2005; R. Davis, 2010; Dickinger et al., 2008; Hwang, 2005; Wakefield & Whitten, 2006) find fun or perceived enjoyment as an important antecedent to users' positive attitude towards an interactive product. Bruner II and Kumar (2005) find fun as a more powerful determinant of users' attitude than the perceived usefulness. They also claim that an interactive device would be more enjoyable if it is easier to use. But, enjoyment may directly influence the acceptance since the usage dimensions of new generation devices have changed immensely and thus the users sometimes view the device as a pure toy (R. Davis, 2010).

5.5 Conclusion

This research makes several important contributions – first, it makes a theoretical contribution to technology acceptance literature by developing a framework using an abductive approach of model building. Moreover, it shows an acceptance model for new generation smartphones in the context of individual use (outside organization settings) which has not been thoroughly investigated in IS literature. Second, the research has been able to demonstrate a qualitative approach in analyzing user experience data presented in online forums. The ethnographic decision tree model, though widely used in qualitative research, has rarely been

employed in IS. This research contributes toward filling that gap through developing and testing ethnographic decision tree models to analyze acceptance/non-acceptance decisions for three new generation smartphones.

This paper also has practical implications for designers and manufacturers of mobile computing devices. It has been observed that consumers view the ability of becoming a nomad user as one of the most important aspects in acceptance. The findings also suggest that while accepting a smartphone, consumers think about both functionality and hedonic aspects such as identification and enjoyment. Designers and manufactures should invest appropriate resources to address these issues. They should consider promoting their products' nomadic and hedonic abilities. Before designing a product, designers may share their ideas with focus groups to get preliminary feedback regarding the pragmatic and hedonic aspects of the products. Next, they may analyze the responses and form ethnographic decision models to analyze the rate of potential acceptance. The decision points driving the people toward negative branches can then be analyzed in greater depth. As Verdegram and De Marez (2011) argue that the sections of non-adopters and late adopters are often greater than that of early adopters and therefore, negative decision points can be a great source of very useful information. This attempt will help in designing product features that are more valued by the consumers.

There are three limitations of this research. First, this research focuses on three specific smartphones. Therefore, the results may not be generalized to other interactive mobile devices (such as tablets, e-readers) without further research. Furthermore, it is also important to note that reports posted on a website have the possibility to be generated from a specific group of people who are proficient with using new technologies. Lastly, most reports in the data sets have been posted by people living in developed countries (the USA, Canada, European countries, Japan etc.). Therefore, there is a boundary in terms of generalizing the results in other cultural contexts without further research.

This research provides new insights into user acceptance of new generation smartphones. Still, there are questions that future studies may find worth pursuing. Can acceptance decisions of other mobile computing devices be analyzed with the theoretical model proposed in this paper? This testing may illuminate other important concepts and help in developing an integrated model for mobile devices. What are the factors that impact user's perception about nomadicity, identification and enjoyment? How the functional attributes of a smartphone interact with its hedonic attributes? What does 'fun' or 'enjoyment' mean in the context of these new devices? How acceptance decisions are varied in different cultural contexts? Investigations into these questions may help the designers and marketers of next generation devices to plan and operate in a way that effectively fulfils consumers' needs, provides better user experiences and consequently helps manufacturers to remain competitive.

Overall, this research provides a theoretical framework for understanding smartphone adoption/non-adoption decisions focusing on new type of data and utilizing ethnographic decision tree modeling. In doing so, it contributes to IS literature, offers practical implications and suggests future research directions.

Appendix 5-A

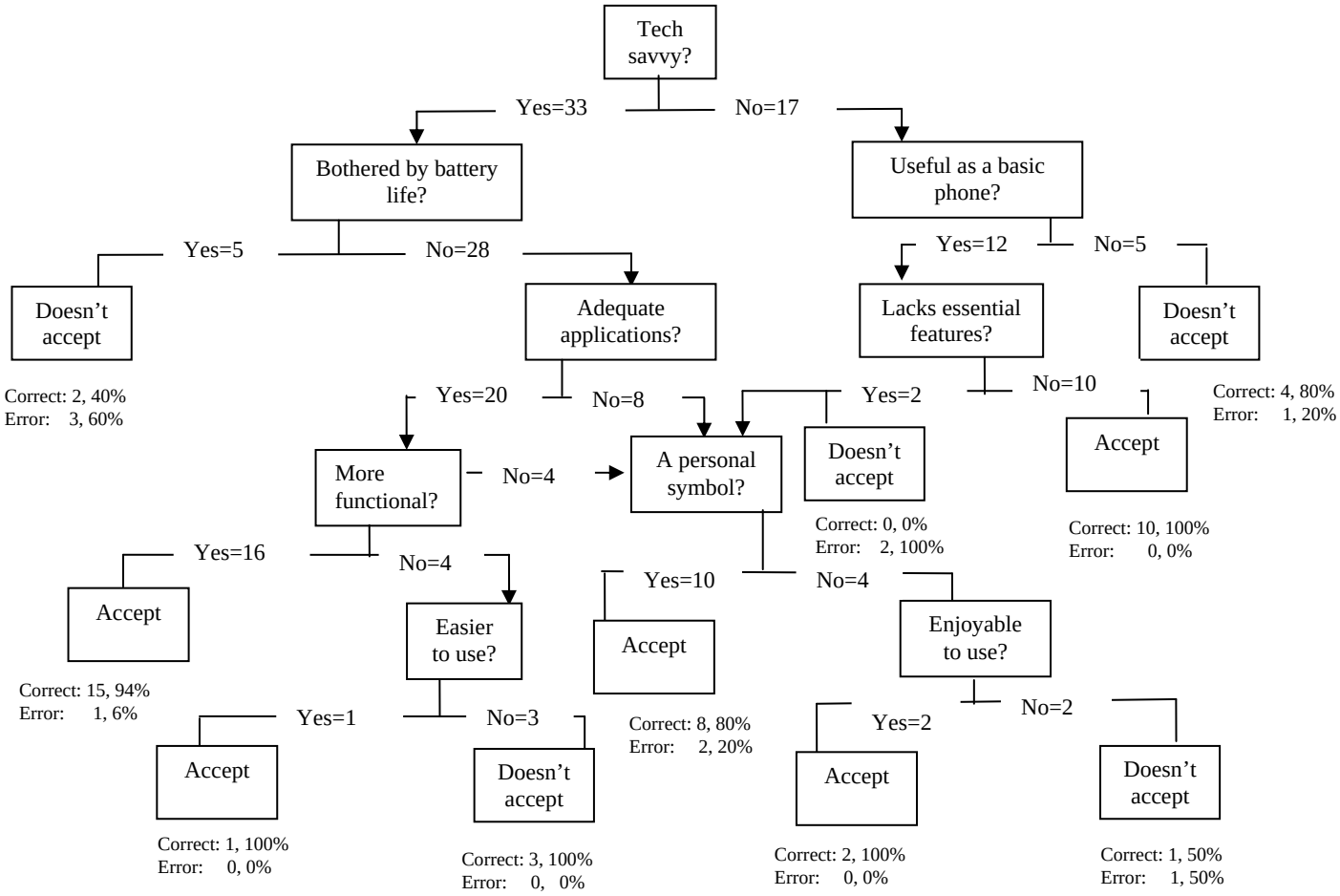
Operational Definitions and Justifications

Concepts	Operational Definitions	Justifications through Examples of Comments	
		Yes	No
Tech Savvy user/ Advanced User	'Tech savvy' generally refers to individuals or groups who are proficient in using new technologies. Therefore, the reviewers who mention about their frequent use of new products, new applications and/ or explicitly identify themselves as technologically advanced individual are categorized as tech savvy user.	"I've owned countless smartphones, but my 3G iPhone is by far the best, there's really no comparison with older attempts at handheld computers with robust communication capabilities."	"I'm not a very technical minded person." "Never used anything like this before"
Used other smartphones before	Whether the reporter explicitly mentions about using other smartphones before the one under investigation	"I am not naïve..have been using smartphones since they first came out"	"This is my first smartphone. So, I think I need to give it some time to impress me"
Useful as a basic phone	It refers to the ability of the phone to deliver the basic services that are expected from any cellular phone such as good call and sound quality, good connection to the network etc.	"The ultimate balance of media player and phone."	"Very good as a blackberry alternative, but seriously bad as a phone."
Lacks other essential features	It refers to the ability of a cellular phone to deliver the features that the users find essential after the phone satisfies its basic functions.	"How can you not be able to send a picture message? With my old Motorola flip phone with Primeco 10 years ago I could send pictures messages. The screen cracks for no reason. This is not a very functional phone. The phone freezes."	"Great features and ability to add-on features through apps"
Bothered by battery life/ adequate battery life	It refers to the problem with the battery life that the reviewers find as an obstacle toward acceptance.	"First the battery was bad really bad. After 2 hours of on & off usage you're in trouble."	"Battery life is manageable if you can charge it nightly or turn off features not being used."

Concepts	Operational Definitions	Justifications through Examples of Comments	
		Yes	No
Adequate applications	It refers to whether the reviewers find the iPhone applications external to basic phone services as important for acceptance.	"The range of applications available for free or very little money is awesome. Such a concept! I will never again think of my iPhone as just a phone."	"App store is good, but not many useful applications compared to my previous smartphones"
More functional/ provides essential functionalities	It refers to the conception that the reviewers hold about the functionality of iPhone compared to other phones they have used in the past or that they use as a requirement of their profession.	"This phone is incredibly easy to use with most functions one touch away. I can sync my contacts, photos, calendars, and have mail pushed to the phone and yes there is microsoft exchange support."	"I'll keep it as a toy nothing more. Does not have the right attitude to be in business."
Business tool	Whether the reporter mentions the device primarily as a business tool/ work related tool	"I have my whole office inside this"	"I use it for all my entertainment needs; not for work. I have my laptop for that"
More secure	Whether the reporter finds the device under investigation more secure than other similar devices	"BlackBerry is so much more secure. iPhone is a toy for teenagers, not someone like me who runs a business on his mobile"	"I am not going to put all my work stuff into it. It's scary"
Adequate software updates	Whether the reporter finds the software updates as adequate	"Latest update fixed all my problems. Now, it's super fast"	"They should do a better job with updates. All the bugs are still here"
Easier to use / steep learning curve	It refers to whether the reviewers find or expect to find iPhone as easier to use compared to other phones they have used in the past or those they use as a requirement of their profession.	"Other smart phones don't compare. Email wise, easy to use, quick typing, beautiful."	"Forget about user friendly."
A personal symbol/ personalized device	It refers to whether the reviewers consider iPhone more as a personal symbol rather than a mere communication device.	"It's what's on style and it's a step up for me."	"this is just a toy, not for me"
Enjoyable to use/fun device	It refers to whether the reviewers find iPhone as 'fun' to use compared to other phones they have used in the past or those they use as a requirement of their profession.	"I've had more fun with this device than any other I have bought this year. It's just a joy to use. I don't miss T-mobile one bit."	"If you want a toy this is great but if you want business and function this is not fun for you."

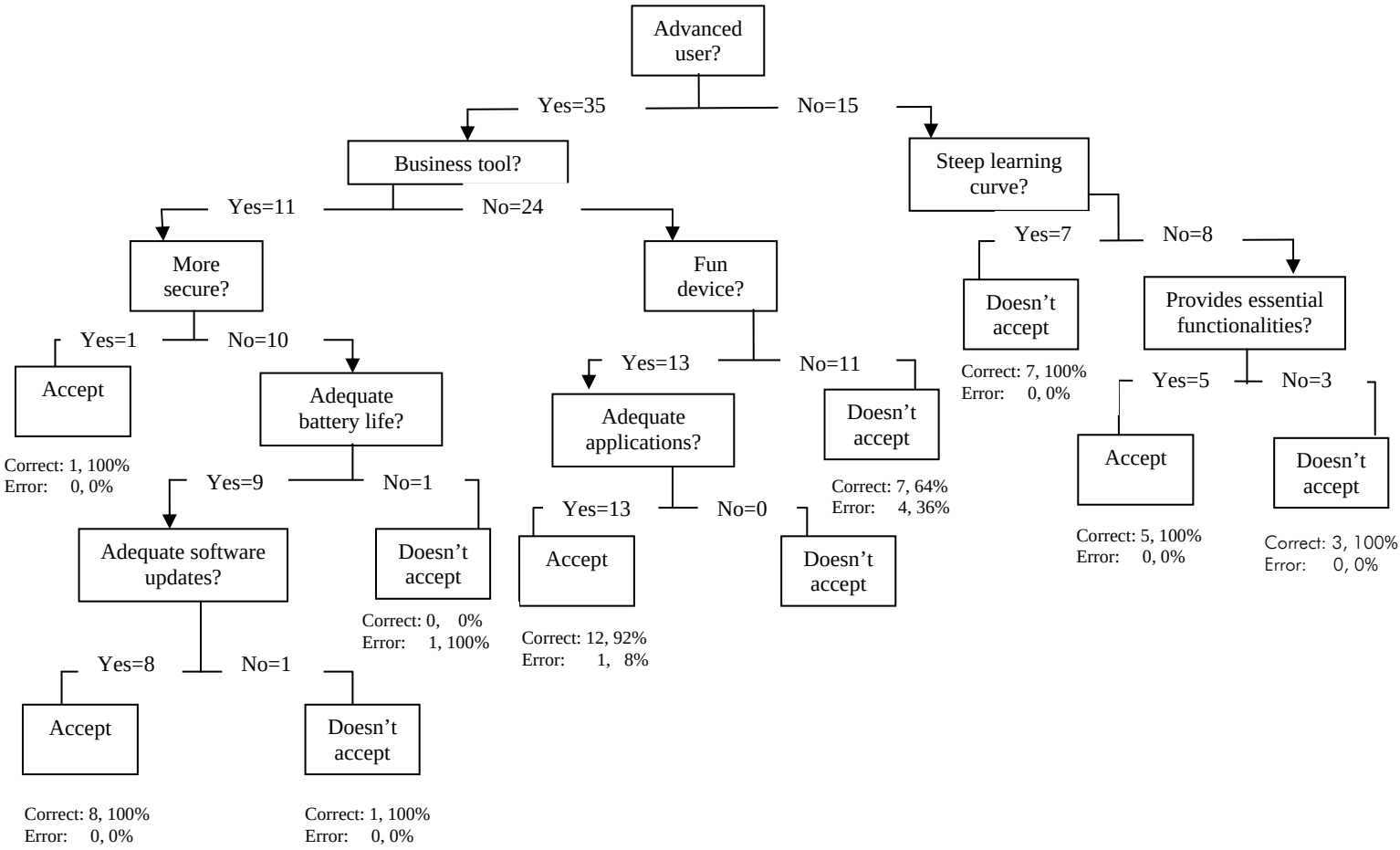
Appendix 5-B (Testing EDTMs on 50 Reports)

Decision Alternatives: Accept the Device; Doesn't Accept the Device (iOS – iPhone)



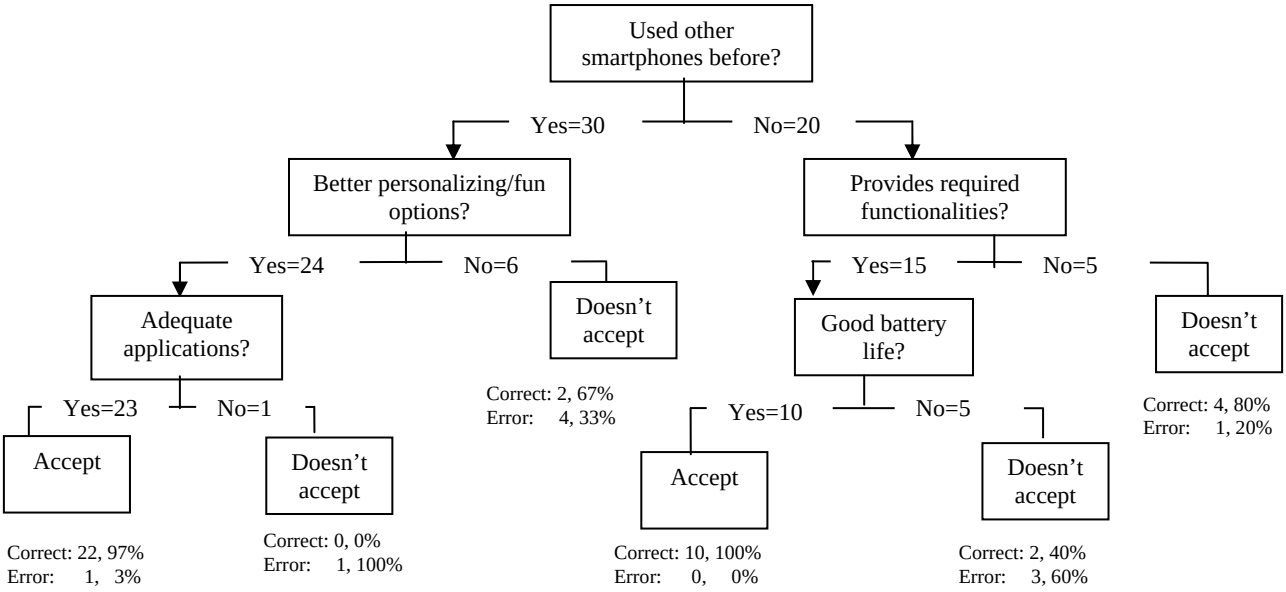
Correct: 46, 82.14%
Error: 10, 17.86%

Decision Alternatives: Accept the Device; Doesn't Accept the Device (BlackBerry OS – BlackBerry)



Correct: 44, 88%
Error: 6, 12%

Decision Alternatives: Accept the Device; Doesn't Accept the Device (Android – Samsung)



Correct: 40, 80%
Error: 10, 20%

(This space has been kept blank intentionally)

6.0 Study 3: Acceptance of Smartphones: A Qualitative Enquiry from the Perspective of Social Identity Theory

Abstract

This study investigates formation of social identity by users of new generation smartphones. Using qualitative content analysis, this study analyzes textual self-reports posted to an online forum by iPhone 4 users. The findings suggest that users form specific social identity based on device ownership and use. They develop social identity through self-categorizing themselves in celebrated user groups and competing with other similar groups by self-enhancing the significance of their in-group norms and values. The findings also suggest that even though users may define themselves based on socially constructed group reality and act in accordance with the prescriptions of the group, they do not necessarily evaluate themselves in the light of those norms. They are keener on enhancing their own identity by competing with owners of similar but different devices. Theoretical and practical implications of this research are discussed.

Keywords: social identity, smartphones, self-categorization, self-enhancement, group norms

6.1 Introduction

The rapid rate of change in new generation mobile computing devices along with the presence of social networking sites are reshaping perceptions about new media platforms (Friedrich et al., 2009). Smartphones provide computing and communicating in a more efficient package with integrated technological capabilities and create new perceptions about spatial and temporal boundaries in personal and work contexts (Agger, 2011; Brannen, 2005; Brown & O'Hara, 2003; Green, 2002; Kakihara & Sørensen, 2001). Therefore, understanding adoption of smartphones can inform many aspects of contemporary lifestyle.

Despite smartphone's novel ways of impacting users' personal and social contexts, it has attracted scant attention from technology adoption literature. This can stem from an unwarranted satisfaction with the existing theoretical frameworks even though smartphones are quite different from previous technologies. Most academic research on smartphones concentrate on specific capabilities or applications (Jewell, 2011; Menard, Miller, Nowak, & Norris, 2011; Oliver, 2010; Santos, Cardoso, Ferreira, Diniz, & Chaínho, 2010). Others use frameworks like TAM (F. D. Davis, 1989) and 'innovation diffusion' (Rogers, 1983) to understand smartphone adoption (S. H. Kim, 2008; Y. Park & Chen, 2007; Shin, Shin, Choo, & Beom, 2011; Verkasalo et al., 2010). On the other hand, newspaper articles emphasize on either privacy / security issues (Amorosi, 2011; Gold, 2011; Knight, 2009; Ponemon Institute, 2011) or latest hype about the newest gadget (M. Butler, 2011).

Considering the overarching reach of smartphones in private and public spheres of users, above mentioned views seem limited to understand a complete picture of smartphone acceptance. In this paper, I argue that identities can play an important role in acceptance of smartphones and I use Social Identity Theory (SIT) as the theoretical lens. Even though some recent research (Mishra et al., 2012) use identity as the lens to understand organizational innovation and technology use, existing IS literature has given limited attention to this issue (Tripsas, 2009). 'User identities' is an understudied theoretical lens in IS even though it has a

rich literary grounding in other fields (Mishra et al., 2012). The situation is same for individual acceptance of smartphones. But smartphone is a unique technology and it is important to know how these devices are shaping and reshaping the lives of users. Identity lens has much to offer in that respect by providing an important and new angle to look into the acceptance picture and thus creating new knowledge and understandings.

One of the main theoretical advancements in identity literature is the Social Identity Theory. Social identity is defined as "individual's knowledge that he/she belongs to certain social groups together with some emotional and value significance to him/her of the group membership" (Tajfel, 1972, p. 31). Abrams and Hogg (1990) define social identity as the self-conception as a group member. In case of using technological innovation, identities can act as "sense-making filters" (Mishra et al., 2012, p. 739) while users make decisions about the environment. In the context of mobile phone use, Green (2003, p. 207) observes that teenagers form "social solidarities and differences, both among themselves, and between themselves and other social groups".

Many research studies concentrate on mobile device adoption, its antecedents and consequences (S. H. Kim, 2008; Sarker & Wells, 2003; Tan & Chou, 2008; Wakefield & Whitten, 2006). Many others emphasize on 'fashion statement' feature of mobile phones (Katz & Sugiyama, 2006; Oksman & Rautiainen, 2003). But, there are only few studies (Campbell, 2005; Holmes & Russell, 1999; Swallow et al., 2005; Walsh, White, & Young, 2009) that investigate use of mobile phones and formation of identity. Mishra et al. (2012) point to the limited empirical research on identity and identification and this paper intends to address this gap.

SIT suggests that people categorize themselves and others into different social groups such as gender, race, religion, age, organization, sports team and so on (Ashforth & Mael, 1989; Tajfel & Turner, 1985). Through this classification, individuals are able to position themselves in the environment and also decide about other peoples' roles (Ashforth & Mael, 1989). According

to SIT, people form a self-perception about belonging into a group based on the values or properties of the group. Over time, people tend to favour in-group behaviours while drawing distinctive boundaries with out-groups (Barnum, 2005; Hogg & Abrams, 1993). The objective of this research is to understand how users of smartphones form self-perceptions about group membership based on their use of a specific device. The underlying purpose is to understand influence of social identities on smartphone acceptance. SIT suits the research purpose since it focuses on group processes from the perspective of intergroup relations and not from the context of interpersonal relations (G.-M. Chen, 2009).

I use self-reports on iPhone 4 as data source and analyze it through qualitative content analysis using HyperRESEARCH software. The results suggest that perception and formation of a unique 'user social identity' can be associated with acceptance of a specific smartphone. Users also enhance their perception of identity by competing with groups using other similar devices. Users point out how their devices have given them an edge over competing groups. They also show solidarity by personally following the established group norms.

This paper contributes to the theoretical understandings of smartphone acceptance. It also addresses the need for empirical research concerning identity associated with a technological innovation. Mishra et al. (2012) point out that research on identity has not really taken notice of the new methodological options and focus either on survey instruments or on a single person's account on identity. This paper attends to that gap by offering a methodological approach that utilizes data available in new media platforms. The findings also suggest that marketers need to incorporate personal and group identities in the forefront of their promotions. Organizations need to understand the duality of personal and work devices and the associated identity issues. Before introducing any new smartphone plan for the employees, managers need to understand what identities the employees might associate with the device and if that is coherent with the desired organizational identity.

The paper is organized in the following sections – first, I discuss about research relevant to social identity and group processes. Next, the propositions are constructed from concepts derived from the extant literature and are tested based on empirical evidences from the data. Then, I discuss contributions and limitations of this research and point out future research directions.

6.2 Theoretical Background

Identity, as a word, comes from a Latin root 'idem' meaning *the same*. However, existing research reveals that identity refers to both *similarity* and *difference*. In one sense, it refers to distinctive characteristics and in another sense, it points to the attachment with a group (Buckingham, 2008).

During 1950s and 1960s, Henri Tajfel and his colleagues investigated identity through two seminal experiments and proposed SIT (Barnum, 2005; Hogg et al., 1995). SIT suggests that people classify themselves into specific social categories through a process of categorization (Amiot et al., 2007). After categorizing the self into a social group (in-group), people tend to highlight the similarities within the in-group while emphasizing the differences with the out-groups. This process is called self-enhancement which is characterized by competition and/or discrimination (Amiot et al., 2007; Tajfel & Turner, 1979). From the perspective of SIT, people perceive memberships in social groups as social identities to reduce uncertainty and enhance self-esteem (Hornsey & Hogg, 2000). Hogg et al. (1995) argue that these social identities hold descriptive, prescriptive and evaluative attributes and members of each identity group associate themselves with these attributes.

The learning from SIT led to Social Categorization Theory (SCT) which deals with the process of self-categorization (Turner et al., 1987). SCT investigates context dependent decisions made by people for classifying themselves in a particular social category. Building on SCT, Common Ingroup Identity Model (CIIM) was proposed (Gaertner et al., 1993). According to

CIIM, if people hold deeper identifications with a more inclusive salient identity compared to other categories, then the tensions in group relations can be resolved. However, some studies find that people can accept a higher level identity only if their lower level sub-identities are acknowledged (Dovidio et al., 1998; Hornsey & Hogg, 2000). That idea resulted in Integrative Model of Subgroup Relations which proposes that intergroup harmony is possible when sub-identities are merged inside higher level identities without losing their properties (Amiot et al., 2007). Like the social psychological literature, sociology also paid much attention to the issue of roles and identities and 'identity theory' (Stryker, 1968) is the most widely used theoretical framework. According to this theory, 'self' is a many sided but organized concept and people occupy different 'role identities[5]' depending on the contexts or situations they find themselves in (Brewer, 2001; Hogg et al., 1995; Stryker, 1968). Identity theory proposes that individuals possess a hierarchical repertoire of role identities. As a result, they tend to invoke higher order role identities in different situations since they are more committed to those roles.

Hogg et al. (1995) compare SIT with 'identity theory' and point out that even though both theories have similar purposes, they differ in many aspects such as cognitive and group processes, inter-group vs. intra-group differentiation and so on (Brewer, 2001). In her comparative analysis, Brewer (2001) focuses on the work of Thoits and Virshup (1997) where they distinguish between 'me' identities and 'we' identities. 'Me' identities include role based identities whereas 'we' identities refer to group and social identities. According to this distinction, SIT is concerned with 'we' identities. But, careful analysis suggests that social identity proposed by SIT encompasses both personal and social aspects since it deals with individual's self-conception of group membership. However, social identity and group membership are not same. As Brewer (1991, p. 477) suggests, "membership may be voluntary or imposed, but social identities are chosen". Brewer (2001) also offers a new categorization of social identity – person based social identities, relational social identities, group-based social

[5] Role identities are "self-conceptions, self-referent cognitions, or self-definitions that people apply to themselves as a consequence of the structural role positions they occupy, and through a process of labelling or self-definition as a member of a particular social category" (Hogg et al., 1995, p. 256).

identities, and collective identities. Based on definitions of those four categories, SIT falls into group based social identities.

The discussion above makes it clear that identity has a strong grounding in literature especially in social psychology, sociology and anthropology. It has been used to understand inclusion of self into groups in many social situations. However, same is not true for IS literature. Even though technology adoption research has its roots in organizational adoption where groups (from different departments), hierarchy, conflict etc. often become very important to understand the drivers or barriers to adoption, the lenses of group processes and identities are yet to be widely utilized. Technology adoption literature developed and used different theoretical perspectives such as technology acceptance model (F. D. Davis, 1989), innovation diffusion theory (Rogers, 1983), model for PC utilization (Thompson et al., 1991), social cognitive theory in IS context (Compeau & Higgins, 1995), institutional theory (H. H. Teo et al., 2003) etc. Some of these theories have been used to study mobile phones as well. Of few studies that focus particularly on smartphones, most have used technology acceptance model or its extensions (S. H. Kim, 2008). Social identity perspective, though proved its importance in other academic fields, is yet to be used in this context and this research intends to contribute to that gap. The next section develops the propositions based on the theoretical underpinnings of SIT.

6.3 Formulating the Propositions Based on SIT

This section formulates the propositions and presents the research model.

Smartphone Use and Categorization

Categorization is a cognitive process which allows individuals to quickly process information about the surrounding environment and make necessary decisions (Dovidio, Gaertner, Pearson, & Riek, 2005). This process consists of classifying the environment in broad categories based on similarities and dissimilarities among the objects under observation. In case

of social identity of self, a person uses this cognitive process to position oneself in the environment (Ashforth & Mael, 1989; Tajfel, 1974) and as a consequence, the category and its properties become important to that person (Abrams & Hogg, 1990). It is important to note that according to social identity theory, an individual does not need to act upon the values of a group in order to identify oneself as a member of the group; perception of oneness is of essence, not the action (Tajfel, 1974).

In the context of mobile computing devices, researchers have found that people view mobile phones as distinguished status symbols (Campbell, 2005) based on features, accessories and personalization capabilities. In a later study, using the lens of social identity theory, Cassidy (2006) finds positive social attitudes and perception of favourable image towards mobile phone usage. The possession of a mobile phone helps individuals to become part of a social group (Campbell, 2005; Walsh et al., 2009) and form an identity separate from the family or institution (Campbell, 2005; García-Montes, Caballero-Muñoz, & Pérez-Álvarez, 2006; Holmes & Russell, 1999). Other researchers argue that the mobile phone ownership promotes and solidifies shared codes, language and meanings among users and as a consequence forms a collective identity (Castells et al., 2007). Based on this knowledge and smartphones' superiority over past mobile phones, it can be argued that there is a positive social outcome of owning and using a smartphone in users' current social environment. Users value these positive social perceptions toward smartphones and therefore, they classify themselves as members of specific smartphone user group. This discussion leads to the proposition below –

P1: Smartphone users will self-categorize themselves in a separate and distinguished user group based on their device.

Smartphone Use and Self-Enhancement

Self-enhancement is a cognitive process which satisfies people's need to have a positive self-concept in comparison to relevant others (Hogg et al., 1995). People classify themselves in

social categories/groups based on attributes or values of those groups. The process of self-enhancement reifies this perceptual category membership by comparing its norms and stereotypical behaviour with that of other relevant categories and by showing in-group norms in a positive light (Abrams & Hogg, 1990; Hogg & Terry, 2000; Hogg et al., 1995; Tajfel, 1974). Relational characteristics of social identity proposed by Abdelal, Herrera, Johnston, and McDermott (2006) is similar to self-enhancement. They suggest that social identity generates exclusivity by comparing the relative status of other identities. Hostility, discrimination and competition among identities can also be present (Abdelal et al., 2006).

Research on mobile phones (Campbell, 2005; Srivastava, 2005) points out that people want to make an impression on relevant others through phone features, ring tones, accessories, covers and so on. In another study, Walsh et al. (2009) investigated mobile phone use of 32 participants through focus groups and found that users hold a negative perception toward non-users as well as to those who do not conform to normative group behaviour (e.g. replying to text messages within a short time). Ownership of a mobile phone is also viewed as similar to a membership in a club (Walsh et al., 2009). Based on this context, it can be argued that owners of different smartphones form self-perceptions originating from the device they use and view themselves as 'club members'. As a consequence, there will be comparison, competition and discrimination against other similar clubs by presenting the in-group with a positive light. This discussion leads to the following proposition –

P2: Smartphone users will compare and compete with those of other devices through self-enhancement.

Smartphone Use and Descriptive Property of Social Identity

SIT indicates that when the membership in a group becomes important to an individual or when a person becomes attached to a social identity, then self-perception and actions toward out-groups get decided through the norms and stereotypical conducts of that identity (Hogg et al.,

1995). In other words, a specific social identity possesses a descriptive property. Abdelal et al. (2006) put forward the idea of cognitive models in respect of social identity which is similar to what Hogg et al. (1995) dub as descriptive property. The cognitive content describes "how group membership is associated with explanations of how the world works as well as descriptions of the social reality of the group" (Abdelal et al., 2006, p. 699). Based on this knowledge, I argue that social identity formed on the basis of smartphone ownership would also possess a descriptive quality into it. Studies on mobile phone usage (Cassidy, 2006; Walsh et al., 2009) find that mobile phone ownership is perceived through positive personal and social traits such as "playful, fun, successful, rich, not lonely, fashionable, attractive" (Cassidy, 2006, p. 246) and so on. In this regard, I propose the following proposition –

P3: Smartphone users will utilize descriptive self-perception properties of the social identity associated with these devices.

Smartphone Use and Prescriptive Property of Social Identity

SIT suggests that while forming self-perceptions, people assign level of importance to each social identity they associate themselves with (Hogg et al., 1995). Based on that importance level, these identities prescribe self-concepts, thoughts and/or actions depending on the situations. In other words, prescriptive property of an identity possesses an expectation that members will conform to the norms and stereotypical behaviours of the group (Abrams & Hogg, 1990; Hogg et al., 1995). Abdelal et al. (2006) conceptualize prescriptive properties as normative contents of collective identity. These normative contents consist of the rules defining group membership and attributes. Even though sometimes these norms are taken for granted, they form the meaning of a social identity by providing guidelines and more importantly recognition (Abdelal et al., 2006).

In the context of smartphones, it can be argued that user groups conform to specific procedures and/or actions which have been developed on the basis of ownership and usage of a

particular device. Mobile phones and the associated peer networks become "the context of behaviour for its participants" (Castells et al., 2007, p. 144). In an earlier study, Campbell (2005) reports a survey result which finds that users are very keen to upgrade their phones since this upgrade confirms status and peer-group membership to the self. In a later study, Walsh et al. (2009) also find emergence of expectations and group norms around the purchase and use of mobile phones. In this respect, the next proposition can be proposed –

P4: Smartphone users will conform to the prescriptive properties of the social identity associated with these devices.

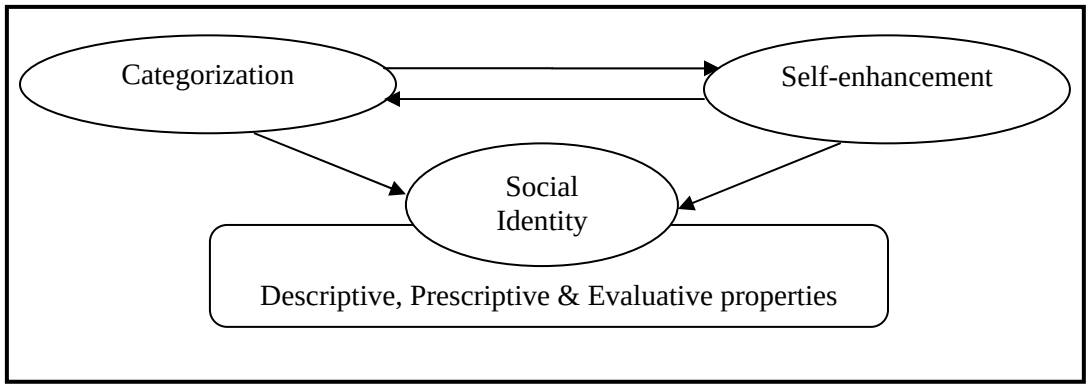
Smartphone Use and Evaluative Property of Social Identity

A social identity can serve as an evaluation criterion (Hogg et al., 1995). In other words, the social identity provides an evaluative result of the self after comparing it with other relevant categories. This evaluative property of social identity motivates individuals to act in a certain way which maintains and reinforces the norms of that identity because the evaluation is positive to the self and the group (Hogg et al., 1995). The purposive content of collective identity proposed by Abdelal et al. (2006) is similar to the concept of evaluative properties. The action of a group and individual members will depend on the notion of who they are. In the context of mobile phones, researchers (Castells et al., 2007) investigate usage by young users and dub this group identity as 'youth culture'. They argue that this collective identity endows each individual who share the culture with affirmation. In this respect, I expect smartphone users to hold evaluative self-perceptions before and after use. This discussion leads to the following proposition –

P5: Smartphone users will experience the evaluative property of the social identity associated with these devices.

Figure 6.1 illustrates the research model –

Figure 6.1: Processes and Properties in Social Identity



6.4 Research Methods

The objective of this study is to investigate social identities associated with smartphones. I use self-reports available on a website (www.cnet.com) as the data source. Qualitative content analysis is used as the data analysis technique.

6.4.1 Data

The data set contains 240 user self-reports on iPhone 4. The reasons for using self-reports are twofold – (a) Self-reports are spontaneous and self-initiated and are not bounded by a certain list of questions. Analysis of these reports has the potential to uncover issues felt by the users but which have not yet been analyzed systematically, (b) Self-reports help to understand the experiences of users though their own language. Words and written expressions are important sources of user experiences in the real life setting (Aakhus, 2003). The use of textual self-reports also allows the researcher to explore the themes that emerge in the context. As Katz (2003, p. 18) points out, the “folk theories” are important to understand impacts of technologies . I argue that user self-reports give a glance into the emerging ‘folk theories’ around a technology.

The data set contains self-reports from all over the world, but most of them are from developed countries. No demographic information is available on user profiles. iPhone 4 release date has been chosen as the cut-off point to include reports only from users who have come in contact with the phone through extended use. This approach eliminates the anticipatory comments made by people before the release of the device. There are three reasons for selecting this particular device – (a) To understand how people form social identity through their device, it is more sensible to select a comparatively new device to capture the identity formation process, (b) online forums provide a large set of textual data on 'iPhone 4' and (c) iPhone is still an evolving device and therefore, analyzing user experiences with iPhone can provide insights into future needs of users.

6.4.2 Data Analysis

Qualitative content analysis is used to analyze the data. Abdelal et al. (2006) suggest that content analysis can vastly inform identity research. Content analysis refers to a "research technique for making replicable and valid inferences from texts to the contexts of their use" (Krippendorff, 2004, p. 18). In addition, content analysis allows researchers to understand the mental maps of other people within a given situation (Duriau et al., 2007) which suits the purpose of this investigation. This technique is also able to handle large volume of unstructured textual data and therefore, is an appropriate choice for the type of data used in this study.

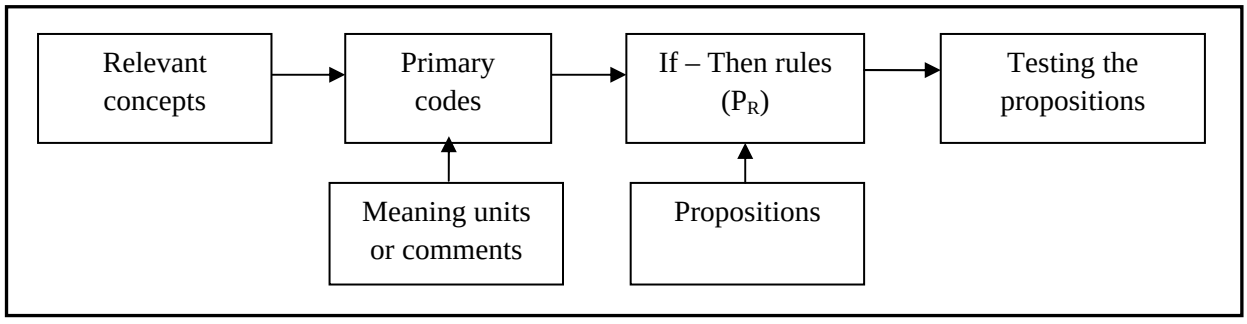
The nature of the data is textual and each report is considered as a separate case or unit of study. This process is in line with content analysis where the decision regarding 'unit of analysis' is important to extract useful information from the text (Krippendorff, 2004; Neuendorf, 2002). As a next step, a project is created with 240 separate cases in the data analysis software (HyperRESEARCH). This step allows the software to look for the proposition rules (thematic patterns) in each report separately and to provide with a result containing how many cases within the project supported a proposition. Knowledge about how many of the reporters have actually talked about an issue provides a basis for focusing on a theme for further research.

The key concepts (from the propositions) that I intend to examine with the evidence from the data are as follows – (1) Categorization, (2) Self-enhancement, (3) Descriptive (4) Prescriptive, and (5) Evaluative properties of social identity. I create primary codes to represent each of these concepts. If the concepts can be visualized as super nodes, the primary codes can be thought of as sub-nodes for the purpose of analysis. These primary codes are generated from the reports by searching for recurring themes that can be classified under each of the concept. Themes or concepts identified in previous research studies (Campbell, 2005; Cassidy, 2006; Hogg et al., 1995; Mishra et al., 2012; Walsh et al., 2009) have been used as the lenses for this search. Next, I examine each case separately to identify meaning units or comments that can be coded under relevant primary codes. Then, I establish software compatible 'if-then' rules based on the propositions (P_R) with the concepts and primary codes to form the 'rules' for thematic pattern matching (Castells et al., 2007; Sarker & Lee, 2003). The rules are developed based on the following format suggested by Sarker and Lee (2003) –

If the [condition] occurs, then the [outcome] is expected to co-occur.

In the final step, the software runs the 'rules' on every case and find out how many of the cases contain same thematic patterns as provided by the 'rules'. Figure 6.2 summarizes the data analysis procedure –

Figure 6.2: Data Analysis Procedure



6.5 Findings

This section presents the findings after the propositions are tested with empirical data from the self-reports. I investigate the association of concepts from SIT with the use of iPhone 4 by examining the co-occurrences of those concepts. This procedure is in line with content analysis. Duriau et al. (2007, p. 6) point out that "content analysis assumes that groups of words reveal underlying themes, that for instance, co-occurrences of keywords can be interpreted as reflecting association between underlying concepts". Co-occurrence in more than 50% of the cases has been selected as a level of acceptable support. This threshold level is selected to illuminate the concepts that follow a recurring pattern in the text from the ones that appear only sporadically.

$P1_R$: If use occurs, then self-categorization is expected to co-occur.

In the context of mobile phone usage, categorization is defined as a process of self-classifying oneself in a celebrated user group in terms of performance, features and options. P1 conjectures that if the reporters use iPhone 4 then they are expected to self-categorize themselves in a separate and distinguished user group through explicit comments. I examine every case to understand use or non-use of iPhone 4 and the concept of categorization. This close examination is important for identifying the primary codes from the text to represent SIT concepts. In the reports, users make frequent comments about how they perform better than others after using their device. They often compare their current performances (in personal and work lives) after using iPhone 4 with that of previous times and classify themselves as members of a distinguished user group who are better equipped to perform. Users also make explicit comments about how iPhone has allowed them to have a distinct lifestyle. Below are examples of comments coded under categorization –

Table 6.1: *Categorization: Primary Codes and Meaning Units*

Primary codes	Meaning units or comments
iPhone 4 makes me perform better than others/before	- "After years of unsuccessfully trying to find a phone that offered just the right balance of coolness and affordability, I decided to ditch that latter entirely when making my new phone decision. Thank god I did, I'm a better man for it."
iPhone 4 is a lifestyle	- "Feels good to show off, iPhone is more than just a phone, it's a lifestyle." - "The iPhone simply has that "It" factor. Some Android phones have a "Wow" factor but not "It" status. This might change as the Android community grows. For example: when I first got my iPhone 4, dozens of people stopped me on the subway to gaze at my phone. In comparison, when my friend got the Android Incredible, no one stopped him."

After running the proposition rule on each case for co-occurrences of 'use' and 'categorization' related codes, the results show that about 59% (140 cases out of 240) of the self-reports contain the co-occurrence pattern. Therefore, P1 passes the acceptable level for empirical support.

$P2_R$: If use occurs, then self-enhancement is expected to co-occur.

Self-enhancement refers to a cognitive process in which people elevate the status or image of their own group by comparing the group norms or features with that of other relevant groups. P2 conjectures that if device use is affirmative, then the reporter would make attempts to enhance the status of their device by posting comments competing with other device. Each case was analyzed to unfold the sequence of use and self-enhancing comments. Below are examples of comments coded under 'self-enhancement' –

Table 6.2: *Self-Enhancement: Primary Codes and Meaning Units*

Primary codes	Meaning units or comments
comparison and competition with other smartphones	- "feeling of superiority over other phones" - "I am familiar with Blackberry (through my employer) and the Droid UI (through a client that is testing them)--There is no comparison in overall experience and quality" - "It's like the line from "The Invention of Lying" - Pepsi: for when they don't have Coke. The iPhone is Coke" - "A friend of mine is on her 5th Palm Pre, and it broke again today after 3 days. I think my iphone 4 is the best of the best that is out there currently. I researched droid a lot. Does the Android Market even have a search feature for a specific app? I wonder what the resale value is on droid phones vs. iPhone?"

141 cases out of 240 i.e. 59% contain co-occurrences of use and comments regarding comparison and competition with other smartphones. This result suggests that P2 has an acceptable level of empirical support.

$P3_R$: If use occurs, then utilization of self-perception properties is expected to co-occur.

SIT suggests that a particular social identity has some inherent descriptive properties into it. People who associate themselves with that identity form a self-perception based on those properties. Their actions with in-group and out-group members are based on the norms and stereotypes associated with that identity (Hogg et al., 1995). P3 aims to investigate whether iPhone 4 users reveal any specific self-descriptive property in their reports. In order to carry out a systematic inquiry, 'tech savvy and performance oriented' and 'playfulness' have been selected as primary codes to represent descriptive property of iPhone oriented social identity. After analyzing all cases, the results suggest that iPhone users make repeated comments about how they perceive themselves as high-skilled users in the context of mobile phone usage and how they distinguish themselves from others by the ownership of this device. Below are examples of comments coded under descriptive property –

Table 6.3: *Descriptive Property: Primary Codes and Meaning Units*

Primary codes	Meaning units or comments
Tech savvy and performance oriented	- "perfect integration with apple's "ecosystem" …extremely intuitive. I've never had to learn how to do something I just figure it out as I'm doing it. It's very fast, multitasking is awesome"
Playfulness	- "Most fun you can have, all in the most compact space. As of now the iPhone is still the better and more fun smartphone to use when it comes to the vast amount of applications in every category (games, productivity, utilities, etc.) "

Out of total 240 cases, 123 cases (about 51%) contain co-occurrence of use and comments coded under descriptive property. Hence, P3 has enough empirical support.

$P4_R$: If use occurs, then conformation to prescriptive properties is expected to co-occur.

Advertisements, marketing campaigns and brand promotions try to portray smartphones as sources of unique experiences. These experiences include 'coolness', 'latest', 'attractive' and such. According to SIT, members of a group conform to the expected stereotypical norms in order to attest identification by self with peer-groups. This study investigates whether users perceive iPhone as a repertoire of such prescriptive properties which they need to conform to in order to be in the league. P4 conjectures that users will express a perception of conformity with iPhone oriented prescriptive properties. Each self-report was coded with the primary codes selected to represent these properties. Table 6.4 provides examples of comments coded under the primary codes –

Table 6.4: *Prescriptive Property: Primary Codes and Meaning Units*

Primary codes	Meaning units and comments
Cool	- "Everything on the iPhone is super cool! Well, what a nice device! Lots of cool apps available" - "It feels like a luxury device (which it is but just saying you'll have that "I can't believe I'm holding it!!!" feeling"

Primary codes	Meaning units and comments
Up to date	- "I knew if I didn't get an iPhone, I would always be jealous of the latest mobile gaming craze" - "On launch day, I loyally queued up at my local Apple Store at 6:30AM and waited... and waited... and much much later that day, I finally had my iPhone 4 in hand."
Innovative	- "Very innovative - responsive and reactive. Amazing app store and fantastic graphics." - "Apple stays way ahead of any competition by its innovation"

Out of 240 cases in the data set, 147 (i.e. about 61%) contain co-occurrence of comments coded under prescriptive property and use. Hence, P4 passes the acceptable level of empirical support.

$P5_R$: *If use occurs, then experience of evaluative properties is expected to co-occur.*

SIT suggests that a person who self-identifies oneself with a social identity will compare the norms of that identity with other relevant/past identities. The result will be positive towards the self and to the in-group (Hogg et al., 1995). In light of this argument, P5 investigates whether iPhone users evaluate their current personality (after using the device) with the former personalities when they used different devices. The primary code for the evaluative property is – 'assessment of self after iPhone use'. It is important to note that the assessment refers to self-assessment as relevant to the self-identification process in the SIT. Below are some comments coded under the evaluative property of social identity –

Table 6.5: *Evaluative Property: Primary Codes and Meaning Units*

Primary codes	Meaning unites or comments
assessment of self after iPhone use	- "I was torn between keeping my beloved BlackBerry and switching to the "trendy" iPhone. I debated right up to my purchase. Since then I haven't looked back, nor regretted my decision! It did take 1-2 weeks while I familiarized myself with the iPhone and its settings, apps and intricacies. The sheer number of apps available for everything under the sun is a huge plus in my book. I feel very organized and like I have the world at my fingertips." - "I love how anything I want to do with my phone I can do with my iphone. It has literally changed my life."

In the data set, 48 cases out of total 240 (about 20%) contain co-occurrence of use and comments coded under evaluative property. Hence, P5 is not supported by the data.

Table 6.6 summarizes the findings –

Table 6.6: *Summary of Findings*

Proposition	Co-occurrence %	Support in the data
P1: Smartphone users will self-categorize themselves in a separate and distinguished user group based on their device.	59%	Supported
P2: Smartphone users will compare and compete with those of other devices through self-enhancement.	59%	Supported
P3: Smartphone users will utilize descriptive self-perception properties of the social identity associated with these devices.	51%	Supported
P4: Smartphone users will conform to the prescriptive properties of the social identity associated with these devices.	61%	Supported
P5: Smartphone users will experience the evaluative properties of the social identity associated with these devices.	20%	Not supported

6.6 Discussion

Users claim that smartphones are becoming essential to carry out their everyday activities both off and online. After observing users passionately defend their devices in online forums and intensely criticizing other brands, I became interested to conduct this research since this situation demands a broader understanding of technology acceptance. Existing theoretical frameworks are not enough to shed light on a situation where people adopt a device at individual level but categorize themselves as members of a user group based on ownership and not on traditional categories like age, gender, location etc. Identity theories, particularly social identity theory hold the potential to illuminate this situation. So, this research started with the aim to investigate whether use of smartphone can be better understood through the lens of SIT.

The findings show that smartphone users categorize themselves in celebrated user groups based on the ownership of their device and associated features. iPhone users self-enhance their status by competing with users of other similar devices. In line with SIT, users do not always need to engage in debates with other users for categorizing oneself in a user group and compete with others, rather it is a self-perception. The competition with other devices portrayed by self-enhancing comments is intense. This result suggests that people want to project a certain identity with their devices and think that other competing device lack in that capability.

The results also show that the users take note of the prescriptive values and norms that get attached with a user group. They regularly update their iphone, keep ‘up to date’ features and argue that this practice helps them in many ways. Most iPhone users also associate themselves with the descriptions of the social reality of their group. They project themselves as technologically savvy who are able to use the device for both work and fun. Most of them do not categorize themselves as devoted Apple fans and suggest that they are open to check out new devices from other manufacturers if they provide a correct balance of work and fun features. This finding suggests that smartphone acceptance does not solely depend on brand devotion or range of functionalities. Users seek a perfect combination of functionalities and enjoyment in device,

but that mix has to conform to the identity they want to project as members of a unique group. However, they may not evaluate their past personalities by current device ownership as revealed by the results. There was no significant co-occurrence of evaluative properties of social identity and smartphone use in the data set.

Limitations of the Research

This study has some limitations that I will point out before moving to contributions and implications. First, the research focuses on a single device and hence, the results may not apply to other similar devices without further investigation. However, future works on social identity and mobile computing devices can be informed from the theoretical background and research process laid out in this paper. Second, self-reports posted on the Internet have the possibility of being generated by users who are tech savvy to begin with. However, it is important to note that the online user reports have become an important information source. There are people who do not post their own experiences but use posts by other users to make purchase decisions. Third, the relationships uncovered in the findings are associations based on co-occurrences of concepts, no causality claims can be made from these results without further research.

Contributions and Implications for Practice

This research makes several specific contributions. To my knowledge, this is among the first studies in IS that uses social identity theory to understand smartphone acceptance and use. Use of this theoretical lens and presentation of empirical evidence contribute to the extant technology adoption and IS literature. This study contributes to the technology acceptance literature by connecting the identity related concepts with new generation personal devices.

The findings can also be useful in technology management literature. Organizations need to manage their identity to the employees as well as to the outsiders (Tripsas, 2009). Smartphones are disruptive to many of the organizations' existing technologies and associated

routines. Analyzing a photography company, Tripsas (2009) finds convergence of technologies in one device to be identity-challenging. This can be true for many other organizations given the overwhelming reach of smartphones armed with the social media platforms. Boundary expansion of workplace can create identity ambiguity among employees. In order to align organizational identity with the technological shift, organizations must understand the personal level identities that employees associate with their devices because attempting to change only routines and capabilities (Tripsas, 2009) without understanding the implications on personal identities may not be effective.

This study also has methodological contribution. It demonstrates a detail method of content analysis by utilizing new type of data. Abdelal et al. (2006) advocate content analysis as one of the best suited method to study social identity and this research responds to that call.

As for practical implications, this research reveals an area where designers and marketers of new generation mobile devices should focus on while promoting their products. This investigation suggests that users self-categorize themselves in a distinguished user group and compete with other devices. Therefore, it is recommended to magnify the differences with other similar devices and in-group norms to be more effective in targeting new customers. In addition, innovative ideas are required to introduce new products in this market. New companies need to think about not only the competing products, but also the social identity associated with them. So, in order to disrupt, there must be reinventions of identity that people can attach them with. Otherwise, negative emotions will be the end result toward the new product after people compare it to their other similar devices.

New generation devices from same manufacturers come out quite regularly. However, many users do not stick with a single smartphone manufacturer for long which is contradictory to the ideas of brand devotion for other consumer goods. This situation indicates the speed of change in personal technologies. As the findings suggest, descriptive and prescriptive group norms are more influential compared to the evaluations of past personalities or identities while

users accept a new smartphone. This is illuminating because while promoting a new product, companies may want to focus on demonstrating the ways their devices fit with the desirable group descriptions and expectations of new capabilities, rather than on what users could not perform with past devices.

Future Research Directions

Further research is needed to understand the role of identities in appropriating new personal technologies like smartphones. Other researchers can include more than one device in their investigations and may be better understandings can be achieved if usage can be monitored over time. This study focuses on individual level, but the theoretical understandings can be applied to study groups and interactions of individual members in those groups.

Contestation or the degree of in-group agreement about the norms, social purposes and out-groups (Abdelal et al., 2006) etc. can also be investigated by future studies in the context of smartphone adoption. This kind of research may illuminate the level or type of stimulations needed to make a group more in tune with the products and as such will have implication for producers of new devices. Expansion of social media can also be linked with identity and smartphones. What roles social media boom play on identity formation that is related with personal mobile devices? What are the impacts of conflicting messages and promotions on identity that was developed based on a device? How new generation devices impact the identity of the users of an old-generation products?

Future research studies may want to understand how the identities associated with mobile computing devices influence social situations such as family, workplaces, educational institutions and overall group interactions. In-depth discourse analysis can be carried out to understand the shared meanings and values of the owners of mobile computing devices which may hold the possibility of solving intergroup misunderstandings in this technologically fluid environment. More research is required to understand how the mobile device identities influence

the perception of efficiency and self-worth of the owner. Formation and change of social identity associated with technological artefacts and their implications on human resource management can be an area of future research. Access to such devices to one group of employees and not to others may give rise to conflicts and is an area where future research can focus on. All these studies would add to the emerging knowledge about these devices and can help in designing next generation devices more in tune with users' needs and help develop policies and practices for better image management at domestic and work spaces.

6.7 Conclusion

This paper investigates acceptance of smartphones and associated identity related issues through the lens of social identity theory which has not been widely used in IS despite its rich grounding in other literature. Since smartphones are penetrating the personal and work contexts, it becomes important for IS researchers to study the acceptance decisions by users in various situations. This research has contributed to practice by pointing out that identity related issues must be thought about before launching any new product to a market segment since users associate with the description and prescription of a group identity. The results show that people want to enhance a smartphone based identity by competing with other similar devices. Hence, for any organization, it becomes important to align the personal smartphone identity of employees with that of official one before introducing organization sponsored devices. The intent of this paper is to fuel interest in IS community to work with identity and adoption of new generation technologies because of the unique capabilities of these devices to reshape communicating and computing practices in so many different contexts.

7.0 Study 4: Identification with a device: An Interpretive Analysis using Hermeneutic Circle Framework

Abstract

This paper explores the phenomenon of users' identification with their smartphones and focuses on two leading brands – iPhone and BlackBerry. Smartphones are reshaping the dimensions of communication and interaction. Motivated by this change, this research investigates why and how people identify with their smartphones. Analyzing qualitative data through hermeneutic circle, this research illuminates that users' seek a way of legitimizing their commitments and view their smartphones as extensions of the image they feel they possess or should possess. The data suggest that people can also identify with their smartphones based on positive contextual experiences even if they are not devoted fans of a particular brand. The findings provide a theoretical understanding and also offer practical implications.

Keywords: smartphone, identification, legitimizing, image

7.1 Introduction

Smartphones have reshaped the way people communicate and interact. Many manufacturers now compete for market share at a global scale. This competition is no longer limited to the producers and marketers of smartphones. Users have joined the camps actively. Many users create websites, regularly post online about the device they are using and how it is affecting their lives and many others go to the length of having heated arguments with users of other smartphones. These users act like spokespersons for the device without any cost to the manufacturers. In this context, it can be argued that many users form identification with their smartphones. Identification with a group is not a new phenomenon. People have been doing it for a long time as they identify with nations, race, ethnicity, sports group and so on (Buckingham, 2008). However, in the technological landscape, identification with a personal device is not a well-explored topic.

Research studies focusing on 'attachment' explain that people get attached to their devices because these devices act as repertoires of the relationships with others in the form of contacts, memories, pictures, and songs etc. (Vincent, 2006). However, the role of the device is missing from this understanding of attachment. In that respect, Wehmeyer (2007) proposes three dimensions in user-device attachment – symbolism, aesthetics and perceived necessity and suggests that future research should focus on these themes. Arnold, Shepherd, and Gibbs (2008) also view creation of memory as an interaction between human and 'things'. This interlinked relationship creates intimacy with the object/device. This intimacy can be influenced by functional features of technology (such as personalization options), situations, and peoples' emotional state (Sørensen, 2011). All these perspectives focus on pre-established personal relationships that are supported by the object. However, the cult like following of some smartphones points to the possible existence of group level issues. This research will use 'identification with a device' as the core research concept which can encompass both personal and group level situations.

There are only few studies which explicitly deal with ‘identification with a device’ (Caroll, Howard, Vetere, Peck, & Murphy, 2001; Cassidy, 2006; Satchell & Graham, 2010; Truch & Hulme, 2004). Moreover, most of the research focus on young users and their general use of phones emphasizing on youth social life (Auter, 2007; Axelsson, 2010; Campbell, 2005; Holmes & Russell, 1999; Katz & Sugiyama, 2006; Stald, 2008; Walsh et al., 2009). Even though these findings are important, this situation points to the gap in the knowledge where a new understanding is required when smartphones are being used in varying contexts by people of different ages. The ever-increasing mobility of the workforce and inclusion of personal computing devices in organizational information network press IS researchers to learn more about how people identify with their devices. This understanding will be important to formulate new strategies to manage a new workforce. This study aims to uncover the meanings of ‘identification with a device’ to build a foundation for such future work. The research questions are as follows –

i) What does identification with a smartphone mean to users? Why do people identify with the device they use?

By analyzing qualitative data on latest models of iPhone and BlackBerry using hermeneutic circle, the research found three recurring themes – legitimizing the commitment, contextual experiences, and image. After going back to the data again, it became clear that the first two concepts are intertwined with ‘self’ while ‘image’ is more connected with groups. The findings of this research suggest that in case of identification with a device, there exists a duality about oneness with the self and the group.

The rest of the paper is organized as follows – first, relevant research studies on identification and identity are discussed. Then, research methods section lays out the hermeneutic circle framework followed during the research. This section also covers the data, its type and sources. Next section reports the findings. The paper concludes with a theoretical elaboration of the findings, limitations and suggestions for future research.

7.2 Related Research

A search for the meaning of 'identification' provides following results –

i) Something that identifies a person, animal or thing, ii) Acceptance as one's own of the values and interests of a social group (Sociology), iii) A process by which one ascribes to oneself the qualities or characteristics of another person; perception of another as an extension of oneself (Psychology), iv) Identification refers to the influence a person has with other persons or group based on a self-defining connection (Kelman, 1974).

These meanings reveal a duality in the meaning of 'identification'. On one hand, it refers to the uniqueness which distinguishes a person from others. On the other hand, it refers to the integration of others' values as one's own. Jenkins (2008) and Buckingham (2008), in their discussions on 'identity' also point to this duality and dub it as the central point of the debate in extant identity literature. A broad literature on identity is available from psychological, sociological and anthropological perspectives (Buckingham, 2008; G.-M. Chen, 2009) and as a result different theoretical understandings have been developed over time. Psychological stream of research mainly focuses on process of identity formation and the most renowned work coming out of this stream is the 'Social Identity Theory' (Tajfel, 1974; Tajfel & Turner, 1979). In contrast, sociological stream of research has emphasized on role identities and salient identities of people and 'Identity Theory' is the most widely used theoretical framework in that field. There have been arguments to integrate these two theories to reduce the overlap in research and understanding. However, there were oppositions to this idea of merging as well (Hogg et al., 1995). In contrast to these two perspectives which concentrate on self and social identity based on individuals and groups, anthropological stream of research introduces issues of culture, community, ethnicity, places etc. into the identity picture (G.-M. Chen, 2009).

Jenkins (2008) points to an ongoing debate about whether identity and identification still have something to offer to the understanding of social phenomena. Critics of using these

concepts argue that these terms have become overloaded with meanings in so many different contexts that they do not really offer any new insight (Brubaker & Cooper, 2000). However, there are researchers who disagree with this position and try to elucidate the overarching reach of identification and identity in both historical and modern times (Jenkins, 2008). Illuminating work by Giddens (1991) which identifies the changes in self-identity through advancements in postmodern societies is notable in this respect. He argues that in the post-modern society, people produce personal narratives to express self-identity and different characteristics of the societies get produced and reproduced by these narratives and vice versa. Though paradigmatically different from Giddens (1991), Goffman (1959) introduces the idea of self-presentation which also has the common theme of self-projection by individuals in everyday life. Identity researchers have done much work on group identity in addition to self-identity discussed above. Even though some researchers question the concept of group as an illusion (Brubaker, 2004; Brubaker & Cooper, 2000), others argue for the existence of groups in both pre-modern and modern societies (Jenkins, 2008) and suggest why identity would matter to those groups.

From the above discussion it is clear that identification and identity are not new topics but they are important. It has been under scrutiny for a long time and from many different perspectives. Even though identification and identity are not solely modern phenomena (Jenkins, 2008), it cannot be denied that modern societies have an influence on how people create their self-narratives (Giddens, 1991). This is where this research connects to the identity literature. We cannot deny that the pace of technological advancements of this time is unprecedented and it might play an important role in shaping the self and social identity of the users. This project explores the issue of identification using the lens of technology, specifically smartphones.

Once again, the debates regarding impacts of technology on society, change, power, identity etc. are not new. As Buckingham (2008) points out, today's debates about digital technologies are surprisingly similar to those about various traditional technologies. He points to the fixations to technology determinism and also social construction of technology. Both perspectives have been challenged by critics. Orlikowski (1992) points out the limitations in both

these perspectives for understanding the interactions of technology and people within organizational settings, and as a solution, proposes a structurational model that incorporates the duality in technologies. IS, as a field, does not have a strong standing in identification and identity research. Even though technology has long been deemed as a source of influence on identity formation and the root of IS research is "science of the artificial" (Y. Yoo, 2010, p. 213), IS field has been surprisingly mute in this regard (Mishra et al., 2012). Most studies have been carried out in the field of communication and marketing. Greater emphasis has been given to youth and their interactions with technologies. Virtual identities such as avatars and profiles have been analyzed as representations of self and social life of young people (Weber & Mitchell, 2008; Willett, 2008).

Mobile communication technologies have also been studied to understand youth identity in an always-on environment (Stald, 2008). Some research focus on brand devotion and current trends to understand the acceptance of mobile devices by youth (Arruda-Filho et al., 2010; Balakrishnan & Raj, 2012). Most of these studies concentrate either on one group of users such as iPhone users or different smartphone users without acknowledging any distinction among the devices used. What is missing is the exploration of identification issues with a lens of comparison among different devices. Do people attach to different devices just because of brand devotion or trend? Why is there a cult-like following for these devices? These questions are important because smartphones are increasingly blurring the boundaries between home and work as well as work/family space and time. This blurring is not just happening for youth and children. Youth and young adults constitute a new market segment and as a result marketing and advertising literatures have been giving more importance to identity and branding. But, these issues are becoming more important for IS as well because the increasing mobility of the workforce and its use of personal mobile devices to accomplish work related activities challenge organizations to devise new kind of strategies. As clear from the findings of Scheepers et al. (2006) organizational use of mobile devices and user satisfaction can be influenced by image and perception of professionalism derived from extra-organizational contexts. Symon and Pritchard (2011) also suggest that the 'connected' identity projected by the 'mobile workforce' is a socio-

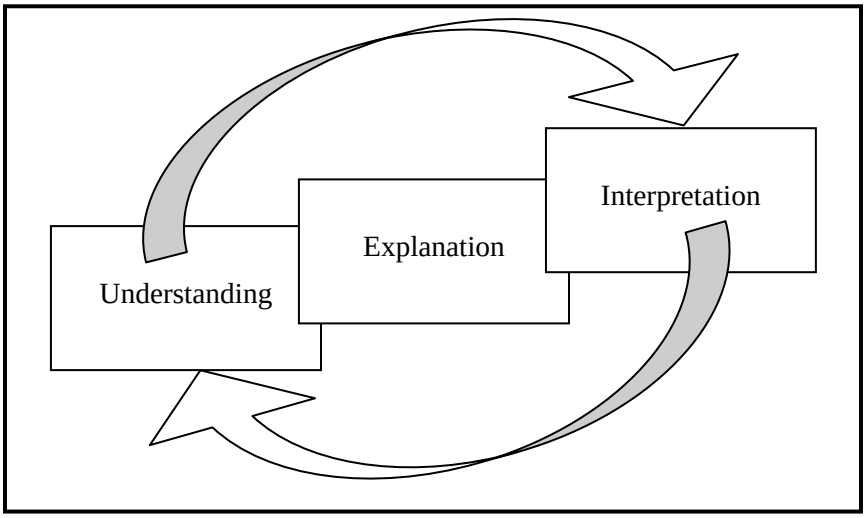
material process including both device and social constructions. These findings reveal that there may be other pieces to the identification puzzle, not just brand devotion or style promoted by the marketers. This research is an attempt to figure out some important parts of the puzzle by exploring comparative narratives regarding two leading smartphones.

7.3 Research Methods

This research follows the hermeneutic framework suggested by Cole and Avison (2007). Hermeneutic circle refers to the process of interpretation that moves through the 'whole' (phenomenon) to its parts and back to the whole (T. Butler, 1998; Gadamar, 1976; Klein & Myers, 1999; Myers, 2004). For this investigation, hermeneutic circle has been chosen for two reasons – first, it allows the researcher to uncover new understanding about a phenomenon by moving beyond the conventional notion; in this case, the common idea about identification with a device. Second, it gives the researcher the freedom to follow the negative cases and therefore to offer new interpretation about the subject (Cole & Avison, 2007).

Figure 7.1 presents the framework that I followed during the investigation –

Figure 7.1: Hermeneutic Framework (from Cole & Avison, 2007)



The research procedure was divided into six phases where each phase constituted an important piece in the process of hermeneutic circle –

7.3.1 Phase I: Clarifying Prejudices

Prejudice is a core concept in hermeneutics since understanding cannot begin without some kind of prior knowledge (Myers, 2004). Due to my prior experience with the literature on technology acceptance and social identity, I started this investigation with some set constructs in my mind about the reasons people identify with their devices. I started the research with these general ideas –

i) When people identify with their devices, it is actually brand devotion due to the hype created by the intense marketing of smartphone companies.

ii) The identification is basically a self-perception about the membership in a celebrated user group.

iii) People who update their smartphones frequently do not get attached to their devices. To them, it is 'just a device' which helps them to accomplish their functions.

7.3.2 Phase II: Constructing the Strategy of Analysis

Deciding about the strategy of enquiry helps the researcher to easily move through the hermeneutic circle – "from deconstruction (as understanding), to analysis (as explanation) to interpretation (to understanding differently)" as suggested by Cole and Avison (2007, p. 825). At this phase, the focus of the research is narrowed down to two leading smartphones – iPhone and BlackBerry. Even though some other smartphone platforms (such as android) are gaining market share, iPhone and BlackBerry still lead the competition at a global scale. Moreover, since the

objective of this study is to understand the phenomenon of 'identification with a device', it is prudent to select devices which have been widely represented in the media and in the user generated online forums. The primary source of data is the self-reports posted by users of these two devices.

7.3.3 Phase III: Collecting Data

At this phase, data were collected for both devices – iPhone and BlackBerry. The online sources of data included websites where the data are publicly available (i.e. no membership is needed to retrieve the self-reports posted by users). For the purpose of this research, first I needed to know if the users show any sign of identification with their smartphones. The issue of identification is subtle. It is not expressed by straightforward yes-no answers. The self-reports are spontaneous expressions of the users (and non-users) and hence, are better sources to find markers of identification compared to direct interviews. Table 7.1 provides the details of data –

Table 7.1: *Data Summary*

Data	Source	Details
Self-reports	www.cnet.com	83 user generated self reports on iPhone 4S, and 65 self-reports on Blabkberry Bold (the newest device for each operating system at the time of this research)
Self-reports	www.squidoo.com	132 user generated self-reports comparing iPhone and BlackBerry

7.3.4 Phase IV: Analyzing Data

The data were qualitative and textual and a thematic analysis (Miles & Huberman, 1994) was carried out to illuminate recurring patterns. At first, two separate documents were created for two sources of self-reports. Next, the self-reports were analyzed for recurring themes with the help of HyperRESEARCH software. After creating a separate study in the software, each self-report was entered as separate case and was coded for themes. These themes emerged from careful reading of the texts. However, it is to be noted that thematic analysis is not absolutely

free from researcher's prior knowledge about the phenomenon and that separation is not needed in hermeneutics. In fact, prior knowledge is an essential part of understanding and new interpretations (Myers, 2004).

Next, a content analysis was conducted with the help of the research software. The purpose of this analysis was to find out the representativeness of the themes previously identified in the data. The software provides with a frequency chart and hence, it becomes easier to pull out the most important concepts from the texts. This frequency report can also help to uncover any contradiction between the prior knowledge of the researcher and the data by making the recurring themes clearer.

After the thematic and content analysis, another round of careful analysis was carried out which included the comparative self-reports. This is an important step in hermeneutic circle which needs the researcher to go back to the whole from the parts. Going back to the data with the knowledge of recurring themes allowed me to compare this understanding with my prior knowledge and hence to identify the contradiction. As a result, a new theoretical understanding was reached that accounts for the themes and also reconciles the contradiction.

After analyzing the content of the self-reports for each separate device, the accounts that reveal users' identification with their smartphones were isolated. Since, it was not possible to get a direct yes/no answer from the written accounts; I used several markers based on the understanding from the extant literature to capture the presence of identification. For example, comments like "I cannot live without this phone", "this device is me", "it makes me smart and efficient" and "At last, I am on the same page with my friends" indicate a blending of users' identification with the object. Based on these markers, a content analysis was carried out which derived interesting results. 58 self-reports out of total 83 (about 70%) on iPhone 4S contain at least one comment similar to the markers. Within those 58 reports where the users explicitly identified with their iPhone, 18 of them (about 31%) reported about using an iPhone or any Apple products before. In 40 self-reports (about 69%), users explicitly mention that they have

been using other smartphones before purchasing iPhone 4S. In case of BlackBerry Bold, 51 self-reports out of total 65 (about 78%) contain at least one comment coded under identification. 34 users out of that 51 (about 67%) used some kind of smartphones before but not BlackBerry while the remaining 17 users (about 33%) have used other BlackBerry phones for quite some time.

7.4 Findings

The analysis revealed several recurring themes in the self-reports. They are – legitimizing the commitment, positive contextual experiences, positive or negative image of the user group, and inclusion or exclusion of the self into or out of that image.

Legitimizing the Commitment

The thematic analysis was conducted with the research questions in mind. I wanted to know if those self – posted accounts reveal any pattern that could shed light on why some people identify with their devices to an extent of posting online and sometimes engaging in heated debates. For both iPhone 4S and BlackBerry Bold reports, one theme appeared over and over again; that is people elaborately explaining why that particular device suits their lifestyle, functional needs and their image. They go on and on about why they really need that device even if they had to pay a premium price. They often compare with other devices when explaining the preferences for their own devices.

> - "I have officially taken ownership of my iPhone 4S. iPhone can be a bit pricey but the quality of technology is well worth it. I have run it through every test I could think of to compare it to my Android OS and found the iPhone allows for more clear calls and a much more stable operating system" *(iPhone 4S user)*

> - "Had Samsung Nexus S before. Good phone but it had some flaws. Decided to get an iPhone 4S. I think $660 CAD is a bit too much for a smart phone, but it's totally

worth it. The phone looks REALLY nice. Does perfectly all the things I need it to do. Overpriced, but worth it" *(iPhone 4S user)*

- "BB Bold is 'The Best Phone' on the market. I am a successful insurance agent and need a phone that will do it all. I want to be productive for work, but yet I also want a phone that will be fun for personal usage too. And, I want my phone to look cool too. To me this is the only phone out there that fits that bill" *(BlackBerry Bold user)*

Many users write about why there is no 'one device fit all' in current smartphone market. They mention about the uniqueness of their situations and usage practices[6]. They argue that different people have different priorities. One particular device cannot cater to all the demands and thus they have valid reasons for choosing the device they currently own. They go to extra lengths to establish the match between the device and their needs. Examples of the comments from the data set show this mind set –

- "The iPhone 4S is ahead of its time and has the applications to stand behind it. This product isn't for every consumer, however. For the customer with music, a need for efficiency, and some money to spend, the iPhone is perfect" *(iPhone 4S user)*

- "This smart phone is great, but definitely for the right costumer. It's quick, innovative, and ahead of time. It's fantastic for users who love music and love to play on their phone by playing games, checking email, and all types of things done on the internet" *(iPhone 4S user)*

- "The ability to handle multiple email accounts, including Exchange. A simple, decent camera. Medical apps like Epocrates. Music apps like Pandora, Shazaam, Slacker radio. Utilities like Evernote, Dropbox. You get the idea. Mostly as a functioning phone, a real phone with organizing tools, but with a few entertainment things" *(BlackBerry Bold user)*

[6] It is important to note that as a researcher reading hundreds of self-reports posted in different websites, I do not find many usage practices as unique as the users think those to be. There are many people writing about similar practices. However, what is important for this study is the perception of unique usage needs by the users which legitimizes their purchase and commitment to a particular device.

> - "BlackBerrys are work horses. At the end of the day, it and its competitors are vying to be your phone so what's best for me isn't necessarily best for you. The way I see it, a cell phone makes calls, allows you to communicate with others via text messages, instant messages or email. The keyboard and touch screen combo makes the 9930 Bold the most efficient communications - yes, better than the iPhone and the plethora of Android devices. It may not be as fun, it may not be as aesthetically attractive, it may not have the biggest screen or the biggest library of apps available - so what if its' not a toy - it's a darn good phone" *(BlackBerry Bold user)*

After carefully reading about half of the reports, I was able to connect these self-explaining reasons into one category – 'legitimizing the commitment'. Next, I went back to the whole data set again to analyze each of the report through the lens of this newly established category. At this stage, I established a working definition of the theme –

Legitimizing the commitment refers to users' explanations about why they purchased the device after considering their personal and social needs, price of the device, and improvements over previous models.

Positive Contextual Experiences

Another theme that comes up quite frequently in the self-reports for both devices is the positive contextual experiences that people had with their devices. Their detail accounts suggest that the relationship with their devices have grown stronger after having those positive experiences and vice versa. User satisfaction with mobile phones have contextual dimensions as reported by Scheepers et al. (2006) and I also observe two contextual sub-themes (personal and work) in the data. Users keep posting about how their devices help them in tight work situations as well as in personal lives in novel or better ways. Below are some examples of comments coded under each sub-theme –

- "Working in the medical field I am finding many uses for it. Translating, using Facetime to troubleshoot equipment problems, and timed exams." *(iPhone 4S user on work context)*

- "This thing is far more than a phone! And I use it a lot more than any of my previous phones- listening to audio through my TV, using he iPhone as a remote; watching video from my phone on my TV seamlessly"*(iPhone 4S user on personal context)*

- "I am a physician at a busy hospital and we communicate with each other EXTENSIVELY via text throughout the day. The main problem I'd had with my Droid Incredible was the virtual keyboard. If I spent an hour a day texting, literally 15 minutes of that time would be erasing incorrect 'auto corrections'. iPhone keyboard is far worse, with absolutely horrid options for customization. BlackBerry 9930 keyboard is the best thing I've ever typed on." *(BlackBerry user on work context)*

- "Call quality is great (amazing compared to my old Galaxy S), I use this phone as my music player and it does that great. By far the best BlackBerry I've ever used. Even though I use it primarily as a phone I still use apps over Wi-Fi and they work great". *(BlackBerry user on personal context)*

With the understanding of contextual experiences shared by the users, I developed definitions to guide the next stage of interpretation. For the purpose of this research, 'positive experiences – personal context' is defined as *'situations where a device has helped in managing personal/leisure situations in novel ways'*. Similarly, 'positive experiences – work context' is defined as *'situations where a device has helped in managing work situations in novel ways'*.

Perception about Group Image and Inclusion or Exclusion of the Self

Users frequently mention about the image that various devices have in society and how their own image match (or does not match) with that perception. It is clearly evident from the

data that the perceptions of the users are not really different from the product image advertised by the manufacturers. For example, iPhone is still predominantly viewed as an entertainment device whereas BlackBerry is seen as a work device. However, what is interesting to observe is the emerging plasticity of these images within the boundary of fun at one end and work on the other. The image situation is fluid and still emerging. For example, some people think iPhone is a 'toy' and therefore, cannot be used as a work device. But, there are some users, though still few in number, disagree with this idea. They write about how their iPhone made them more efficient in work situations. Similarly, many BlackBerry users view their devices as ultimate productivity boosters while some iPhone users think BlackBerry are not for new work situations. Instead of the fluidity of the perceived image of the group, writers of most self-reports do have an idea of where they stand in the continuum of 'fun/toy/popular' to 'work/adult/efficient' and accordingly include (or exclude) themselves into (from) the dominant group image. Below are examples of statements coded under 'perception of group image' category –

> - "Everyone already knows about how popular the iPhone is, and after finally purchasing one, I'm happy to report that I'm a member of the following. I have to say, I've always envied people who had iPhones, and now that I own one, I am glad to report that the envy is justified" *(iPhone 4S user)*
>
> - "Finally found an adult phone for my daily needs" *(iPhone 4S user)*
>
> - "To those of you convinced you're leaving BlackBerry for an iPhone or an Android device; please give this one a look. It'd be a shame if you ignored this phone simply because of your current BlackBerry's' woes and because you want a shiny new 'toy' instead of a shiny new communications device" *(BlackBerry Bold user)*
>
> - "If you aren't mesmerized by iPhone and Android games and just want to get things done efficiently, I would suggest this phone" *(BlackBerry Bold user)*

Table 7.2 provides a summary of data analysis and findings –

Table 7.2: *Summary: Data Analysis and Findings*

	iPhone 4S	BlackBerry Bold
Total self-reports coded for separate device	83	65
Reports containing identification markers	58	51
Reports containing statements showing brand devotion	18	17
Reports containing statements regarding legitimizing the commitment	42 (134 statements)	46 (151 statements)
Reports containing statements regarding positive contextual experiences	31 (32 statements on work context, 77 statements on personal context)	28 (59 statements on work context, 23 statements on personal context)
Reports containing statements regarding image	32 (47 statements on positive image, 33 statements on negative image)	24 (38 statements on positive image, 31 statements on negative image)

After analyzing self-reports on separate devices, I move on to the next piece of the data where the users compare iPhone and BlackBerry devices (132 self-reports). I wanted to check if similar themes are at play when they are intentionally comparing these two devices and in what ways they identify with the product they own. It is important to note that competition with other devices was very common in the self-reports about separate devices. However, in the comparative reports, the competition almost borders a sense of anger and cult-like behaviour. Users of a device get engaged in long and furious debates with those of the competing device. Examples of some statements make the point clear –

> - "I will never touch any touch screen phone. iPhone is just a toy meant for the flock of sheep that just follow everyone else. Got to tell you something when majority of users using a BlackBerry are business workers in suits and majority of users of the iPhone are high schoolers and college students wanting the coolest and most apps" *(BlackBerry user)*

- "You don't know anything about BlackBerry if you think it's outdated…the only thing outdated is your knowledge. Apple is a marketing company. Fear mongering is their game. Truth is far from their lips" *(BlackBerry user)*

- "iPhone are by far the best. People who don't agree either have a firewall for their business that won't support Apple or are lost in the dinosaur age and can't figure out how to work the iPhone properly. Typing on iPhone is much easier than BlackBerry unless you have baby fingers" *(iPhone user)*

- "F*** BlackBerry! It sucks really bad. They have WAY too many glitches, hard keyboards, and it sucks how it's not touch screen. The track pad s*** is the most annoying thing I have ever seen. iPHONE IS THE BESTTTTTTTTTTTTT!" *(iPhone user)*

The themes identified in the separate device reports are all present in the comparative reports. However, the level of intensity in the image category is much higher. Many BlackBerry users continually dub iPhone as a toy and a device for teenagers overhyped by media. On the other hand, many iPhone users feel that their phone is "future proof" and BlackBerrys are for boring people who cannot handle an innovative device like iPhone. After reading through the comparative reports, it becomes clear that these users feel strongly about their smartphones and attach their personal identification as smart, efficient, funny, and so on with these devices.

7.4.1 Phase V: Comparing with Prior Understanding

I started this research with some prior understanding as outlined in phase I. My expectation was to observe deep brand devotion among a significant number of the users in the sample data. For users who do not show explicit brand devotion, I expected to see lower level of identification with their device since many of them update their smartphones when new generation devices become available at the time of their contract renewal (probably with any brand offering good value). However, in the data brand devotion is not highly visible. Only few

of the users do report themselves as devoted fans of either iPhone or BlackBerry[7]. Both devices have reached a level of maturity and hence, may be the brand name would not be sufficient in the future anymore. Arruda-Filho and Lennon (2011) make a similar observation and suggest that brand devotion do not stay at the same level for upgrades compared to that for the original novel device. This finding suggests that brand devotion does not possess an easy answer for identification with a personal smartphone. Brand devotion, as represented in the data was not able to reveal why people identify with their devices to an extent that they start posting about them online, get engaged in lengthy debates with other users, and what does this identification mean to them. The next section provides a framework which can help to interpret the patterns that have been illuminated during the thematic analysis. This process repositions the research problem in the relevant field of knowledge (Cole & Avison, 2007).

7.5 Discussion

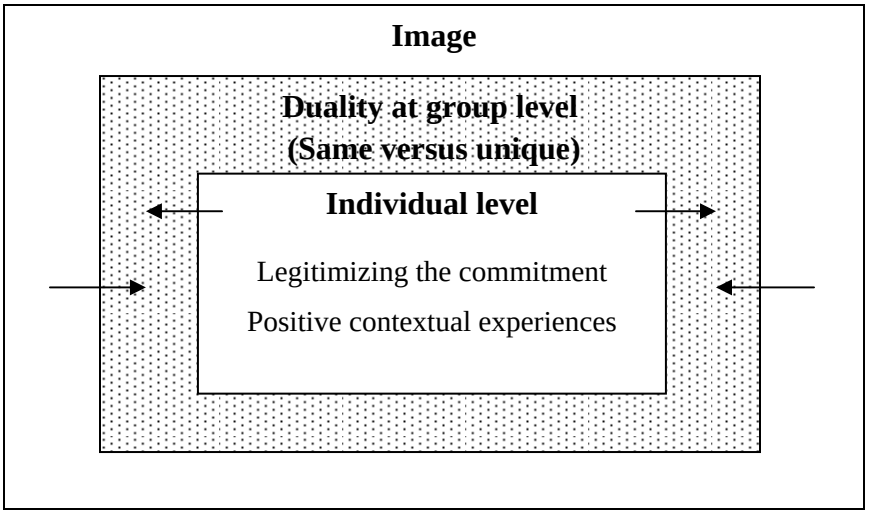
The findings show that users can identify with their smartphones even though most of them cannot be categorized as devoted fans of the brands they are currently using. Given the cult-like following often portrayed by the media, this result was not anticipated at the outset of this research. Most of us, based on common sense, would think that people who go to the extent of posting online are passionate followers or loyal fans of their brands. But, that is not what I observed in this data set.

This result does not suggest that brand devotion cannot play a role in identification. But, it introduces other constructs that needed to be considered to understand identification with devices. Based on the findings, it can be argued that people can identify with their devices to the extent of posting online even if they do not feel strongly about the brand or do not have past evocative experiences with older generation devices. Their identification can legitimize the

[7] One might argue that the very act of writing reports in online forums makes these users devoted iPhone or BlackBerry users. In response to that I would argue that there is a difference between being devoted to a brand and simply being a user of a device for other reasons and feeling strongly about the device.

commitments of money and time and commitments toward user groups. Positive contextual experiences and image potentials can also affect the way users perceive the value of device in their lives. Figure 7.2 provides a detailed depiction of how these constructs can be further conceptualized –

Figure 7.2: Individual and Group Level Constructs Considered while Forming Identification with Smartphones



Self-reports on specific device provide an individual level picture of identification. As shown in the findings section, users try to legitimize their choice very frequently. Over time, this legitimizing action may lead them to identify with the object more as their commitment becomes obligatory due to binding contractual agreements with service providers. In addition, these smartphones are expensive (with or without contract) for most of the users in the data. If the trial period is over, then it can get more expensive to switch to other brands. All these factors may influence the identification process for the individuals. In addition, most of the users report doing extensive research about device before purchasing. They spend a lot of time reading reviews. Some also spend time in the store to have a 'feel' of the device before making purchase decisions. Identification after purchasing the device can legitimize those time spent on the device. Moreover, identification with the device can legitimize the attachment to the user community.

Contextual experiences can also affect the way users evaluate a mobile computing device (Scheepers et al., 2006). These devices help users to navigate through different types of situations in their personal and work life. These experiences happen in a fluid state and users may not always distinguish them as separate contextual situations. But, during the analysis, both work and personal contexts and their influences on the identification became clear. Continuous positive experiences may lead individual users to form a favourable opinion about the particular device and vice versa.

Analysis of comparative reports provides a broader view of the identification with smartphones. In this case, the group level dynamics are more visible. Image becomes more evident in this thread. Users seem to hold an opinion about what iPhone or BlackBerry stands for. They want to point out why their personalities and objectives match with the image. They want to fit into the image that these devices portray to the society. However, both individual level and group level analysis illuminate a duality of same versus unique identities. There are many self-reports for both the devices where users think their own device not only makes them unique but also provides acceptance to a celebrated group. In contrast, many explanations are provided discussing the reasons why the other device holds a group image the users do not want themselves to be attached with.

New generation organizations must take note of these issues discussed above while deciding about sponsoring smartphones to their employees. The perception of image about a smartphone should match the image the organization wants to portray to their employees. It is even more important to match the identification of the employees who will use these devices on daily basis. A mismatch can lead to frustration toward the capabilities offered by the organization. Smartphone manufacturers who plan to focus only on developing brand name must pause for a moment and revise strategies. Brand devotion may not always result in identification. Arruda-Filho and Lennon (2011) observed that brand devotion may not even boost repeat purchase unless something new is offered. This research illuminates that people who are not devoted fans of a brand can constitute a significant consumer segment. They prefer to have

positive contextual experiences that can legitimize their choice. Therefore, it may be a good idea for marketers and manufacturers of smartphones to focus on illuminating contextual experiences rather than simply promoting brands.

7.6 Conclusion

This research shows that identification with smartphones is not solely influenced by brand devotion. Legitimizing the commitment of time and monetary investment, positive experiences with the smartphone in personal and work lives can shed light on identification at individual level. Perception about corresponding individual and group image (that can be portrayed by the device) helps in understanding identification with respective user group. Smartphoens are becoming increasingly integrated in our everyday lives – blurring spatial and temporal boundaries. Hence, new conceptualization of the relationship between users and these devices is needed. This research does not propose a general framework. Rather, it is an effort to build a theoretical knowledge base about these pervasive technologies.

This research has three limitations. First, the data is based on online postings which can limit the knowledge into a group of people who care to post on the Internet. This data may not reveal some important factors which are only illuminated by observing people using their devices in real life situations. Second, the focus was only on smartphones (and two specific devices) and the findings may not be applicable to other mobile devices such as tablets, iPods etc. Third, this research investigated the smatphones as singular device, but in reality people may use them as a piece in their overall technology eco-system. Future research should investigate other devices and how users identify with those devices. Smartphones could be a single layer in a system of personal technologies and future research should focus on how other devices embedded into the system influence identification with a specific device.

8.0 Theoretical Integration and Discussion of Research Findings

This chapter presents an integrative theoretical discussion of the empirical findings from the four empirical studies conducted for this PhD thesis. First a short summary of the empirical findings are reviewed; then an integrated theoretical model is presented which conceptualizes the new understandings derived from the empirical research. Finally, this chapter closes the hermeneutic circle of inquiry and understanding (Cole, 2005; Myers, 2004) by positioning the research findings in relation to relevant theoretical knowledge.

8.1 Summary of the Studies

This PhD project started with the intent to elucidate the story of smartphone acceptance and identity formation from the perspective of user experience. Inquiry into the general research question, 'How smartphone users make smartphone adoption decisions?' was pursued from a social constructionist epistemological perspective using a multi-method approach. The four empirical studies of this project were designed to complement each other and target specific relevant theoretical aspects of the research problem. This triangulation at the theoretical level also necessitated triangulation on the methodological level, consequently the multi-method approach.

Study 1 attempts to better understand acceptance of smartphones through the lens of user experiences with key product attributes. It employs an extension of technology acceptance model (F. D. Davis, 1989) that includes product attributes constructs from the user experience model proposed by Hassenzahl (2003). Focusing on three smartphone devices run on three separate platforms – iOS, BlackBerry OS and Android, this study demonstrates associations of smartphone attributes with attitude and actual use of the device. **Study 2** explores the assessment points that users and non-users of smartphones move through while making decisions about either accepting or rejecting their devices. Conceptualizing the acceptance decision as a process, this study employs ethnographic decision tree modeling (Gladwin, 1989) to develop separate

decision models for three smartphones runing on three different platforms. The results obtained from the decision models provide the basis for formulating a theoretical understanding of smartphone acceptance. **Study 3** explores the identity formation process in smartphone acceptance. Employing the theoretical lens of social identity theory (Tajfel, 1974) and user generated data on iPhone 4, this study connects the notion of smartphone acceptance and identity related issues. **Study 4** focuses on the phenomenon of identification with a device and uses a hermeneutic circle framework (Cole & Avison, 2007). This study explores the concept of identification with these new generation mobile devices by emphasizing their meaning to the users.

8.2 The Social Constructivist Perspective

The aim of social constructionist research is to provide explanations of social experiences by uncovering the meanings people attach to them. Research conducted under this paradigm concentrates on understanding specific phenomenon or phenomenal behaviour and prescribes updates to past theoretical frameworks (if necessary) through rich interpretations (Turnbull, 2002). This research, operating from social constructionist paradigm, has the objective to provide a better understanding of smartphone adoption decisions. To attain this objective, this research program utilizes theoretical and methodological triangulations through four empirical studies. Theoretical triangulation provided a richer understanding of smartphone adoption behaviour and methodological triangulation allowed to shed light on the behaviour from different angles. The objective of better explanation is realized by developing an integrated model of smartphone adoption from the findings of the empirical studies. The integrated model looks beyond the traditional user acceptance models and extends our understandings in the context of smartphones.

This research stems from a curiosity to understand smartphone acceptance decisions from user self-accounts written in their own language. Texts, in this investigation, have been conceptualized as symbols and cues that can give insights into how smartphone users conduct

their everyday lives around their devices and in what ways smartphones reshape their constructed realities. Texts can reflect construction of self and adjustments with other symbols in social interactions (Denzin, 1987; Fine, 1993; Schwalbe, 1983). This conceptualization of user textual accounts corresponds to the understandings offered by the social constructionist paradigm and the symbolic interactionist perspective followed in this research.

Examination of user self-accounts during the course of the empirical studies clearly points to the fact that smartphones are different from past fixed and mobile technologies. Smartphones provide users with extended mobility both off and online unlike desktop computers, laptops, PDAs and earlier mobile phones (Rahmati, 2013). These new generation devices encompass embedded computing and communication capabilities and novel technological convergence (Middleton, 2007; Middleton & Cukier, 2006). These devices also have off and online followings in the forms of user groups, anti-device groups, review websites/blogs, and YouTube videos of use, trouble shooting and even blending a device in a blender (Blythe & Cairns, 2009) and these practices make smartphones part of bigger social networks. These social networks provide participants with a sense of community (McMillan & Chavis, 1986). People feel a sense of belonging by self-indicating themselves into a community which in turn influences them to adopt group norms and practices. In case of technology acceptance, sense of community shapes the usage as well as legitimizes the choices made by the individual user. However, the ‘social’ part of the user behaviour is often overlooked and understudied in IS research as rightly noted by Lamb and King (2003). Smartphone acceptance research is no exception as it cannot breakthrough from the traditional user acceptance models despite their limitations in capturing the unique nature of smartphone use and adoption. In the following sections of this chapter, I will point out the limitations of the past user acceptance models and will lay out why the integrated model developed in this research offers a better explanation about how users make smartphone acceptance decisions.

8.3 Limitations of Existing Theoretical Models of User Acceptance

Abraham et al. (2013) provide a detail account of general limitations of traditional technology acceptance models and indicate that most of the models are based on TRA (Ajzen & Fishbein, 1980) and share a common framework. They argue that TRA based models such as Theory of Planned Behaviour (TPB) (Ajzen, 1991) and TAM (F. D. Davis, 1989), extensions of TAM such as motivation models (F. D. Davis et al., 1992; Venkatesh, 2000), IDT (Moore & Benbasat, 1991; Rogers, 1983), Social Cognitive Theory (Compeau & Higgins, 1995) all assume technology acceptance as a result of individual cognitive processes only. Social processes, according to these models, enter the acceptance situation only as social influence which acts on individuals from outside as social pressure or expectations. Hence, it can be argued that co-creation of acceptance behaviours (and meanings) by users, significant others (in social networks), and objects has largely been neglected in these theoretical understandings.

While conducting the empirical studies, I observed some specific limitations making past acceptance models inadequate for fully understanding smartphone adoption considering the unique contexts integrated into smartphone usage. First, past acceptance models put more emphasis on functional attributes of technology; beyond functional attributes are often ignored. Those models cannot account for spatial and temporal flexibility (Prasopoulou, Pouloudi, & Panteli, 2006; Scheepers et al., 2006) offered by increased mobility of smartphones. Yet, smartphone users put great emphasis on the nomadic ability provided by their devices. Traditional acceptance models and their extensions were usually developed and tested in the organizational settings. Those models mostly studied use of technology by either employees or full / part-time students with job responsibilities (Adams et al., 1992; Agarwal & Prasad, 1997; Compeau & Higgins, 1995; F. D. Davis, 1989, 1993; F. D. Davis et al., 1992; Dishaw & Strong, 1999; Gefen & Straub, 1997; Hwang, 2005; Igbaria et al., 1995; Karahanna & Straub, 1999; Moore & Benbasat, 1991; Thompson et al., 1991). But, due to ubiquity of smartphones, boundaries between ‘work’ and ‘personal’ are increasingly being blurred (Agger, 2011; Ayyagari, Grover, & Purvis, 2011; Cousins & Varshney, 2009; Prasopoulou et al., 2006;

Scheepers et al., 2006). Most theories were developed in mandatory usage contexts where the decision of using a technology had been imposed from the top. End users usually had no choice in selecting the device. With smartphones and their enhanced capabilities, this situation has been largely altered. Employees can now connect their personal devices with company's networks. In other cases, when the organization provides specific brand of smartphone for the purpose of data security, employees are usually free to choose their preferred models. In addition, social aspects of product acceptance are absent from traditional acceptance models (Lamb & King, 2003). As indicated before, smartphones are part of a bigger social network and this research argues that people make decisions about adopting their devices on the basis of interactions they have with the object, the relevant others in their off and online networks and the contexts in which they use these devices. Moreover, original TRA/TPB based acceptance models do not take account of the concept of self-identity (Sparks & Shepherd, 1992). Even though some extensions of those models acknowledge identity and identifications, these factors remain largely unexplored in the context of smartphone use. Table 8.1 summarizes the limitations discussed above –

Table 8.1: *Limitations of Traditional User Acceptance Models – Summary*

1)	Conceptualize adoption as a result of individual cognitive factors only; the role of social interactions in the decision making is absent
2)	Unbalanced focus on task-fulfilling attributes; beyond functional attributes have often been attached to the original models on ad hoc basis without rich theoretical underpinnings
3)	Development of the models was based on fixed technologies; do not account for nomadic nature of technology and the resulting affordances of spatial and temporal mobility
4)	Do not explain converged capabilities of smart devices and the technological ecosystem connecting public and personal spheres
5)	Everyday experiential use of technology by individuals has largely been ignored; emphasis was on organizational and mandatory use
6)	Self-identifications with devices and development of social identities have not been deeply investigated; social influence has been conceptualized as a factor acting from outside users' realities

A review of recent research on smartphone adoption reveals that researchers acknowledge and argue for the uniqueness of smartphones. Yet, they depend solely on past acceptance models to study the device they are arguing as being unique and different from past fixed and mobile technologies. Table 8.2 summarizes recent works on smartphone adoption and it shows researchers' preference for traditional acceptance models. Even though the results are useful, they are limited for understanding unique dimensions of smartphone adoption decisions.

Table 8.2: *Recent Research Studies on Smartphone Adoption*

Citation	**Theoretical model used**	**Method**	**Sample**	**Constructs added / investigated**
Aldhaban (2012)	Integrated model from UTAUT and TTF	Literature review	Not applicable	UTAUT and TTF constructs
Alt et al. (2012)	Simplified TAM	Online convenience survey	1864 teenagers	Perceived enjoyment
J. V. Chen et al. (2010)	Integrated model from TAM, self-efficacy and IDT	Survey	153 healthcare professionals	Constructs from TAM and IDT and self-efficacy
Chun et al. (2012)	Structurally similar to TRA, TAM	Survey	239 students	Social influence, perceived ubiquitous connectivity, enjoyment, image
Hsiao (2013)	Extended TRA	Web survey	881 android users	Perceived content, interface convenience, perceived infrastructure, design aesthetics, perceived value
Kang et al. (2011)	TAM	Online and offline survey; SEM analysis	100 respondents	Device characteristics and user characteristics affecting PU and PEOU

Citation	Theoretical model used	Method	Sample	Constructs added / investigated
S. H. Kim (2008)	Extended TAM	Online survey; SEM analysis	286 respondents	Perceived cost savings, Company's willingness to fund
Pan, Chen, and Rau (2013)	Extended TAM	Questionnaire	402 college students	Social influence, entertainment utility, compatibility of smartphone
B.-W. Park and Lee (2011b)	Structurally similar to TRA, TAM	Questionnaire	33 respondents	Smartphone stress, perceived enjoyment, instant connectivity
B.-W. Park and Lee (2011a)	Structurally similar to TRA, TAM	Questionnaire	183 respondents	Perceived enjoyment, satisfaction, personal innovativeness
Putzer and Park (2012)	IDT	Questionnaire	103 physicians	IDT constructs
Putzer and Park (2010)	IDT	Questionnaire	200 practicing nurse	IDT constructs
Rahmati (2013)	Empirical analysis only	Four month field study, experimental phone and focus groups	14 novice teenage users	Investigates smartphone use and use evolution
S. Y. Lee (2013)	Random utility model	Online survey	151 college students	Peer influence, family influence, consumer innovativeness, financial status
J. Yoo et al. (2010)	Empirical analysis only	Online survey and Conjoint analysis	53 respondents	Positive reputation

Overall, it is evident that most of the past and current technology acceptance models basically use the same framework. They see adoption as a standalone decision, not as an interactive process unravelling itself over different contexts. This research argues that viewing adoption as a onetime decision and only an attitude or intention based concept does not allow the researchers to follow what is actually happening in everyday lives of the users. In an effort to overcome the limitations discussed above, this research program utilized different theoretical frameworks to obtain a deeper understanding of the adoption behaviour. In addition, it employed multiple methods to illuminate various aspects of smartphone acceptance decisions. Symbolic interactionism encircles this research program as the guiding perspective and provides a refreshingly new explanation of smartphone acceptance decisions.

8.4 Smartphone Adoption: From the Perspective of Symbolic Interactionism (SI)

This research conceptualizes smartphone adoption as an interactive process and analyzes the behaviour from Symbolic Interactionism (SI) perspective under social constructionist paradigm. This section connects main ideas of SI with the rationale for analyzing smartphone adoption from this perspective.

The basic principles of SI was developed by Mead (1934). Later, Herbert Blumer reflected on Mead's work and along with his colleagues in University of Chicago, developed SI as a concrete theoretical perspective (Fine, 1993). The core idea of SI is the construction of meaningful realities by symbolic communication in a dynamic way (Fernback, 2007; D. H. Lee, 1990). Blumer (1969a) suggests three basic premises of SI – (i) people construct their actions toward objects based on the meanings those objects have for them, (ii) these meanings are generated from social interactions and (iii) people make sense of these meanings through interpretations. Interactionist perspective focuses on human ability to engage in social interactions (Blumer, 1969a; Fine, 1993). Some interactionist researchers argue that the reality is obdurate and loaded with prior agreements on meanings. Therefore, reality has a predefined

structure within which the human actors construct their actions and interpret meanings in social interaction (Fine, 1993; Weigart, 1991). Objects can have inherent structure, not meaning and only interaction with objects can make that structure meaningful and symbolic (Cohen, 1989; Denzin, 1969). But, despite the structured nature of the surrounding environment, human actors construct their own realities by reacting to the environment in a selective and dynamic manner (Gallant & Kleinman, 1983; Singelmann, 1972).

This research conceptualizes smartphones as symbolic objects. Smartphones, like other technological systems, have inherent usage structure intended by designers and hence, users have to accommodate with that structure. But, users can make independent decisions about personalizing their devices. At the very least, they use different covers, ring tones, etc. to stamp their device with their own identities. In addition, users download applications according to their needs and preferences. Even though users have to adjust with app developers' designs, they can personalize their experiences with the applications by making different choices. This research argues that people make choices about their smartphone use based on the meanings these devices have for them. Depending on the usage contexts (personal, work, social etc.), people decide what these devices mean to them. Based on these meanings, users act toward their devices and construct their own realities within the structure of the device.

Another major tenet of SI is the 'self' which is one of the main objects in every interaction (Denzin, 1969). One SI research stream views 'self' as a creative product generated through stories of oneself and others, and also by manipulation of symbols (Denzin, 1987; Fine, 1993; Schwalbe, 1983). Another research stream (identity theory) acknowledges the idea of constructing the self but stresses that self is adjusted with the obdurate reality rather than created (Fine, 1993; Stryker, 1968, 1987). Once again, the contrasting ideas revolve around agency and structure. But, the common theme in SI perspective and a guiding principle in this research is that the self is constructed and given meaning by actors' choices in different contexts in which experiences are rooted (Fine, 1993; Singelmann, 1972). Participants in an interaction co-create and share meanings and consequently 'self' is influenced by properties of significant others. In a

sense, ‘self’ is transformed into an object observed and interacted by others while simultaneously the ‘self’ responds back to the environment (Singelmann, 1972). Denzin (1969) argues that social interactions are filled with self-lodging actions by individuals. Appreciating Goffman’s (1959) idea of self presentation, Denzin (1969) notes that self-lodging becomes the dominant phase after interactions occur persistently and at that stage, the idea of ‘self’ very much relates to Cooley’s (1902) idea of ‘looking-glass self’ consisting self-presentation to others, identification and interpretation of how others react to the self (Robinson, 2007; Solomon, 1983). But, Mead (1934) contrasts with Cooley’s (1902) notion of an innate ‘self-feeling’ and perceives ‘self’ as a socially constructed process while acknowledging roles of others in forming the self (Robinson, 2007).

Mead’s (1934) conception of self is important for this research which argues for understanding smartphone adoption as a self-formulating process through interactions with the device and others in off and online social networks. Smartphone adoption is a process that connects the ‘self’ of the users with the device and others. In a way, the adoption becomes a reflexive action in which people move through certain assessment criteria and ultimately make a decision in favour of adopting as opposed to rejecting the device. This research unveils the interaction process that people experience before they reach the final decision point. The interaction process involves the device and the meanings people attach to these devices. The interaction is realized by self-categorization and self-enhancement procedures in which users perceive themselves as objects on which they work on through the use of their smartphones. This objectification of self is carried out by interpreting the descriptive and prescriptive properties suggested by the user groups. People perceive themselves as members of these user groups (off and online) and form self-image by internalizing the descriptive and prescriptive properties of the smartphone groups and these perceptions, in turn, legitimize their commitments toward the devices.

8.4.1 Theoretical Elaboration of the Findings

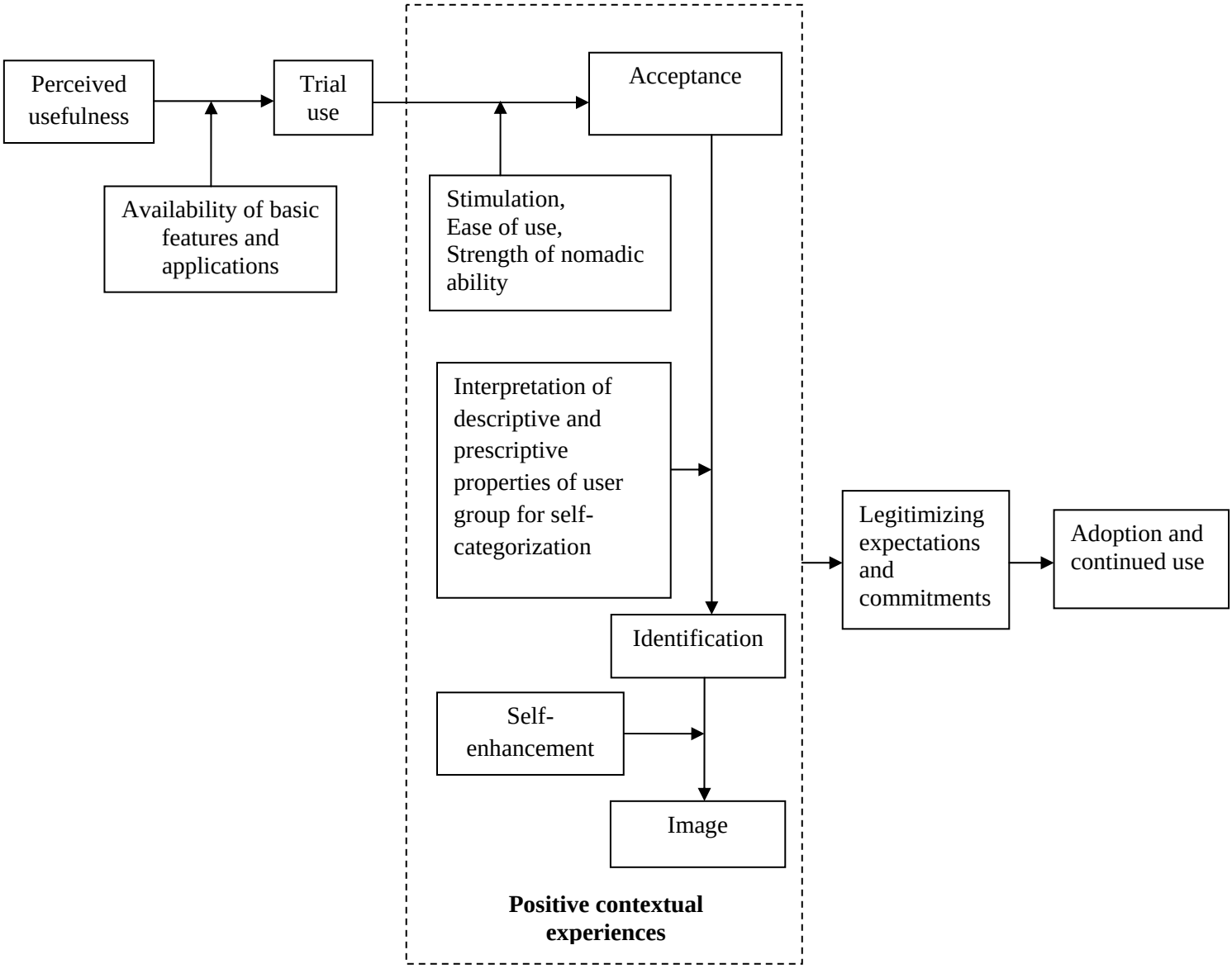
This research followed an emergent design stance and the nomological mapping of the individual studies (see figure 1.2) helped me to elucidate the aspects important to generate an integrated picture of smartphone adoption. It tied the concepts derived from the extant literature to those emerged from the individual studies and thus illuminated a coherent theoretical understanding. By highlighting how the empirical findings of each study are connected, the nomological net explicates the applicability of the symbolic interactionism perspective in the theoretical elaboration.

The theoretical understanding is formulated based on the analysis of the empirical findings as prefigured in the nomological net. The specific empirical conclusions are - (1) realization of perceived usefulness through availability of basic features is important for moving into the acceptance stage, (2) people seek positive contextual experiences in the forms of novel stimulations, nomadic abilities, self-inclusion in celebrated groups, image formation etc, (3) positive contextual experiences have an influence on how people legitimize their device choices to themselves.

Based on the findings from the four empirical studies I suggest a new model for studying and explaining the dynamics of user adoption of smartphones. Figure 8.1 provides an illustration of the key concepts of the model and their relationships.

(This space has been kept blank intentionally)

Figure 8.1: Smartphone Adoption – Integrated Model



The model conceptualizes smartphone adoption as a set of processes which connects the interactions of self with object and others in social networks. Decision processes about obtaining a smartphone start with the conjecture that the device will provide some useful features and help in accomplishing some goals. Earlier studies on mobile phones suggest that these goals can originate from both work and personal contexts (Scheepers et al., 2006). ***Perceived Usefulness:*** Once people perceive smartphones as useful devices, they start accumulating information about

comparable devices. Some people enter this information seeking stage with preconceived notions about smartphone brands and what these brands represent. But, empirical evidence from this research suggests that brand loyalty may not play as big a part as marketers would like us to believe. Brand loyalty has not been found to co-occur at an acceptable level with either attitude or actual use. Arruda-Filho and Lennon (2011) reached a similar conclusion while they investigated users decisions to upgrade iPhones. In addition, this research has not found previous perceptions about ease of use to co-occur with either tendency to use or actual use of smartphones which is in contrast with what researchers observed with former fixed and non-converged technology (F. D. Davis, 1989, 1993; Igbaria et al., 1995; Venkatesh, 2000; Venkatesh & Bala, 2008). The reason could be that people who consider using a smartphone has already been exposed to computer and communication technologies before and do not perceive smartphones as something entirely different with a steep learning curve.

Trial Use: After gathering necessary information, people try out smartphones either at the stores or through trial offers. During this stage, they examine the device for availability of basic features (such as call quality, quick texting, reliable emails etc.), application repertoire and performance of those applications on the device platform. Empirical evidence from the EDTM study suggests that some people may not move beyond this stage and become non-user if they find the basic features inadequate. People want to be able to manipulate their environments (either personal or work) by using the functionalities or pragmatic attributes of the device. This intention to manipulate influences how usefulness is perceived. If a device cannot meet the basic expectations, then the relationship will not move beyond this point i.e. perceived usefulness will not result in trial use. The above discussion leads to the following proposition –

P1: Perceived usefulness about smartphone results in trial use given the device provides basic features and applications.

The unique nature of smartphones as portable communication and computing devices along with converged technical capabilities gives it an edge over fixed devices (Rahmati, 2013).

For past technical systems, only task-accomplishing capabilities (such as perceived usefulness, perceived ease of use, task-technology fit etc.) were deemed pivotal for diffusion while using those systems mostly at work environments. But, studies in this research show that even when a person uses a smartphone after deciding that the device meets expectations for basic communication and functions through embedded capabilities and user-picked applications, they do not accept the device unless it offers stimulating experiences (novelty, personal enjoyment and personal development), strong nomadic ability (battery strength) and actual ease of use. ***Acceptance:*** It is important to note that acceptance, in this model, does not imply plain use. Here, acceptance is conceptualized as an intermediate stage in the adoption process when users connect to the object through interacting with both functional and beyond-functional attributes and attaching meanings to them. People may use a technical system in many situations, but that does not mean that they have accepted the system. They can use it out of mandatory requirements in work place, as a temporary replacement for regular system, in emergency situations and so on. But, in all these cases, use of the system merely represents fulfilment of a task; there is no emotional or personal connection. This model, based on the studies conducted, conceives 'acceptance' as a concept extending beyond mere use. The concept of acceptance encompasses elements of attachment. The attachment as seen from the studies can stem from use. However, as the model suggests, the trial use has to offer stimulating experiences, nomadic abilities through stellar battery life, and actual but not perceived ease of use. It is interesting to note that both pragmatic and hedonic attributes play important interconnected roles in transforming use into acceptance. For example, ease of use and nomadic strength may seem to be solely pragmatic at first look. But closer examination of user self-reports carried out throughout this research demonstrates that pragmatic and hedonic attributes, in case of smartphones, may not always have clear boundaries. For example, strength of nomadic ability represented by battery life may seem to be purely functional without properly understanding how smartphone users value being nomadic and how they attach it to their 'always on' image. Overall, the above discussion leads to the following proposition –

P2: Trial use of smartphone results in acceptance if the device provides stimulating new experiences, good nomadic ability and actual ease of use.

Even though pragmatic and hedonic attributes of smartphones are important for initial device use and then acceptance, empirical evidence uncovered during this research shows that the adoption process is not straightforward. It becomes clear that the concept of ***identification*** with the device needs to be deeply analyzed to figure out the process and understandings derived from symbolic interactionism to make sense of the results obtained during this research. According to symbolic interactionism, peoples' actions toward an object get decided by the meanings they have for those objects or things (Blumer, 1969a). After accepting a smartphone, users identify with their device and the nature of identification depends on the meanings they attach to it. For smartphone users, identifications primarily vary between 'work device' and 'fun device' and this indication toward the device holds deeper meanings for those users. It implies their identity and what they aspire to display to their social sphere. Interestingly, different brands of smartphones have been viewed in different lights of identities. For example, BlackBerry has long been viewed as a work device (Middleton, 2007) suitable for serious use by adults, mostly professionals like lawyers, accountants, auditors, healthcare professionals and so on. In contrast, iPhone has generally been interpreted as a 'toy' which may be suitable for teenagers, but not for serious work. Even though the discourses around these two different brands of smartphones have started to shift recently with the change of focus by the manufacturers, the issue of identification does not become less important. On the contrary, this shift shows that the identifications have been acknowledged by competing brands. These meanings, as illuminated by symbolic interactionism, are derived from the interactions people have with their in-group or community members (Blumer, 1969a; Mead, 1934). This process of meaning attachment and identification results from interpretations of descriptive and prescriptive properties drawn from smartphone in-groups. As shown in the studies, users want to conform to the ideas and values characterizing their particular in-group. They also want to follow the trend toward which their in-group moves collectively. The needs for quick upgrading to the latest generation device and to have the 'cool' applications all suggest conformation to descriptive and prescriptive properties. But, the point at

issue is the interpretive process they employ to reach the point of conformation. After accepting a smartphone based on the performances of pragmatic and hedonic attributes, users collect and process information about the device and its usage cues (descriptive and prescriptive properties) from perceived in-group members from off and online sources. Next, they interpret the information and cues in light of their previously formed ideas and expectations about the device. If the cues derived from descriptive and prescriptive properties match their expectations, users self-categorize themselves as group members and hence identification is formed around their smartphones. The proposition below follows from the preceding discussion –

P3: Smartphone users develop identification with their devices after self-categorizing themselves into specific user group through interpreting descriptive and prescriptive properties of that group.

Symbolic interactionism proposes that people interact with communities or groups through self-interactions even when that group is not physically present during the course of the interaction (Blumer, 1969b; Mead, 1934). The idea of self-interaction, in case of smartphone adoption, illuminates how a user outlines personal ***image*** from identifications with their device. Smartphone users follow the character and norms of a user group and hence identify themselves as group members through self-categorization. The process of self-interaction, however, does not end at this point. Users start comparing their devices with those of other user groups and compete by self-enhancement and form an image. Users employ this self-indicated image to differentiate themselves with other user groups. It is important to note that even though some smartphone users engage in arguments with users of other similar devices, explicit actions are not obligatory. Indications to the self by self-enhancement are enough to build that expected image. Users form a sense of community and belongingness with the user group of their smartphones and the expected image is influenced by group norms and values. A harmony of expected self image with the one promoted by the community has an effect on users' acceptance behaviour. Based on the discussion above, the following proposition can be developed –

P4: Identifications with smartphones form self-indicated user image using self-enhancing cues extracted from the user community.

Legitimization: After accepting a smartphone, users identify with the device and self-indicate a satisfactory image based on usage in different situations. If the device helps in having positive contextual experiences consistent with the self-indicated identification and image, and in generating a sense of inclusion into an aspired user community, then the commitments toward the device are legitimized from the perspective of the users. The commitments include (but are not limited to) the premium price paid for the device, time commitment for researching the right fit of device with expected performances in different contexts etc. If commitments are legitimized and expectations from the device are realized through positive contextual experiences, then the user will move beyond temporary acceptance phase and will start continuous use. The propositions below can be developed in light of this discussion –

P5: Positive contextual experiences provided by smartphones legitimize the commitments made in relation to the device and legitimized commitments result in adoption and continued use of smartphones.

As argued previously in this thesis, smartphones are different from past technologies in terms of converged technological capabilities incorporated into a single device. It enhances what a person can do in his private and public spheres by empowering individual user in various spatial and temporal contexts. Traditional technology acceptance models have certain limitations that make those models inadequate for understanding the smartphone adoption as an interactive process. The integrated model, along with the empirical studies conducted in this research, reveals that smartphone adoption is a social process despite its being a personal technology. It is adopted based on meanings constructed through social interactions. Users attach those meanings with the device in terms of expected and realized capabilities (both functional and beyond functional) as well as self-indicated identification and image. In that way, the adoption process becomes a performance to the self drawing cues from the social world created by self-indication

and interpretation of interactions with peers. The purpose of developing the integrated model is to provide better explanations about smartphone adoption behaviour from actual user experiences which is in line with the theory-building tradition under social constructionist research (Turnbull, 2002).

8.5 Summary of Theoretical Advances

This research program started with the objective to understand how users make decisions about adopting smartphones. The theoretical and methodological approaches utilized in this research helped to illuminate that smartphone adoption is not a standalone decision, but is a set of interactive processes. Existing user acceptance models, as pointed out earlier in this chapter, only focus on product attributes (either functional or hedonic) and roles of these attributes in forming users' perceptions about the technology. The knowledge repertoire that these approaches have built over time is certainly useful. However, those models are inadequate in revealing the interactive processes that people engage in while they adopt their smartphones. People make choices at each stage of the process and engage in a three way interaction consisting of the self, object and others in social networks. Smartphone adoption decisions take place within a much wider context compared to that of past fixed technologies. But, the changing dimensions of technology acceptance scenario brought about by newer technologies, are not being captured in the theoretical knowledge base. Use of only TRA or TAM based predictive models by most of the recent research on smartphones seems rather aimless given the altered technological dimensions. Uncritical following of status quo may help in publishing but cannot give an enhanced understanding.

The integrative model presented in this thesis provides a deeper and better understanding of the interactive processes that unfold over time when people make decisions about adopting their smartphones. It argues that merely identifying different variables pertaining to product attributes or users' perceptions about those attributes is not enough to understand the mechanisms which are at work when a person makes technology acceptance decisions. The

predictive modeling approach championed by the existing acceptance models is inadequate to provide understandings about phenomenal behaviour, such as smartphone adoption decisions, which unfolds in stages over time. In order to provide enhanced user experiences, it is important to refine our understanding about how people actually move within a decision continuum over time. IS research needs to acknowledge the interactive nature of adoption decisions to remain relevant.

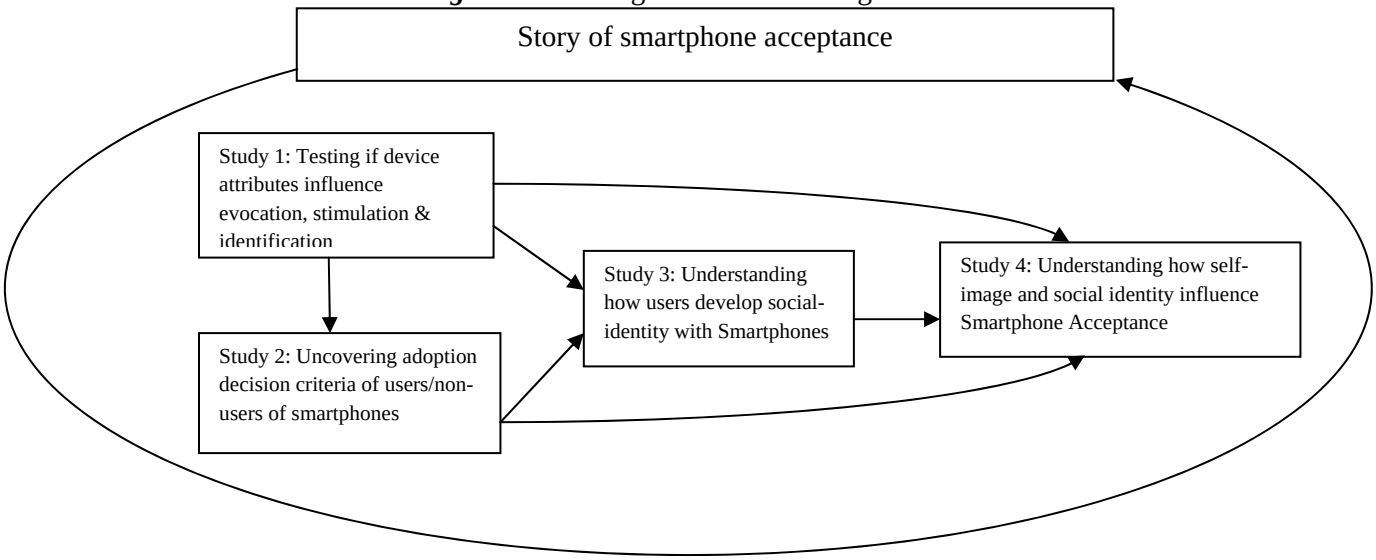
(This space has been kept blank intentionally)

9.0 Reflections and Conclusions

9.1 Emergent Design

In the previous chapter I discussed the integrated theoretical contribution of this PhD research project. In this reflection I want to emphasize the emergent design of this research to assist the reader in understanding the overarching logic of this social science research project. The fundamental epistemological position of this research was to develop an understanding of smartphone adoption from the perspective of the users. This led me to choose the social constructionist paradigm, a symbolic interactionist approach and an emergent research design to inquire into how users ascribe meanings to their smartphone devices and how they identify with those. From this perspective my PhD research project consisted of four empirical studies in which the key empirical observations from earlier studies influenced the design of the subsequent empirical studies. Figure 9.1 below illustrates the logic of the emergent research design.

Figure 9.1: Emergent Research Design



Study 1 found that both pragmatic (functional or instrumental) and hedonic (beyond instrumental) attributes of smartphones influenced user's attitude towards smartphone devices and their ultimate use. Three issues stood out from the findings of Study 1 which led me to raise some new questions. First, there were decision points in the users' accounts which were outside the scope of the TAM based research models. Second, acceptance decisions have been conceptualized as a static choice, while my analysis of the user self-reports revealed that adoption decision making was a multi-stage process of interdependent decisions. Third, contrary to my expectation, in testing the extended-TAM model, I found that users' reports show a high co-occurrence of identification related comments with positive attitude and use while evocation (conceptualized as brand devotion and addictive device) showed very low co-occurrence. I had expected that these two constructs would show similar co-occurrence patterns. These empirical findings led me to conceptualize acceptance as a process emphasizing assessment points mentioned by both users and non-users. I then designed Study 2 (Chapter 5) and used ethnographic decision tree modeling (Gladwin, 1989) to uncover users' adoption/acceptance criteria and decision processes to develop a more inclusive decision model of smartphone acceptance. In this study identification also stood out as an important issue in smartphone adoption decisions, while brand devotion did not have enough representation to become separate decision criterion (see Chapter 5 for detail). Puzzled by the empirical findings from Studies 1 and 2, I decided to inquire into the identification issues. For Study 3 I chose social identity theory as a theoretical lens as it provides an appropriate approach within the symbolic interactionist and social constructionist paradigm for investigating the research question (see Chapter 6 for detail). The empirical findings of Study 3 show how social identities are formed around a particular device. The empirical findings also reveal key aspects of the identity formation process and its relationship to smartphones. However, the findings of Study 3 also gave rise to some questions: Why do users identify with their smartphone devices? What does this identification mean to them? Study 4 was then designed to investigate these issues. For this study I used a hermeneutic approach to try to complete the circle of understanding which started with the aim to uncover the story of smartphone adoption.

9.2 Research Challenges and Contributions

The emergent research design was demanding, and scary in certain times, and challenged my research capabilities. It required a great deal of reflection after each study to try to plan the next step as I tried to develop the best understanding of the phenomenon I was studying. As the process unfolded it became clear to me that the theoretical/analytical stance I took was critical to the integrity of the inquiry. I have also learnt to acknowledge and appreciate the importance of multiple perspectives for unpacking key dimensions of the research phenomenon. By the end of the research project I began to truly understand that this plurality of views was critical to my scientific enquiry. And I am glad that I did not follow the path of testing a single theoretical model, or conducting a single inductive study.

I must admit that certain aspects of conducting social constructionist inquiry were challenging. From a hermeneutic perspective, the acceptance and illumination of my own prejudices at the onset of the research process was important. However, while moving through this journey, I found out that this whole process is a learning experience and it was not possible for me to foresee what understandings I would form during this investigation. As a result, before conducting each subsequent study, I delved into myself and tried to uncover the pre-understandings I have developed over the course of the research. Sometimes the later understandings made the prior revelations more confusing. This experience gave rise to unexpected dilemma where I wanted to go back to the start of the circle again and again to uncover the true meaning of the texts. Even though hermeneutic principle requires the researchers to move between the parts and the whole, it is not productive to go back without the acknowledgement of multiple interpretations. After going through this process, I can clearly see where my passion lies.

9.2.1 Theoretical Contributions

The main contribution of this research (elaborated in Chapter 8) is the theoretical understanding made in the area of technology adoption. Employing the symbolic interactionist perspective, this research illuminated the interactive processes that people engage in while they make smartphone adoption decisions. The integrated model, unlike existing user acceptance models, conceptualized adoption decision as a set of processes which unfolds in stages over time. This understanding is closer to the lived experiences of the users and therefore, can be a useful addition to IS knowledge repertoire for further research on newer technologies. Traditional user acceptance models only focus on individual cognitive aspects depicting a one-dimensional picture of technology adoption decisions. The social aspect of technology use is missing in original TAM and most of its extensions even though people use ICTs within wider social contexts which include other users and groups (Lamb & King, 2003). In contrast to existing approaches, this research illuminated the role of community in forming social identities around smartphones. The integrated model highlighted the interactive processes which enable users to attach meanings to the object as well as to their chosen community.

The research project, through four empirical studies, made other specific contributions. It connected concepts from user experience literature with works on technology acceptance and illuminated smartphone attributes associated with attitude and acceptance. It showed the importance of investigating views from non-users and developed a more informative model of smartphone acceptance using EDTM. The research also identified several specific factors for smartphone acceptance – importance of applications, strength of nomadic ability and identification. These factors provide a new understanding of smartphone acceptance environments that IS research needs to acknowledge in future works.

This research also contributed to the field of IS research by connecting social identity theory with user acceptance literature and by showing how social identities get attached to individual smartphone users through a conscious placement or ‘lodging of self’ into the

conceptual territory of a user group or community. Even though identity has a strong standing in other research literature, this lens has never been fully utilized in IS research except for some works on organizational and professional identity (Mishra et al., 2012). This research tied the lens of social identity with smartphone adoption and thus contributed to the technology acceptance literature. This research in its pursuit of identification issue related to smartphone adoption went deep into why people identify with their devices. The new factors (legitimizing the commitment, positive contextual experiences and duality in individual and group level) identified in study 4 resulted in a theoretical explanation of image formation during smartphone adoption process. This understanding makes connection to technology management literature which may be used in later research regarding the use of smartphones in organizations where both individual and group level identities play active roles while implementing and managing new technological systems.

9.2.2 Methodological Contributions

This research adopted a multi-method approach to interrogate different aspects of the phenomenon of smartphone adoption. The new understanding of smartphone adoption decision as an interactive and multi-stage process would in all likelihood been overlooked if this research was conducted using a single perspective and single method approach. This research has demonstrated how to carry out a multi-perspective, multi-method qualitative enquiry in order to achieve a better understanding of the research problem. This research used qualitative content analysis, ethnographic decision tree modeling and hermeneutic circle framework and integrated the results from all the studies into one theoretical model. An important cornerstone of the multi-perspective, multi-method research is the integration of findings which justifies the choice of mixing perspectives and methods to generate better and deeper understanding of the research phenomenon.

The studies in the research project demonstrated a new way to utilize online based self-reports in empirical studies. Though the form of data is textual, the number of self-reports available is quite large. This research demonstrated how to derive meaningful insights from large number of online reports acknowledging the textual nature of data. This research also exhibited the applicability of ethnographic decision tree modeling (EDTM) to investigate IS related phenomenon. Even though EDTM has been in use in different research fields, it has not yet been established in IS arena.

In summary, by means of theoretical and methodological contributions discussed above, this research project provides a better and richer understanding about users' smartphone adoption decisions. Table 9.1 presents an evaluation of the research project –

Table 9.1: *Evaluation of the Research Project*

Evaluation criteria	**What this research has accomplished**
1) Appropriate use of multi-method approach	A multi method approach is adopted in this research to provide a holistic view of smartphone adoption phenomenon. The literature on technology adoption has been informed by different fields such as IS, Human–computer interaction, Consumer behaviour etc. However, there is a lack of acceptance research directed specifically toward smartphones. Most of the research used TAM or some extensions of TAM and therefore, utilized a specific approach. This research analyzed smartphone adoption phenomenon through multiple approaches to illuminate its different sides. The results from studies employing multiple methods revealed different factors important for smartphone adoption. This discovery would not have been possible if only one approach was applied.
2) Integration of findings	An integrated theoretical model was developed from the findings of the empirical studies employing symbolic interactionist perspective. The model revealed the interactive set of processes involved in smartphone adoption decisions. It also provided a better explanation of the stages through which users move while making adoption decisions.

Evaluation criteria	What this research has accomplished
3) Assessment of the quality of integrative inferences	Venkatesh, Brown, and Bala (2013) suggest three criteria for evaluating the quality of integrative inferences – integrative efficacy, inference transferability, and integrative correspondence. This research accomplished integrative efficacy by utilizing findings from each study to generate the integrative understanding of smartphone adoption behaviour. The integrated analysis is presented and described in a format that can be used by future studies to investigate other interactive devices in order to achieve inference transferability. Integrative correspondence is achieved by matching the purpose of a holistic enquiry of smartphone adoption behaviour with the integrative inferences that tells a more complete story of smartphones compared to prior research studies conducted using the existing acceptance models.

9.3 Implications for Practice

This research highlighted the importance of social interactions in smartphone adoption decisions. Users' identification with their devices and self-indicated image both are connected with the sense of community derived from the social networks (both off and online) formed on the basis of smartphone user group. Identifications with groups and communities can influence how consumers attach meanings to products (Friedman, 1986). Therefore, different user groups can be a source of information for smartphone designers. Organizations already utilize the feedbacks they get from the customers through their websites or blogs. However, it is important to gather information from smaller and close knitted communities (church groups, book clubs etc.) for diffusing these devices to users who are late adopters. Meetings with such off and online groups can give insights into how to make the affordances offered by smartphones more appealing and usable by fixing design issues. User groups can also help in identifying the kind of positive contextual experiences people expect from their devices. Promoters and marketers can use this knowledge and target specific communities by highlighting their image and identities. Research has found that targeted advertisements works effectively in both small and large groups

if social dimensions are included highlighting the group distinctiveness (Grier & Deshpandé, 2001).

This research also has several specific practical implications stemming from the empirical studies. The findings from the studies suggest that smartphone users prefer having novel applications, features etc. than getting later generation devices from the same brand. Arruda-Filho and Lennon (2011) reported a similar finding with iPhone. Hence, the designers and marketers of next generation products need to focus on promoting the new features they have added to the product rather than relying on their brand name only. Most smartphone users in the data do not associate themselves exclusively with a particular brand and are open to switch if new capabilities are offered by different manufacturers.

The ethnographic decision tree models reveal the assessment points of non-users who start to examine the product, but eventually decide to reject it because it does not fulfil their needs, either task related or social. Marketers of products can use this technique to analyze responses from focus groups before launching a new product in the market. The current innovation arena, in both industry and academia, is mostly concerned about the early adopters probably because it takes less effort to sell a product to this group of people because of their tech-enthusiasm. However, the larger chunk of people is either late adopters or laggards in case of adopting new technologies. With the fierce competition in the smartphone market, it is important to tap the benefits of understanding the needs of that larger group and assessing the decision points in which people generally move toward the negative responses. This research found that smartphone users form social identities based on the device they use. Different smartphones are perceived from different perspectives in terms of their capabilities. To develop a coherent organizational identity, companies must think about the social identities that their employees may attach with these devices before offering company sponsored smartphones. This alignment of identity will result in effective use and implementation of organizational technical systems.

9.4 Limitations and Future Research Directions

This research has three main limitations – first, it focused only on smartphones and hence, the results may not readily apply to other interactive technologies such as tablets, game consoles etc. without further research. Second, no demographic or geographic information was available about the people posting on the websites. Therefore, more research is required before applying the results to other cultural or geographical contexts. Third, the self-reports could be posted by people who are tech savvy in the first place and who are skilled in using advanced technologies like smartphones. Therefore, even though online self-reports provide useful information to people making purchase decisions, more research is needed to draw conclusions about people who do not post online.

The theoretical understandings developed in this research can be useful for investigating other new generation interactive devices. More research should be conducted to understand the place these new generation devices occupy in the overall technological environment in relation to other existing devices such as desktop or laptop computers. In that respect, future research should look into the impacts that simultaneous use of all these technical systems have on user adoption behaviour. More research is required to understand the interactions between the pragmatic and hedonic attributes and in what ways that interaction can influence the acceptance of future personal technologies. Practice oriented research should be undertaken to identify positive experience generating contexts and how to integrate those contexts into product design.

References

Aakhus, M. (2003). Understanding information and communication technology and infrastructure in everyday life: Struggling with communication at-a-distance. In J. E. Katz (Ed.), *Machines that become us: The social context of personal communication technology*. New Jersey: Transaction Publishers.

Abdelal, R., Herrera, Y. M., Johnston, A. L., & McDermott, R. (2006). Identity as a variable. *Perspectives on Politics, 4*(4), 695-711.

Abraham, C., Boudreau, M.-C., Junglas, I., & Watson, R. (2013). Enriching our theoretical repertoire: the role of evolutionary psychology in technology acceptance. *European Journal of Information Systems, 22*(1), 56-75. doi: 10.1057/ejis.2011.25

Abrams, D., & Hogg, M. A. (1990). An introduction to the social identity approach. In D. Abrams & M. A. Hogg (Eds.), *Social Identity Theory:Constructive and Critical Advances*. New York: Springer-Verlag New York Inc.

Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly*, 227-247.

Adoni, H., & Mane, S. (1984). Media and the social construction of reality: Toward an Integration of Theory and Research. *Communication Research, 11*(3), 323-340. doi: 10.1177/009365084011003001

Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences, 28*(3), 557-582.

Agarwal, R., & Prasad, J. (1998). A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology. *Information Systems Research, 9*(2), 204-215.

Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new generation technologies? *Decision Sciences, 30*(2), 361-391.

Agger, B. (2011). iTime: Labor and life in a smartphone era. *Time & Society, 20*(1), 119-136. doi: 10.1177/0961463x10380730

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitude and predicting social behavior*. New Jersey: Prentice-Hall.

Al-Gahtani, S. S., & King, M. (1999). Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behaviour & Information Technology, 18*(4), 277-297.

Al-Khaldi, M. A., & Wallace, R. A. O. (1999). The influence of attitudes on personal computer utilization among knowledge workers: the case of Saudi Arabia. *Information & Management, 36*, 185-204.

Al-Natour, S., & Benbasat, I. (2009). The Adoption and Use of IT Artifacts: A New Interaction-Centric Model for the Study of User-Artifact Relationships. *Journal of the Association for Information Systems, 10*(9), 661-685.

Alben, L. (1996). Quality of experience: Defining the criteria for effective interaction design. *Interactions, 3*, 11-15.

Aldhaban, F. (2012). *Exploring the Adoption of Smartphone Technology: Literature Review*. Paper presented at the 2012 Proceedings of PICMET '12: Technology Management for Emerging Technologies, Vancouver, BC.

Alt, M.-A., Seer, L., & Pal, Z. (2012). Using the technology acceptance model to explain teenagers' adoption of smartphones in Transylvania. *Journal Studia Universitatis Babes-Bolyai Negotia., 57*(1), 3-19.

Alvesson, M., & Deetz, S. (2000). *Doing Critical Management Research*. London: SAGE Publications.

Amiot, C. E., Sablonnière, R. d. l., Terry, D. J., & Smith, J. R. (2007). Integration of social identities in the self: toward a cognitive-developmental model. *Personality and Social Psychology Review, 11*(4), 364-388. doi: 10.1177/1088868307304091

Amorosi, D. (2011). Time to Avoid the Droid? *Infosecurity, 8*(2), 6-9.

Anttonen, J., & Jumisko-Pyykkö, S. (2008). *Understanding the Meaning of Experiences with Technology*. Paper presented at the "Research Goals and Strategies for Studying User Experience and Emotion", NordiCHI 2008, Lund, Sweden.

Arnold, M., Shepherd, C., & Gibbs, M. (2008). Remembering Things. *The Information Society, 24*(1), 47-53. doi: 10.1080/01972240701774782

Arruda-Filho, E. J. M., Cabusas, J. A., & Dholakia, N. (2010). Social behavior and brand devotion among iPhone innovators. *International Journal of Information Management, 30*(6), 475-480. doi: 10.1016/j.ijinfomgt.2010.03.003

Arruda-Filho, E. J. M., & Lennon, M. M. (2011). How iPhone innovators changed their consumption in iDay2: Hedonic post or brand devotion. *International Journal of Information Management, 31*, 524-532. doi: 10.1016/j.ijinfomgt.2011.04.007

Ashforth, B. E., & Mael, F. (1989). Social Identity Theory and the Organization. *The Academy of Management Review, 14*(1), 20-39.

Auter, P. J. (2007). Portable social groups: willingness to communicate, interpersonal communication gratifications, and cell phone use among young adults. *international Journal of Mobile Communications, 5*(2), 139-156.

Axelsson, A. S. (2010). Perpetual and personal: Swedish young adults and their use of mobile phones. *New Media & Society, 12*(1), 35-54. doi: 10.1177/1461444809355110

Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly, 35*(4), 831-858.

Bagozzi, R. P. (2007). The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift. *Journal of the Association for Information Systems, 8*(4), 244-254.

Balakrishnan, V., & Raj, R. G. (2012). Exploring the relationship between urbanized Malaysian youth and their mobile phones: A quantitative approach. *Telematics and Informatics, 29*(3), 263-272. doi: 10.1016/j.tele.2011.11.001

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliff, NJ: Prentice Hall.

Barnum, C. (2005). The Effects of Status and Group Membership Modeled in a Graph-Theoretic Setting. *Advances in Group Processes, 22*, 125-153. doi: 10.1016/s0882-6145(05)22005-2

Bazeley, P., & Kemp, L. (2012). Mosaics, Triangles, and DNA: Metaphors for Integrated Analysis in Mixed Methods Research. *Journal of Mixed Methods Research, 6*(1), 55-72. doi: 10.1177/1558689811419514

Beck, K. A. (2000). *A decision making model of child abuse reporting.* Dissertation Abstracts International Section A: Humanities and Social Sciences. (61 (5-A))

Beck, K. A. (2005). Ethnographic Decision Tree Modeling: A Research Method for Counseling Psychology. *Journal of Counseling Psychology, 52*(2), 243-249. doi: 10.1037/0022-0167.52.2.243

Benbasat, I., & Barki, H. (2007). Quo vadis, TAM? *Journal of the Association for Information Systems, 8*(4), 212-218.

Benbasat, I., & Zmud, R. W. (2003). The identity crisis within the IS discipline: Defining and communicating the disciplines's core properties. *MIS Quarterly, 27*(2), 183-194.

Berger, P., & Luckman, T. (1966). *The social construction of knowledge: A treatise in the sociology of knowledge*. New York: Double Day.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly, 25*(3), 351-370.

Biljon, J. V., & Kotzé, P. (2007). *Modelling the Factors that Influence Mobile Phone Adoption*. Paper presented at the SAICSIT, Fish River Sun, Sunshine Coast, South Africa.

Blaikie, N. (2010). *Designing social research* (2nd edition ed.). Cambridge: Polity Press.

Blumer, H. (1969a). The methodological position of symbolic interactionism *Symbolic Interactionism: Perspective and Method*. California: The University of California press.

Blumer, H. (1969b). Psychological import of the human group *Symbolic Interactionism: Perspective and Method*. California: The University of California Press.

Blumer, H. (1969c). Society as symbolic action *Symbolic Interactionism: Perspective and Method*. New Jersey: Prentice-Hall Inc. .

Blythe, M., & Cairns, P. (2009). *Critical Methods and User Generated Content: the iPhone on YouTube*. Paper presented at the CHI 2009, Boston, MA, USA.

Brannen, J. (2005). Time and the Negotiation of Work-Family Boundaries: Autonomy or illusion? *Time & Society, 14*(1), 113-131. doi: 10.1177/0961463x05050299

Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin, 17*(5), 475-482.

Brewer, M. B. (2001). The Many Faces of Social Identity: Implications for Political Psychology. *Political Psychology, 22*(1), 115-125.

Brown, B., & O'Hara, K. (2003). Place as a practical concern of mobile workers. *Environment and Planning, A*(35), 1565-1587.

Brubaker, R. (2004). *Ethnicity without groups*. Cambridge: Harvard University Press.

Brubaker, R., & Cooper, F. (2000). Beyond Identity. *Theory and Society, 29*, 1-47.

Bruner II, G. C., & Kumar, A. (2005). Explaining consumer acceptance of handheld Internet devices. *Journal of Business Research, 58*(5), 553-558. doi: 10.1016/j.jbusres.2003.08.002

Buckingham, D. (2008). Introducing Identity. In D. Buckingham (Ed.), *Youth, Identity and Digital Media* (pp. 1-22). London, England: The MIT Press.

Bull, M. (2005). No Dead Air! The iPod and the Culture of Mobile Listening. *Leisure Studies, 24*(4), 343-355. doi: 10.1080/0261436052000330447

Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organizational analysis*. London: SAGE Publications Inc.

Butler, M. (2011). Android: Changing the mobile landscape. *Pervasive Computing*, 1-7.

Butler, T. (1998). Towards a hermeneutic method for interpretive research in information systems. *Journal of Information Technology, 13*, 285-300.

Campbell, M. (2005). *The impact of the mobile phone on young people's social life*. Paper presented at the Social change in the 21st century conference, Qweensland.

Carlile, P. R., & Christensen, C. M. (2005). *The Cycles of Theory Building in Management Research*. Harvard Business School Working Paper, (05-057). Harvard Business School, Boston.

Caroll, J., Howard, S., Vetere, F., Peck, J., & Murphy, J. (2001). *Identity, power and fragmentation in cyberspace: Technology appropriation by young people*. Paper presented at the Proceedings of the 12th Australasian Conference on Information Systems (ACIS), Lismore, NSW, Australia.

Cassidy, S. (2006). Using social identity to explore the link between a decline in adolescent smoking and an increase in mobile phone use. *Health Education, 106*(3), 238-250.

Castañeda, J. A., Muñoz-Leiva, F., & Luque, T. (2007). Web Acceptance Model (WAM): Moderating effects of user experience. *Information & Management, 44*(4), 384-396. doi: 10.1016/j.im.2007.02.003

Castells, M., Ardevol, M. F., Qui, J. L., & Sey, A. (2007). *Mobile Communication and Society: A Global Perspective*. London: The MIT Press.

Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). A Methodology for Conducting Integrative Mixed Methods Research and Data Analyses. *Journal of Mixed Methods Research, 4*(4), 342-360. doi: 10.1177/1558689810382916

Chang, M. K., & Cheung, W. (2001). Determinants of the intention to use Internet/WWW at work: a confirmatory study. *Information & Management, 39*, 1-14.

Chang, P.-C. (2010). Drivers and moderators of consumer behaviour in the multiple use of mobile phones. *International Journal of Mobile Communications, 8*(1), 88-105.

Chen, G.-M. (2009). On Identity: An alternative view. *China Media Research, 5*(4), 109-118.

Chen, J. V., Park, Y., & Putzer, G. J. (2010). An Examination of the Components that Increase Acceptance of Smartphones among Healthcare Professionals. *Electronic Journal of Health Informatics, 5*, 1-12.

Chen, J. V., Yen, D. C., & Chen, K. (2009). The acceptance and diffusion of the innovative smart phone use: A case study of a delivery service company in logistics. *Information & Management, 46*(4), 241-248. doi: 10.1016/j.im.2009.03.001

Cheung, W., Chang, M. K., & Lai, V. S. (2000). Prediction of Internet and World Wide Web usage at work: a test of an extended Triandis model. *Decision Support Systems, 30*, 83-100.

Chiu, C.-M., Hsu, M.-H., & Wang, E. T. G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems, 42*(3), 1872-1888. doi: 10.1016/j.dss.2006.04.001

Chun, H., Lee, H., & Kim, D. (2012). The integrated model of smartphone adoption: hedonic and utilitarian value perceptions of smartphones among Korean college students. *Cyberpsychology, Behavior and Social Networking, 15*(9), 473-479. doi: 10.1089/cyber.2012.0140

Chung, J. (2011). Investigating the roles of online buzz for new product diffusion and its cross-country dynamics. *Journal of Business Research, 64*(11), 1183-1189. doi: 10.1016/j.jbusres.2011.06.020

Cohen, J. (1989). About steaks liking to be eaten. *Symbolic Interaction, 12*, 191-213.

Cole, M. (2005). *A Hermeneutic investigation of online consumer decision making.* PhD Thesis, Brunel University. Retrieved from http://bura.brunel.ac.uk/handle/2438/5168

Cole, M., & Avison, D. (2007). The potential of hermeneutics in information systems research. *European Journal of Information Systems, 16*(6), 820-833. doi: 10.1057/palgrave.ejis.3000725

Compeau, D., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*(June), 189-211.

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly, 23*(2), 145-158.

Cooley, C. H. (1902). *Human Nature and the Social Order*. The USA: Charles Scribner's Sons.

Cousins, K. C., & Varshney, U. (2009). Designing ubiquitous computing environments to support work life balance. *Communications of the ACM, 52*(5), 117. doi: 10.1145/1506409.1506438

Creusen, E. H., & Schoormans, P. L. (2005). The Different Roles of Product Appearance in Consumer Choice. *The Journal of Product Innovation Management, 22*, 63-81.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*, 281-302.

Davis, F. D. (1986). *A technology acceptance model for empirically testing New England user information systems: Theory and results*. Cambridge: MIT Sloan School of Management.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*, 475-487.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology, 22*(14), 1111-1132.

Davis, R. (2010). Conceptualising fun in mobile commerce environments. *International Journal of Mobile Communications, 8*(1), 21-40.

Demir, E. (2008). The field of design and emotion: Concepts, arguments, tools and current issues. *Middle East Technical University Journal of the Faculty of Architecture 25*(1), 135-152.

Deng, L., Turner, D. E., Gehling, R., & Prince, B. (2010). User experience, satisfaction, and continual usage intention of IT. *European Journal of Information Systems, 19*(1), 60-75. doi: 10.1057/ejis.2009.50

Denzin, N. K. (1969). Symbolic interactionism and ethnomethodology: A proposed synthesis. *American Sociological Review, 34*(6), 922-934.

Denzin, N. K. (1987). *The recovering alcoholic*. Newbury Park, California: SAGE Publications.

Denzin, N. K., & Lincoln, Y., S. (1994). *Entering the field of qualitative research*. Thousand Oaks, CA: SAGE.

Dickinger, A., Arami, M., & Meyer, D. (2008). The role of perceived enjoyment and social norm in the adoption of technology with network externalities. *European Journal of Information Systems, 17*(1), 4-11. doi: 10.1057/palgrave.ejis.3000726

Diefenbach, S., & Hassenzahl, M. (2008, April 5-10). *Give Me a Reason. Hedonic Product Choice and Justification.* Paper presented at the CHI 2008 Proceedings Works In Progress, Florence, Italy.

Diefenbach, S., & Hassenzahl, M. (2009). *The "Beauty Dilemma": Beauty is Valued but Discounted in Product Choice*. Paper presented at the CHI 2009 ~ The Beauty Dilemma, Boston, MA, USA.

Dillon, A. (2001). User acceptance of information technology. In W. Karwowski (Ed.), *Encyclopedia of Human Factors and Ergonolics*. London: Taylor and Francis.

Dishaw, M. T., & Strong, D. M. (1999). Extending the technology acceptance model with task-technology fit constructs. *Information & Management, 36*, 9-21.

Dovidio, J. F., Gaertner, S. L., Pearson, A. R., & Riek, B. M. (2005). Social Identities and Social Context: Social Attitudes and Personal Well-Being. *Advances in Group Processes, 22*, 231-260. doi: 10.1016/s0882-6145(05)22009-x

Dovidio, J. F., Gaertner, S. L., & Validzic, A. (1998). Intergroup bias: Status, differentiation, and a common in-group identity. *Journal of Personality and Social Psychology, 75*(1), 109-120.

Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A content analysis of the content analysis literature in organization studies. *Organizational Research Methods, 10*(1), 5-34.

Edvardsson, B., Tronvoll, B., & Gruber, T. (2010). Expanding understanding of service exchange and value co-creation: a social construction approach. *Journal of the Academy of Marketing Science, 39*(2), 327-339. doi: 10.1007/s11747-010-0200-y

Evrard, Y., & Aurier, P. (1996). Identification and Validation of the Components of the Person-Object Relationship. *Journal of Business Research, 37*, 127-134.

Fairweather, J. R. (1999). Understanding how farmers choose between organic and conventional production: Results from New Zealand and policy implications. *Agriculture and Human Values, 16*, 51-63.

Fernback, J. (2007). Beyond the diluted community concept: a symbolic interactionist perspective on online social relations. *New Media & Society, 9*(1), 49-69. doi: 10.1177/1461444807072417

Fine, G. A. (1990). Symbolic interaction in the post-Blumerian age. In G. Ritzer (Ed.), *Frontiers of Social Theory: The New Synthesis* (pp. 117-157). New York: Columbia University Press.

Fine, G. A. (1993). The sad demise, mysterious disappearance, and glorious triumph of symbolic interactionism. *Annual Review of Sociology, 19*, 61-87.

Firmin, M. W., Firmin, R. L., Orient, K. M., Edwards, A. J., & Cunliff, J. M. (2012). The BlackBerry image: self-identified perceptions and motivations associated with college student BlackBerry use. *Educational Media International, 49*(1), 19-32. doi: 10.1080/09523987.2012.662622

Friedman, R. (1986). Psychological meaning of products: Identification and marketing applications. *Psychology and Marketing, 3,* 1-15.

Friedrich, R., Gröne, F., Hölbling, K., & Peterson, M. (2009). The March of Mobile Marketing: New Chances for Consumer Companies, New Opportunities for Mobile Operators. *Journal of Advertising Research, 49*(1), 54. doi: 10.2501/s0021849909090096

Fulk, J. (1993). Social constrcution and communication technology. *The Academy of Management Journal, 36*(5), 921-950.

Gadamar, H.-G. (1976). The historicity of understanding. In P. Connerton (Ed.), *Critical Sociology: Selected Readings* (pp. 117-133). Harmondsworth: Penguin.

Gaertner, S. L., Dovidio, J. F., Bachman, B. A., & Rust, M. C. (1993). The coommon ingroup identity model: Recategorization and the reduction of intergroup bias. *European Review of Social Psychology, 4*, 1-26.

Gallant, M. J., & Kleinman, S. (1983). Symbolic Interaction vs. Ethnomethodolgy. *Symbolic Interaction, 6*(1), 1-18.

García-Montes, J. M., Caballero-Muñoz, D., & Pérez-Álvarez, M. (2006). Changes in the self resulting from the use of mobile phones. *Media, Culture & Society, 28*(1), 67-82. doi: 10.1177/0163443706059287

Garfinkel, H. (1967). *Studies in Ethnomethodology*: Prentice-Hall Inc.

Gartner Research Inc. (2011). Gartner Says Sales of Mobile Devices in Second Quarter of 2011 Grew 16.5 Percent Year-on-Year; Smartphone Sales Grew 74 Percent Retrieved December 27, 2011, from http://www.gartner.com/it/page.jsp?id=1764714

Gaver, B., & Martin, H. (2000). *Alternatives: Exploring information appliances through conceptual design proposals*. Paper presented at the SIGCHI Conference on Human Factors in Computing Systems, The Hauge, The Netherlands.

Gefen, D., & Straub, D. (1997). Gender differences in the perception and use of e-mail: An extension to the Technology Acceptance Model. *MIS Quarterly*(December), 389-400.

Gefen, D., & Straub, D. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. *Journal of the Association for Information Systems, 1*, 1-28.

Gergen, K. J. (1999). *An invitation to social construction*. London: SAGE Publications.

Giddens, A. (1991). *Modernity and self-identity: Self and society in the late modern age*. Stanford, California: Stanford University Press.

Gladwin, C. H. (1989). *Ethnographic Decision Tree Modeling*. London: SAGE Publications.

Gladwin, C. H., Gladwin, H., & Peacock, W. G. (2001). Modeling hurricane evacuation decisions with ethnographic models. *International Journal of Mass Emergencies and Disasters, 19*(2), 117-143.

Goffman, E. (1959). *The presentation of self in everyday life*. New York: Anchor Books.

Goggin, G. (2009). Adapting the mobile phone: The iPhone and its consumption. *Continuum, 23*(2), 231-244. doi: 10.1080/10304310802710546

Goh, K. Y., Heng, C. S., & Lin, Z. (2013). Social Media Brand Community and Consumer Behavior: Quantifying the Relative Impact of User- and Marketer-Generated Content. *Information Systems Research, 24*(1), 88-107. doi: 10.1287/isre.1120.0469

Gold, S. (2011). Android insecurity. *Network Security, 2011*(10), 5-7.

Goodhue, D. L. (1995). Understanding User Evaluations of Information Systems. *Management Science, 41*(12), 1827-1844.

Goodhue, D. L. (1998). Development and Measurement Validity of a Task-Technology Fit Instrument for User Evaluations of Information Systems. *Decision Sciences, 29*(1), 105-138.

Goodhue, D. L. (2007). Comment on Benbasat and Barki's "Quo Vadis TAM" article, *Journal of the Association for Information Systems,* pp. 220-222.

Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly, 19*(2), 213-236.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today, 24*, 105-112. doi: 10.1016/j.nedt.2003.10.001/c

Green, N. (2002). On the Move: Technology, Mobility, and the Mediation of Social Time and Space. *The Information Society, 18*, 281-292. doi: 10.1080/0197224029007512

Green, N. (2003). Outwardly mobile: Young people and mobile technologies. . In J. E. Katz (Ed.), *Machines that become us: The social context of personal communication technology*. New Brunwick, New Jersey: Transaction Publishers.

Grier, S. A., & Deshpandé, R. (2001). Social dimensions of consumer distinctiveness: The influence of social status on group. *Journal of Marketing Research, 38*(2), 216-224.

Gu, B., Park, J., & Konana, P. (2012). Research Note--The Impact of External Word-of-Mouth Sources on Retailer Sales of High-Involvement Products. *Information Systems Research*. doi: 10.1287/isre.1100.0343

Harbich, S., & Auer, S. (2005). Rater bias: The influence of hedonic quality on usability questionnaire. In M. F. Costabile & F. Paternò (Eds.), *INTERACT 2005* (pp. 1129-1133). LNCS: IFIP International Federation of Information Processing.

Hart, P., & Saunders, C. (1997). Power and Trust: Critical Factors in the Adoption and Use of Electronic Data Interchange. *Organization Science, 8*(1), 23-42.

Hassenzahl, M. (2001). The effect of perceived hedonic quality on product applelingness. *International Journal of Human-Computer Interaction, 13*(4), 481-499.

Hassenzahl, M. (2003). The Thing and I: Understanding the Relationship Between User and Product. In M. A. Blythe, A. F. Monk, K. Overbeeke & P. C. Wright (Eds.), *Funology: From usability to enjoyment* (pp. 1-12). The Netherlands: Kluwer Academic Publishers.

Hassenzahl, M. (2004). The Interplay of Beauty, Goodness, and Usability in Interactive Products. *Human-Computer Interaction, 19*, 319-349.

Hassenzahl, M., Beu, A., & Burmester, M. (2001). Engineering joy. *IEEE Software*(January/February), 70-76.

Hassenzahl, M., Diefenbach, S., & Göritz, A. (2010). Needs, affect, and interactive products – Facets of user experience. *Interacting with Computers, 22*(5), 353-362. doi: 10.1016/j.intcom.2010.04.002

Hassenzahl, M., Platz, A., Burmester, M., & Lehner, K. (2000). *Hedonic and ergonomic quality aspects determine a software's appeal.* Paper presented at the CHI 2000: Conference on Human Factors in Computing New York.

Hassenzahl, M., & Tractinsky, N. (2006). User experience - a research agenda. *Behaviour & Information Technology, 25*(2), 91-97. doi: 10.1080/01449290500330331

Hazra, U.-T. (2009). *Interrogating user experiences with mobile phone technologies: A multi-method qualitative study of user experiences with the iPhone.* Master of Management Science (MMSc), Ryerson University, Toronto, Canada.

Hedman, J., & Gimpel, G. (2010). The adoption of hyped technologies: a qualitative study. *Information Technology and Management, 11*, 161-175. doi: 10.1007/s10799-010-0075-0

Hogg, M. A., & Abrams, D. (1993). Towards a single process uncertainty reduction model of social motivation in groups. In M. A. Hogg & D. Abrams (Eds.), *Group motivation: Social psychological perspectives*. London: Prentice Hall.

Hogg, M. A., & Terry, D. J. (2000). Social identity and self-categorization processes in organizational contexts. *The Academy of Management Review, 25*(1), 121-140.

Hogg, M. A., Terry, D. J., & White, K. M. (1995). A tale of two theories: A critical comparison of identity theory with social identity theory. *Social Psychology Quarterly, 58*(4), 255-269.

Holmes, D., & Russell, G. (1999). Adolescent CIT use: PParadigm shifts for educational and cultural practices. *British Journal of Sociology of Education, 20*(1), 69-78.

Hornsey, M. J., & Hogg, M. A. (2000). Assimilation and diversity: An integrative model of subgroup models. *Personality and Social Psychology Review, 4*(2), 143-156.

Hsiao, K.-L. (2013). Android smartphone adoption and intention to pay for mobile internet: Perspectives from software, hardware, design, and value. *Library Hi Tech, 31*(2), 216-235. doi: 10.1108/07378831311329022

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual Health Res, 15*(9), 1277-1288. doi: 10.1177/1049732305276687

Hu, P. J.-H., Chau, P. Y. K., Liu Sheng, O. R., & Tam, K.-Y. (1999). Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology. *Journal of Management Information Systems, 16*(2), 91-112.

Hwang, Y. (2005). Investigaing enterprise systems adoption: uncertainty avoidance, intrinsic motivation, and the technology acceptance model. *European Journal of Information Systems, 14*(2), 150-161.

Igbaria, M., Guimares, M., & Davis, G. B. (1995). Testing the Determinants of Microcomputer Usage via a Structural Equation Modei. *Journal of Management Information Systems, 11*(4), 87-114.

Indulska, M., Hovorka, D. S., & Recker, J. (2012). Quantitative approaches to content analysis: identifying conceptual drift across publication outlets. *European Journal of Information Systems, 21*(1), 49-69. doi: 10.1057/ejis.2011.37

Jenkins, R. (2008). *Social Identity* (3rd ed.). NY, USA: Routledge.

Jetter, H.-C., & Gerken, J. (2006). *A Simplified Model of User Experience for Practical Application.* Paper presented at the NordiCHI 2006, Oslo.

Jewell, S. (2011). Productivity via Mobile Phones: Using Smartphones in Smart Ways. *Journal of Electronic Resources in Medical Libraries, 8*(1), 81-86. doi: 10.1080/15424065.2010.551501

Johnson, J., & Williams, M. L. (1993). A Preliminary Ethnographic Decision Tree Model of Injection Drug Users' (IDUs) Needle Sharing. *Substance Use & Misuse, 28*(10), 997-1014. doi: 10.3109/10826089309062179

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research, 1*(2), 112-133. doi: 10.1177/1558689806298224

Kakihara, M., & Sørensen, C. (2001). Expanding the 'Mobility' concept. *SIGGROUP Bulletin, 22*(3), 33-37.

Kang, Y. M., Cho, C., & Lee, S. (2011). *Analysis of Factors Affecting the Adoption of Smartphones*. Paper presented at the IEEE International Technology Management Conference, San Jose, CA.

Kaplan, B., & Maxwell, J. A. (1994). Qualitative Research Methods for Evaluating Computer Information Systems. In J. G. Anderson, C. E. Aydin & S. J. Jay (Eds.), *Evaluating the organizational impact of health care information systems: methods and applications* (pp. 45-68). Thousand Oaks, CA: SAGE.

Karahanna, E., & Straub, D. (1999). The psychological origins of perceived usefulness and ease of use. *Information & Management, 35*, 237-250.

Karahanna, E., Straub, D., & Chervany, N. L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption benefits. *MIS Quarterly, 23*(2), 183-213.

Karapanos, E., Hassenzahl, M., & Martens, J.-B. (2008, April 5-10). *User Experience Over Time*. Paper presented at the CHI 2008 Proceedings-Works In Progress, Florence, Italy.

Kassarjian, H. H. (1977). Content analysis in consumer research. *The Journal of Consumer Research, 4*(1), 8-18.

Katz, J. E. (2003). Do machines become us? In J. E. Katz (Ed.), *Machines that become us: The social context of personal communication technology*. New Jersey: Transaction Publishers.

Katz, J. E., & Aakhus, M. (2002). Introduction: Framing the issues. In J. E. Katz & M. Aakhus (Eds.), *Perpetual Contact: Mobile communication, private talk, public performance* (pp. 1-13). Cambridge: Cambridge University Press.

Katz, J. E., & Sugiyama, S. (2006). Mobile phones as fashion statements: evidence from student surveys in the US and Japan. *New Media & Society, 8*(2), 321-337. doi: 10.1177/1461444806061950

Kelman, H. C. (1974). Further thoughts on processes of compliance, identification and internalization. In J. T. Tedeschi (Ed.), *Perspectives on social power* (pp. 126-171). Chicago: Aldine.

Kim, H. L., Decker, S., & Breslin, J. G. (2009). Representing and sharing folksonomies with semantics. *Journal of Information Science, 36*(1), 57-72. doi: 10.1177/0165551509346785

Kim, J., & Forsythe, S. (2008). Adoption of Virtual Try-on technology for online apparel shopping. *Journal of Interactive Marketing, 22*(2), 45-59. doi: 10.1002/dir.20113

Kim, S. H. (2008). Moderating effects of Job Relevance and Experience on mobile wireless technology acceptance: Adoption of a smartphone by individuals. *Information & Management, 45*(6), 387-393. doi: 10.1016/j.im.2008.05.002

Kim, Y. J., Chun, J. U., & Song, J. (2009). Investigating the role of attitude in technology acceptance from an attitude strength perspective. *International Journal of Information Management, 29*(1), 67-77. doi: 10.1016/j.ijinfomgt.2008.01.011

Klein, H. K., & Myers, M. D. (1999). A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly, 23*(1), 67-93.

Kleinrock, L. (1995). *Nomadic computing - An opportunity*. Paper presented at the Computer Communication Review.

Kleinrock, L. (2003). An Internet vision: the invisible global infrastructure. *Ad Hoc Networks, 1*(1), 3-11. doi: 10.1016/s1570-8705(03)00012-x

Klopping, I. M., & McKinney, E. (2004). Extending the Technology Acceptance Model and the Task-Technology Fit Model to Consumer E-Commerce. *Information Technology, Learning, and Performance Journal, 22*(1), 35-48.

Knight, W. (2009). A Smart Phone? *Info Security*(November/December), 32-35.

Kolbe, R. H., & Burnett, M. S. (1991). Content-Analysis Research: An Examination of Applications with Directives for Improving Research Reliability and Objectivity. *Journal of Consumer Research 18*(September), 243-250.

Krashinsky, S. (2013). Blackberry's brave new world Retrieved March 16, 2013, from http://www.theglobeandmail.com/report-on-business/industry-news/marketing/blackberrys-brave-new-world/article8087553/

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousand Oaks: SAGE Publications.

Kulviwat, S., Bruner II, G. C., Kumar, A., Nasco, S. A., & Clark, T. (2007). Toward a unified theory of consumer acceptance technology. *Psychology and Marketing, 24*(12), 1059-1084. doi: 10.1002/mar.20196

Kwon, H. S., & Chidambaram, L. (2000). *A Test of the Technology Acceptance Model: The Case of Cellular Telephone Adoption*. Paper presented at the 33rd Hawaii International Conference on System Sciences, Hawaii.

Lamb, R., & King, R. (2003). Reconceptualizing users as social actors in information systems research. *MIS Quarterly*, *27*(2), 197-235.

Larsen, T. J., Sørebø, A. M., & Sørebø, Ø. (2009). the role of task-technology fit as users' motivation to continue information system use. *Computers in Human Behavior*, *25*, 778-784.

Lee, A. S., & Dennis, A. R. (2012). A hermeneutic interpretation of a controlled laboratory experiment: a case study of decision-making with a group support system. *Information Systems Journal*, *22*(1), 3-27. doi: 10.1111/j.1365-2575.2010.00365.x

Lee, C.-C., Cheng, H. K., & Cheng, H.-H. (2007). An empirical study of mobile commerce in insurance industry: Task-technology fit and individual differences. *Decision Support Systems*, *43*, 95-110.

Lee, D. H. (1990). Symbolic interactionism: Some implications for consumer self-concept and product symbolism research. *Advances in Consumer Research*, *17*, 386-393.

Lee, M. K. O., Cheung, C. M. K., & Chen, Z. (2005). Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation. *Information & Management*, *42*(8), 1095-1104. doi: 10.1016/j.im.2003.10.007

Lee, S., Ha, S., & Widdows, R. (2011). Consumer responses to high-technology products: Product attributes, cognition, and emotions. *Journal of Business Research*, *64*(11), 1195-1200. doi: 10.1016/j.jbusres.2011.06.022

Lee, S. Y. (2013). Examining the factors that influence early adopters' smartphone adoption: The case of college students. *Telematics and Informatics*. doi: 10.1016/j.tele.2013.06.001

Lee, Y., Kozar, K. A., & Larsen, K. R. T. (2003). The Technology acceptance model: Past, present and future. *Communications of the Association of Information Systems, 12*, 752-780.

Lin, C.-H., Shih, H.-Y., & Sher, P. J. (2007). Integrating technology readiness into technology acceptance: The TRAM model. *Psychology and Marketing, 24*(7), 641-657. doi: 10.1002/mar.20177

Lin, C.-P., & Bhattacherjee, A. (2010). Extending technology usage models to interactive hedonic technologies: a theoretical model and empirical test. *Information Systems Journal, 20*(2), 163-181. doi: 10.1111/j.1365-2575.2007.00265.x

Lin, T.-C., & Huang, C.-C. (2008). Understanding knowledge management system usage antecedents: An integration of social cognitive theory and task technology fit. *Information & Management, 45*(6), 410-417. doi: 10.1016/j.im.2008.06.004

Lu, J., Yu, C.-S., Liu, C., & Yao, J. E. (2003). Technology acceptance model for wireless internet. *Internet Research: Electronic Networking Applications and Policy, 13*(3), 206-222.

Mahlke, S. (2007a). Aesthetic and Symbolic Qualities as Antecedents of Overall Judgements of Interactive Products. In N. Kinns, A. Blanford, P. Curzon & L. Nigay (Eds.), *People and Computer XX - Engage* (pp. 57-64). London: Springer.

Mahlke, S. (2007b). *User experience of interaction with technical systems.* Technische Universität Berlin, VDM-Verlag.

Malhotra, Y., & Galletta, D. F. (1999). *Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation.* Paper presented at the

Proceedings of the 32nd Hawaii International Conference on System Sciences - 1999, Hawaii.

Maruping, L. M., & Agarwal, R. (2004). Managing team interpersonal processes through technology: a task-technology fit perspective. *J Appl Psychol, 89*(6), 975-990. doi: 10.1037/0021-9010.89.6.975

Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173-191.

Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research, 1*(2). Retrieved from http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology, 14*(January), 6-23.

Mead, G. H. (1934). *Mind, Self, and Society*. Chicago: University of Chicago Press.

Menard, T., Miller, J., Nowak, M., & Norris, D. (2011, October 5-7). *Comparing the GPS Capabilities of the Samsung Galaxy S, Motorola Droid X, and the Apple iPhone for Vehicle Tracking Using FreeSim_Mobile.* Paper presented at the 2011 14th International IEEE Conference on Intelligent Transportation Systems, Washington, DC, USA.

Meso, P., Musa, P., & Mbarika, V. (2005). Towards a model of consumer use of mobile information and communication technology in LCDs: the case of sub-Saharan Africa. *Information Systems Journal, 15*, 119-146.

Middleton, C. A. (2007). Illusions of balance and control in an always-on environment: A case study of Blackberry users. *Continuum, 21*(2), 165-178.

Middleton, C. A., & Cukier, W. (2006). Is mobile email functional or dysfunctional? Two perspectives on mobile email usage. *European Journal of Information Systems, 15*(3), 252-260. doi: 10.1057/palgrave.ejis.3000614

Miles, M., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks: SAGE.

Minge, M. (2008). *Dynamics of User Experience*. Paper presented at the Proceedings of the Workshop on Research Goals and Strategies for Studying User Experience and Emotion, NordiCHI '08, Lund, Sweden.

Mingers, J. (2001). Combining IS Research Methods: Towards a Pluralist Methodology. *Information Systems Research, 12*(3), 240-259.

Mingers, J. (2003). The paucity of multimethod research: a review of the information systems literature. *Information Systems Journal, 13*, 233-249.

Mishra, A. N., Anderson, C., Angst, C. M., & Agarwal, R. (2012). Electronic Health Records Assimilation and Physician Identity Evolution: An Identity Theory Perspective. *Information Systems Research*. doi: 10.1287/isre.1110.0407

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.

Myers, M. D. (2004). Hermeneutics in Information Systems Research. In J. Mingers & L. Willcocks (Eds.), *Social Theory and Philosophy for Information Systems* (pp. 103-128). Chichester, UK: John Wiley & Sons.

Nasco, S. A., Kulviwat, S., Kumar, A., & Bruner II, G. C. (2008). The CAT model: Extensions and moderators of dominance in technology acceptance. *Psychology and Marketing, 25*(10), 987-1005. doi: 10.1002/mar.20249

Neuendorf, K. A. (2002). *The content analysis guidebook*. Thousand Oaks: SAGE Publications.

Oh, H.-S., & Park, H.-A. (2004). Decision Tree Model of the Treatment-Seeking Behaviors Among Korean Cancer Patients. *Cancer Nursing, 27*(4), 259-266.

Oksman, V., & Rautiainen, P. (2003). "Perhaps it is a body part": How the mobile phone became an organic part of the everyday lives of Finnish children and teenagers. In J. E. Katz (Ed.), *Machines that become us: The social context of personal communication technology*. New Brunswick, New Jersey: Transaction Publishers.

Oliver, E. (2010). *The Challenges in Large-Scale Smartphone User Studies*. Paper presented at the ACM HotPlanet, San Francisco, California, USA.

Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science, 3*(3), 398-427.

Pan, D., Chen, N., & Rau, P.-L. P. (2013, July 21-26, 2013). *The Acceptance and Adoption of Smartphone Use among Chinese College Students.* Paper presented at the 5th International Conference, CCD 2013 Held as Part of HCI International 2013, Las Vegas, NV, USA.

Park, B.-W., & Lee, K. C. (2011a). *The Effect of Users' Characteristics and Experiential Factors on the Compulsive Usage of the Smartphone*. Paper presented at the Ubiquitous Computing and Multimedia Applications, UCMA 2011, Daejeon, Korea.

Park, B.-W., & Lee, K. C. (2011b, April 13-15, 2011). *A Pilot Study to Analyze the Effects of User Experience and Device Characteristics on the Customer Satisfaction of Smartphone Users.* Paper presented at the Second International Conference, UCMA 2011, Daejeon, Korea.

Park, N., Roman, R., Lee, S., & Chung, J. E. (2009). User acceptance of a digital library system in developing countries: An application of the Technology Acceptance Model. *International Journal of Information Management, 29*(3), 196-209. doi: 10.1016/j.ijinfomgt.2008.07.001

Park, Y., & Chen, J. V. (2007). Acceptance and adoption of the innovative use of smartphone. *Industrial Management & Data Systems, 107*(9), 1349-1365. doi: 10.1108/02635570710834009

Pavlou, P. A. (2003). Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce, 7*(3), 69-103.

Pedersen, I. (2008). "No Apple iPhone? You Must Be Canadian": Mobile Technologies, Participatory culture, and Rhetorical Transformation. *Canadian Journal of Communication, 33*(3), 491-510.

Pehlivan, E., Sarican, F., & Berthon, P. (2011). Mining messages: Exploring consumer response to consumer- vs. firm-generated ads. *Journal of Consumer Behaviour, 10*(6), 313-321. doi: 10.1002/cb.379

Peterson, A. N., & Zimmerman, M. A. (2004). Beyond the individual: Toward a nomological network or organizational empowerment. *American Journal of Community Psychology, 34*(1/2 September), 129-145.

Plouffe, C. R., Hulland, J. S., & Vandenbosch, M. (2001). Research report: Richness versus parsimony in modeling technology adoption decisions - understanding merchant adoption of a smart card-based payment system. *Information Systems Research, 12*(2), 208-222.

Ponemon Institute. (2011). Smartphone Security: Survey of U.S. consumers: Ponemon Institute.

Prahalad, C. K., & Krishnan, M. S. (2008). *The new age of innovation: Driving co-created value through global networks* New York: McGraw-Hill.

Prasopoulou, E., Pouloudi, A., & Panteli, N. (2006). Enacting new temporal boundaries: the role of mobile phones. *European Journal of Information Systems, 15*(3), 277-284. doi: 10.1057/palgrave.ejis.3000617

Prentice, D. A. (1987). Psychological correspondence of possesions, attitudes, and values. *Journal of Personality and Social Psychology, 53*(6), 993-1003.

Putzer, G. J., & Park, Y. (2010). The Effects of Innovation Factors on Smartphone Adoption among Nurses in Community Hospitals. *Perspectives in Health Information Management, 7*(Winter), 1-20.

Putzer, G. J., & Park, Y. (2012). Are Physicians Likely to Adopt Emerging Mobile Technologies? Attitudes and Innovation Factors Affecting Smartphone Use in the Southeastern United States. *Perspectives in Health Information Management, Spring, 2012*, 1-22.

Raento, M., Oulasvirta, A., & Eagle, N. (2009). Smartphones: An Emerging Tool for Social Scientists. *Sociological Methods & Research, 37*(3), 426-454.

Rafaeli, A., & Vilnai-Yavetz, I. (2004). Instrumentality, aesthetics and symbolism of physical artifacts as triggers of emotion. *Theoretical Issues in Ergonomics Science, 5*(1), 91-112. doi: 10.1080/1463922031000086735

Rahmati, A. (2013). Studying Smartphone Usage: Lessons from a Four-Month Field Study. *IEEE Transactions on Mobile Computing, 12*(7), 1417-1427.

Rahmati, A., & Zhong, L. (2012). Studying Smartphone Usage: Lessons from a Four-Month Field Study. *IEEE Transactions on Mobile Computing*(May), 1-11.

Reid, M., & Levy, Y. (2008). Integrating Trust and Computer Self Efficacy with TAM: An Empirical Assessment of Customers' Acceptance of Banking Information Systems (BIS) in Jamaica. *Journal of Internet Banking and Commerce, 13*(3), 1-18.

Robinson, L. (2007). The cyberself: the self-ing project goes online, symbolic interaction in the digital age. *New Media & Society, 9*(1), 93-110. doi: 10.1177/1461444807072216

Rogers, E. (1983). *Diffusion of innovations*. New York: The Free Press.

Ryan, G. W., & Bernard, R. H. (2000). Data management and analysis methods. In N. K. Denzin & Y. Lincoln, S. (Eds.), *Handbook of Qualitative Research*. London: Sage Publications, Inc.

Ryan, G. W., & Bernard, R. H. (2006). Testing an ethnographic decision tree model on a national sample: Recycling veverage cans. *Human Organization, 65*(1), 103-114.

Santos, A. C., Cardoso, J. M. P., Ferreira, D. R., Diniz, P. C., & Chaínho, P. (2010). Providing user context for mobile and social networking applications. *Pervasive and Mobile Computing, 6*(3), 324-341. doi: 10.1016/j.pmcj.2010.01.001

Sarker, S., & Lee, A. S. (2003). Using a case study to test the role of three key social enablers in ERP implementation. *Information & Management, 40*(8), 813-829. doi: 10.1016/s0378-7206(02)00103-9

Sarker, S., & Wells, J. D. (2003). Understanding mobile handheld device use and adoption. *Communications of the ACM, 46*(12), 35-40.

Satchell, C., & Graham, C. (2010). Conveying identity with mobile content. *Personal and Ubiquitous Computing, 14*(3), 251-259. doi: 10.1007/s00779-009-0254-3

Scheepers, R., Scheepers, H., & Ngwenyama, O. K. (2006). Contextual influences on user satisfaction with mobile computing: findings from two healthcare organizations. *European Journal of Information Systems, 15*(3), 261-268. doi: 10.1057/palgrave.ejis.3000615

Schindler, R. M., & Bickart, B. (2012). Perceived helpfulness of online consumer reviews: The role of message content and style. *Journal of Consumer Behaviour, 11*(3), 234-243. doi: 10.1002/cb.1372

Schrepp, M., Held, T., & Laugwitz, B. (2006). The influence of hedonic quality on the attractiveness of user interfaces of business management software. *Interacting with Computers, 18*(5), 1055-1069. doi: 10.1016/j.intcom.2006.01.002

Schutz, A. (1967). *The Phenomenology of the Social World*. Evanston, Illinois: Northwestern University Press.

Schwalbe, M. L. (1983). Language and the self: An expanded view from a symbolic interactionist perspective. *Symbolic Interaction, 6*, 291-306.

Schwarz, A., & Chin, W. (2007). Looking Forward: Toward an Understanding of the Nature and Definition of IT Acceptance. *Journal of the Association for Information Systems, 8*(4), 232-243.

Sen, A. (2006). *Identity and Violence: The Illusion of Destiny*. New York: Norton.

Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative consumer reviews on the Web. *Journal of Interactive Marketing, 21*(4), 76-94. doi: 10.1002/dir.20090

Shin, D.-H., Shin, Y.-J., Choo, H., & Beom, K. (2011). Smartphones as smart pedagogical tools: Implications for smartphones as u-learning devices. *Computers in Human Behavior, 27*(6), 2207-2214. doi: 10.1016/j.chb.2011.06.017

Shott, S. (1979). Emotion and social life: A symbolic interactionist perspective. *American Journal of Sociology, 84*(6), 1317-1334.

Singelmann, P. (1972). Exchange as symbolic interaction: Convergences between two theoretical perspectives. *American Sociological Review, 37*(4), 414-424.

Solomon, M. R. (1983). The role of products as social stimuli: A symbolic interactionism perspective. *Journal of Consumer Research, 10*(3), 319-329.

Song, M., Parry, M. E., & Kawakami, T. (2009). Incorporating network externalities into the technology acceptance model. *The Journal of Product Innovation Management, 26*, 291-307.

Sørensen, C. (2011). *Enterprise mobility: Tiny technology with global impact on work*. New York, NY: Palgrave-Macmillan.

Sparks, P., & Shepherd, R. (1992). Self-identity and the theory of planned behavior: Assessing the role of identification with "Green Consumerism". *Social Psychology Quarterly, 55*(4), 388-399.

Srivastava, L. (2005). Mobile phones and the evolution of social behaviour. *Behaviour & Information Technology, 24*(2), 111-129. doi: 10.1080/01449290512331321910

Stald, G. (2008). Mobile Identity: Youth, Identity, and Mobile Communication Media. In D. Buckingham (Ed.), *Youth, Identity and Digital Media*. Cambridge, MA: The MIT Press.

Straub Jr, D. W., & Burton-Jones, A. (2007). Veni, Vidi, Vici: Breaking the TAM Logjam. [Article]. *Journal of the Association for Information Systems, 8*(4), 224-229.

Strauss, A., & Corbin, J. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Thousand Oaks, California: SAGE Publications.

Stryker, S. (1968). Identity salience and role performance: The relevance of symbolic interaction theory for family research. *Journal of Marriage and Family, 30*(4), 558-564.

Stryker, S. (1987). The vitalization of symbolic interactionism. *Social Psychology Quarterly, 50*(1), 83-94.

Swallow, D., Blythe, M. A., & Wright, P. (2005). *Grounding Experience: Relating Theory and Method to Evaluate the User Experience of Smartphones.* Paper presented at the Proceedings of the Annual Conference of the European Association of Cognitive Ergonomics.

Symon, G., & Pritchard, K. (2011). *Performing and resisting the 'connected' worker as sociomaterial identity*. Paper presented at the Critical Management Studies conference, Naples.

Tajfel, H. (1972). Experiments in vacuum. In J. Israel & H. Tajfel (Eds.), *The context of social psychology: A critical assessment*. London: Academic Press.

Tajfel, H. (1974). Social identity and intergroup behavior. *Social Science Information, 13*(2), 65-93.

Tajfel, H., & Turner, J. C. (1979). *An integrative theory of intergroup conflict.* Monterey, CA: Brooks-Cole.

Tajfel, H., & Turner, J. C. (1985). The social identity theory of intergroup behavior. . In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations*. Chicago: Nelson-Hall.

Tan, F. B., & Chou, J. P. C. (2008). The Relationship Between Mobile Service Quality, Perceived Technology Compatibility, and Users' Perceived Playfulness in the Context of Mobile Information and Entertainment Services. *International Journal of Human-Computer Interaction, 24*(7), 649-671. doi: 10.1080/10447310802335581

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. London, UK: SAGE Publications.

Teng, W., & Lu, H.-P. (2010). Consumer adoption of PDA phones in Taiwan. *International Journal of Mobile Communications, 8*(1), 1-20.

Teo, H. H., Wei, K. K., & Benbasat, I. (2003). Predicting intention to adopt interorganizational linkages: An institutional perspective. *MIS Quarterly, 27*(1), 19-49.

Teo, T. S. H., Lim, V. K. G., & Lai, R. Y. C. (1999). Intrinsic and extrinsic motivation in Internet usage. *Omega, International Journal of Management Science, 27*, 25-37.

Thoits, P. A., & Virshup, L. V. (Eds.). (1997). *Me's and we's: Forms and functions of social identities* (Vol. 1). New York: Oxford University Press.

Thompson, R. L., Higgins, C., & Howell, J. M. (1994). Influence of experience on personal computer utilization: Testing a conceptual model. *Journal of Management Information Systems, 11*(1), 167-187.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly, 15*(1), 125-143.

Trauth, E. M., & Jessup, L. M. (2000). Understanding Computer-Mediated Discussions: Positivist and Interpretive Analyses of Group Support System Use. *MIS Quarterly, 24*(1), 43-79.

Tripsas, M. (2009). Technology, Identity, and Inertia Through the Lens of "The Digital Photography Company". *Organization Science, 20*(2), 441-460. doi: 10.1287/orsc.1080.0419

Truch, A., & Hulme, M. (2004). *Exploring the implications for social identity of the new sociology of the mobile phone*. Paper presented at the The Global and the Local in Mobile Communication: Places, Images, People, and Connections, Budapest.

Turel, O., Serenko, A., & Bontis, N. (2010). User acceptance of hedonic digital artifacts: A theory of consumption values perspective. *Information & Management, 47*(1), 53-59. doi: 10.1016/j.im.2009.10.002

Turnbull, S. (2002). Social construction research and theory building. *Advances in Developing Human Resources, 4*(3), 317-334.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, UK: Basil Blackwell.

Vallerand, R. J. (2000). Deci and Ryan's self determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 4*, 312-318.

Vallerand, R. J., & Ratelle, C. F. (2002). Intrinsic and extrinsic motivation: A hierarchical model. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self determination research* (pp. 37-64). Rochester: Hudson House Publishing.

Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS Quarterly, 23*(2), 239-260.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342-365.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda for interventions. *Decision Sciences, 39*(2), 273-315.

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly, 37*(1), 22-54.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal feild studies. *Management Science, 46*(2), 186-204.

Venkatesh, V., Davis, F. D., & Morris, M. G. (2007). Dead Or Alive? The Development, Trajectory And Future Of Technology Adoption Research. *Journal of the Association for Information Systems, 8*(4), 268-286.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Venkatesh, V., & Speier, C. (1999). Computer Technology Training in the Workplace: A Longitudinal Investigation of the Effect of Mood. *Organizational Behavior and Human Decision Processes, 79*(1), 1-28.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. [Article]. *MIS Quarterly, 36*(1), 157-178.

Verdegram, P., & De Marez, L. (2011). Rethinking determinants of ICT acceptance: Towards an integrated and comprehensive overview. *Technovation, 31*(8), 411-423. doi: 10.1016/j.technovation.2011.02.004

Verkasalo, H. (2010). *Analysis of Smartphone User Behavior*. Paper presented at the 2010 Ninth International Conference on Mobile Business.

Verkasalo, H., López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2010). Analysis of users and non-users of smartphone applications. *Telematics and Informatics, 27*(3), 242-255. doi: 10.1016/j.tele.2009.11.001

Vincent, J. (2006). Emotional Attachment and Mobile Phones. *Knowledge, Technology & Policy, 19*(1), 39-44.

Wakefield, R. L., & Whitten, D. (2006). Mobile computing: a user study on hedonic/utilitarian mobile device usage. *European Journal of Information Systems, 15*(3), 292-300. doi: 10.1057/palgrave.ejis.3000619

Walden, E. A., & Browne, G. J. (2009). Sequential Adoption Theory: A Theory for Understanding Herding Behavior in Early Adoption of Novel Technologies. [Article]. *Journal of the Association for Information Systems, 10*(1), 31-62.

Walsh, S. P., White, K. M., & Young, R. M. (2009). The phone connection: A qualitative exploration of how belongingness and social identification relate to mobile phone use amongst Australian youth. *Journal of Community & Applied Social Psychology, 19*(3), 225-240. doi: 10.1002/casp.983

Wang, C.-C., Lo, S.-K., & Fang, W. (2008). Extending the technology acceptance model to mobile telecommunication innovation: The existence of network externalities. *Journal of Consumer Behaviour, 7*(2), 101-110. doi: 10.1002/cb.240

Weber, S., & Mitchell, C. (2008). Imaging, keyboarding, and posting identities: Young people and new media technologies. In D. Buckingham (Ed.), *Youth, Identity and Digital Media* (pp. 25-47). London, England: The MIT Press.

Wehmeyer, K. (2007). *Assessing Users' Attachment to Their Mobile Devices*. Paper presented at the Sixth International Conference on the Management of Mobile Business.

Weigart, A. J. (1991). Transverse interaction: A pragmatic perspective on environment as other. *Symbolic Interaction, 14*, 353-363.

Willett, R. (2008). Consumer citizens online: Structure, agency and gender in online participation. In D. Buckingham (Ed.), *Youth, Identity and Digital Media* (pp. 49-69). London, England: The MIT Press.

Winch, P. (1958, 1990). *The Idea of Social Science and its Relation to Philosophy*. London: Routledge.

Xu, K., Liao, S. S., Li, J., & Song, Y. (2011). Mining comparative opinions from customer reviews for Competitive Intelligence. *Decision Support Systems*, *50*(4), 743-754. doi: 10.1016/j.dss.2010.08.021

Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, *59*(4), 431-449. doi: 10.1016/s1071-5819(03)00114-9

Yoo, J., Yoon, Y., & Choi, M. (2010). *Importance of Positive Reputation for Smartphone Adoption*. Paper presented at the 2010 International Conference on Informationa and Communication Technology Convergence, ICTC 2010, Jeju, Republic of Korea.

Yoo, Y. (2010). Computing in everyday life: A call for research on experiential computing. *MIS Quarterly*, *34*(2), 213-231.

Zigurs, I., & Buckland, B. K. (1998). A Theory of Task/Technology Fit and Group Support Systems Effectiveness. *MIS Quarterly*, *22*(3), 313-334.

Zigurs, I., Buckland, B. K., Connolly, J. R., & Wilson, E. V. (1999). A test of task-technology fit theory for group support systems. *The DATA BASE for Advances in Information Systems*, *30*(3,4), 34-50.