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Abstract

Despite evidence that competing forces shape adoption and assimilation of technologies, there is currently no comprehensive model available that explains how such forces impact individually and socially oriented usage of technology. We distinguish between exploration versus exploitation forces and individual versus social forces and posit that these play key roles in shaping assimilation behaviors and usage outcomes. On this basis, we develop the Competing Forces Framework (CFF) of technology assimilation and validate it by analyzing how a group of fifteen iPhone users assimilated mobile services over a period of seven months. In doing so, we draw on data about the antecedent conditions at the time of iPhone adoption, about interactions within the group and its wider social network, and about how individual usage patterns developed over the considered time period. Based on the analysis, we describe and explain how the iPhone was assimilated into the group. As a result, we offer two distinct contributions to the literature. First, we present the CFF to support further investigation of how assimilation behaviors and usage outcomes are shaped as social groups adopt new technologies. Second, we offer new insight into the forces that shape assimilation of mobile devices into a social group of users. At present the analysis is forthcoming.

Keywords: Technology assimilation, Competing Forces Framework, mobile devices and services

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Abstract

Despite evidence that competing forces shape adoption and assimilation of technologies, there is currently no comprehensive model available that explains how such forces impact individually and socially oriented usage of technology. We distinguish between exploration versus exploitation forces and individual versus social forces and posit that these play key roles in shaping assimilation behaviors and usage outcomes. On this basis, we develop the Competing Forces Framework (CFF) of technology assimilation and validate it by analyzing how a group of fifteen iPhone users assimilated mobile services over a period of seven months. In doing so, we draw on data about the antecedent conditions at the time of iPhone adoption, about interactions within the group and its wider social network, and about how individual usage patterns developed over the considered time period. Based on the analysis, we describe and explain how the iPhone was assimilated into the group. As a result, we offer two distinct contributions to the literature. First, we present the CFF to support further investigation of how assimilation behaviors and usage outcomes are shaped as social groups adopt new technologies. Second, we offer new insight into the forces that shape assimilation of mobile devices into a social group of users.

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Introduction

The mobile device has evolved into becoming an invisible ready-at-hand extension of most human beings. Today's advanced devices combine communication and computing into one multipurpose gadget that provides users with a considerable variety of services (Bergman 2000). As mobile devices have a one-to-one binding with the user, offer ubiquitous access, and provide a set of both utilitarian and hedonic functions (Hong and Tam 2006), they are rarely separated from their owners, and are in use, or ready for use, at all times. As a result, mobile devices are used for both work and leisure purposes, and users' experiences with the technology can therefore be inconsistent.

Lang and Jarvenpaa (2005, pp. 7) note, "*the positive and negative impacts of mobile technology are conceptually inseparable and grow in strength with new releases*". Mobile technology provides communication options that did not previously exist, thereby creating a condition where everyone is close and far away at the same time (Arnold, 2003). Similarly, users of contemporary technologies often find they are confronted with conflicting consequences, such as new freedoms and new forms of enslavement, experience of control and experience of chaos, feelings of being intelligent and efficient as well as feelings of ignorance or ineptitude (Mick and Fournier, 1998). These consequences of technology are called paradoxes. A paradox allows opposite conditions to simultaneously exist and is a statement that appears self-contradicting though well-founded and valid (Quine, 1966).

Hence, it is not surprising users of mobile technologies often experience conflicting situations, i.e. circumstances that prompt them "*to take actions whose consequences clash with their original intentions or expectations*" (Lang and Jarvenpaa, 2005, pp. 9). Such contradictory experiences with mobile devices obviously influence users' assimilation of the technology. While contradictions have been used to gain insight into organizational behavior and change in general (Poole and Van de Ven, 1989; Cameron, 1986), only little research has been conducted to examine how contradictions influence consumer behavior (Mick and Fournier, 1998). Specifically, we identified no research that can help understand how contradictory or competing forces shape consumer adoption and assimilation of mobile devices. On this basis, we draw on the Competing Values Framework developed by Quinn and Rohrbaugh (1981, 1983) to present a Competing Forces Framework (CFF) of how mobile device usage behavior is shaped over time. The framework is validated through a detailed analysis of individual and social forces as well as exploration and exploitation behaviors that shaped fifteen observed users' assimilation of the iPhone over a period of seven months.

In the next section, we review the literature on adoption and assimilation of information technology (IT) in general and mobile technology in particular. We then develop the CFF of technology assimilation and present the underlying research design. Finally, we apply the model to analyze our data from the field study and close by discussing contributions and implications.

Technology Adoption and Assimilation

Technology adoption is the result of a decision-making process in which an individual, group, or organization considers using a particular innovation (Rogers, 2003). High adoption rates of a technology indicates considerable impact, however, the long term innovative effects and benefits occur when users subsequently assimilate the technology, make it their own, and embed it within their lives. Assimilation refers broadly to the process of incorporating and absorbing new ideas into an existing cognitive structure. In IS research, however, assimilation is usually constrained to “*the effective application of IT in supporting, shaping, and enabling firms’ business strategies and value chain activities*” (Armstrong and Sambamurthy, 1999, pp. 306). The IS literature generally maintains this focus on technology assimilation in organizational contexts, with Solo (1966) as an exception providing a theoretical explanation of the capacity to assimilate advanced technologies into societies more broadly.

Organizational Adoption

One of the most well-known frameworks on adoption of technology into organizations is the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). The framework derived through a review and consolidation of constructs from eight previous models with the aim of explaining intentions to use and subsequent usage of a technology. While some researchers do not distinguish between adoption and use of technologies (Carlsson et al., 2000; Cambell and Russo, 2003), others focus on either adoption (Mahler and Rogers, 1999) or subsequent assimilation and usage (Bajwa et al., 2004). Fichman (2000) presents a framework that classifies key constructs and their effects on both adoption and assimilation, and Gallivan (2001) proposes a framework that incorporates unique processes and factors related to organizational adoption and assimilation of innovations. Sarker et al. (2005) conceptualize a model of technology adoption by groups (TAG) in organizations, which incorporates technological and psychosocial factors to explain technology adoption, where there is considerable freedom of choice available to the group.

A number of studies investigate adoption of mobile technologies in organizations. As the majority of mobile users previously acquired their device through work, researchers have studied mobile adoption in organizations in general, the resulting changes in organizational structure (Meehan 1998), and the effects on the divide between work and leisure (Nippert-Eng 1996). Palen et al. (2001) study the haziness of work- and leisure-related functions of the mobile device and Wang and Cheung (2004) examine mobile business-to-business e-commerce. Harrington and Ruppel's study (1999) was also conducted in an organizational setting, but they are among the few to investigate the impact of group values on adoption of mobile devices.

Organizational Assimilation

Though organizational innovation researchers for some time have known that a new IT may be widely acquired, but only sparsely deployed, Fichman and Kemerer (1997) were the first to introduce the assimilation gap concept, and develop a general operational measure derived from the difference between cumulative acquisition and deployment patterns. Purvis et al. (2001) later confirmed that there often is a significant gap between the adoption and actual assimilation of complex technologies.

As technology assimilation signifies important outcomes in organizations (DeLone and McLean, 1992; Jaarvenpaa and Ives, 1991; Mahmood and Soon, 1991), recent research has focused on organizational assimilation of IT. Sabherwal and King (1991) have provided an overview of IT assimilation research and find that most frameworks are rooted in generic business strategies and value chain activities (Porter, 1985, Porter and Millar, 1985). Later, researchers have focused on examining factors that may influence higher levels of assimilation. Armstrong and Sambamurthy (1999) examine the influence of quality of senior leadership, sophistication of IT infrastructures, and organizational size; later, Chatterjee et al. (2002) explain the importance of three other factors to achieve high levels of web technology assimilation: top management championship, strategic investment rationale, and the extent of coordination. Organizational assimilation research has also proposed theoretical frameworks to explain success or failure of information technologies (Purvis et al., 2001; Fichman and Kemerer, 1997; Gallivan, 2001), how to enhance assimilation (Bajwa et al., 2004), and on understanding the antecedents and outcomes of IT assimilation (Meyer and Goes, 1998; Zhu et al. 2006).

While research on IT assimilation in organizational contexts is comprehensive, very little research has been conducted on the group and individual levels. Wong et al. (1998) examine

factors influencing technology assimilation in Taiwanese IT firms and find that effectiveness is significantly higher when multidisciplinary and multifunctional teams are involved in assimilation.

While there is considerable research on organizational assimilation of information technologies in general, assimilation of mobile technologies in organizations is nearly absent in the literature. Some insights are, however, provided by the literature on appropriation of technology, i.e. the process through which users go beyond mere adoption to make a technology their own and to embed it within their social, economic, and political practices. Leclercq (2008) investigate benefits brought by mobile technologies within ten French organizations and highlight different factors, such as the role of management, employee empowerment, and personal advantages for employees that favor mobile technology appropriation by individuals and thereby lead to organizational effectiveness benefits.

Consumer Adoption

Adoption of IT by individual consumers has been the target of several widely used theories: the Technology Acceptance Model (Davis 1989; Gefen et al., 2003); the Theory of Reasoned Action (Ajzen and Fishbein, 1980; Pavlou, 2003); the Theory of Planned Behavior (Ajzen et al., 1985; Pavlou and Fygenson, 2006); and Moore and Benbasat's (1991) perceived characteristics of using an innovation inspired by Rogers' (2003) Diffusion of Innovations Theory. Walden and Browne (2009) develop and test a model of observational learning to explain technology adoption decisions and suggest that observational learning is common in adoption decisions. They hence provide a valuable tool for understanding sequential adoption of information technologies. Furthermore, Al-Natour and Benbasat (2009) propose that the decision on how to utilize an IT artifact in interaction is influenced by already held beliefs about the artifact and the relationship with it. They present relationship beliefs that help in understanding users' choices regarding interactions with IT artifacts.

Researchers have also attempted to explain adoption or lack of adoption of mobile technology by consumers using a variety of theories relevant to the context they are investigating: how mobile commerce exposure influences adoption (Bruner and Kumar, 2005; Khalifa and Cheng, 2002); how users create value when adopting mobile banking services (Laukkanen and Lauronen, 2005); which factors induce users to accept mobile devices to communicate promotional content (Bauer et al., 2005), and how the application of advertising theory can help analyze consumer attitude toward advertising via mobile devices (Haghirian and Madlberger, 2005). Dahlberg and Mallat (2002) combine consumer perceived value (Grönroos, 1997), the

Technology Acceptance Model (Davis et. al., 1989), and Network Externalities Theory (Shapiro and Varian, 1999) to explain managerial implications of consumer value perceptions in relation to mobile payment service development. van der Heijden et al. (2005) introduce a user acceptance model that addresses the hedonic value of the mobile device, context relevance, and perceived risk as major drivers of user acceptance.

Consumer Assimilation

To fully grasp the impact of technology, it is necessary to understand how people incorporate and absorb technology into their everyday activities. There is, however, only little research on how consumers assimilate information technologies and mobile technologies.

As mentioned above, the literature on appropriation of technology provides additional insight. Delaney et al. (2008) explore the philosophical roots of appropriation based on Marx's theories and socio-cultural perspectives in an attempt to seek common ground among existing theories of technology appropriation in IS research.

Focusing on mobile technologies, a recent study by Lee et al. (2009) investigate factors that affect post-adoption usage changes in mobile data services. While this study did not specifically investigate assimilation of mobile technologies, it was however concerned with usage changes during the post-adoption stage. Sarker and Wells (2003) investigate the motivations and circumstances surrounding mobile device adoption and use from the perspective of the consumers themselves and, hence, provide a framework of an integrative view of the key issues related to mobile device adoption and use by individuals. Turning to the appropriations literature, Carroll et al. (2002) investigate young people's appropriation of mobile devices and come up with a set of enabling and inhibiting criteria. Carroll (2004) later argued that appropriation of information technologies is part of the design process and that the design of a technology is only completed through users' appropriation of it. Wiredu (2007) analyze the appropriation of mobile technologies as a function of motives, conditions of use, and technology design properties and explain flexibility of mobile computing as a function of the appropriation process. Finally, Bar et al. (2007) review existing theoretical approaches to technology appropriation, re-consider them within the Latin American cultural context, and propose a theoretical framework that can inform an in-depth study of the social, economic, and political impact of mobile phones in that context.

Gaps in Current Knowledge

Our review of the literature, as summarized in Table 1, reveals interesting gaps in current knowledge. First, we know little about how group values impact mobile technologies; Harrington and Ruppel's study (1999) and Sarker et al. (2005) are among the first to shed some initial light on this important subject.

Table 1. Overview of relevant IS research					
	General IT		Mobile technology	Mobile technology	General IT
Use in organizations	Adoption		Fichman (2000), Fichman and Kemerer (1997), Gallivan (2001), Purvis et al. (2001), Sarker et al. (2005), Venkatesh et al. (2003),	Harrington and Ruppel (1999), Meehan (1998), Nippert-Eng (1996), Palen et al. (2001), Wang and Cheung (2004)	Bauer et al. (2005), Bruner and Kumar, 2005, Dahlberg & Mallat (2002), Davis et. al. (1989), Grönroos (1997), Haghirian and Madlberger (2005), Khalifa and Cheng (2002), Laukkanen and Lauronen (2005), Shapiro & Varian (1999), Van der Heijden et al (2005)
	Assimilation		Armstrong and Sambamurthy (1999), Bajwa et al. (2004), Chatterjee et al. (2002), Fichman and Kemerer (1997), Gallivan, (2001), Meyer and Goes (1998), Purvis et al. (2001), Sabherwal and King (1991), Zhu et al. (2006)	Leclercq (2008)	Bar et al. (2007), Carroll et al. (2002), Carroll (2004), Lee et al. (2009), Wiredu (2007)
Use by consumers	Adoption				Al-Natour and Benbazat (2009), Ajzen and Fishbein (1980), Ajzen et al. (1985), Davis (1989), Gefen et al., 2003, Moore & Benbasat (1991), Pavlou, 2003, Pavlou and Fygenson, 2006, Rogers (2003), Walden and Browne (2009)
	Assimilation				Delaney (2008), Sarker and Wells (2003),
	General IT		Mobile technology	Mobile technology	General IT

Second, little research has been conducted on how groups and individuals assimilate IT in organizational contexts. An exception is Wong et al. (1998) study revealing that assimilation is significantly higher when multidisciplinary and multifunctional teams are involved. Third, we only found one study focusing on assimilation of mobile technology in organizational contexts; Leclercq (2008) highlights different factors, such as the role of management, employee empowerment, and personal advantages for employees that favor mobile technologies assimilation by individuals. Fourth, while research into consumer adoption of technology is well developed, we know, at this point, little about consumer assimilation of IT in general and mobile technology in particular. Also, it is interesting to observe that this body of research overall suggests that many conflicting forces influence adoption and assimilation of information and mobile technologies. Nippert-Eng (1996) emphasizes the impact of the divide between work and leisure and Palen et al. (1996) studied the tensions between work- and leisure-related functions specifically related to the mobile device. In fact, the utilitarian and hedonic functions of contemporary mobile devices create paradoxical intentions of use and these may inhibit assimilation of the technology. Mobile technology also creates the paradoxical notion of colleagues and friends being close and far away at the same time (Arnold, 2003). Moreover, users of contemporary technologies may more generally find themselves confronted with conflicting consequences, such as new freedoms and new forms of enslavement, experience of control and experience of chaos (Mick and Fournier, 1998). On these grounds, it is not surprising that users of mobile technology often experience conflicting situations in which they are prompted *“to take actions whose consequences clash with their original intentions or expectations”* (Jarvenpaa and Lang 2005, pp. 9). Interestingly, however, no research that can help us understand how contradictory forces shape users’ assimilation of mobile devices and IT in general was identified.

On these grounds, this research was designed with the dual objective of 1) increasing our knowledge about consumer assimilation of IT, and 2) to develop and validate a model that can help us understand how contradictory forces shaped assimilation behaviors and outcomes.

Development of Competing Forces Framework

To examine how competing forces shape assimilation of information technologies, this study draws on Quinn and Rohrbaugh’s Competing Values Framework (1981, 1983). The framework was developed from research conducted on the major indicators of effective organizations, where they found that sustained success of firms had more to do with company values than

market forces. The Competing Values Framework operates with three sets of competing values. The first set of values relates to organizational *focus* and differentiates between an internal emphasis on the well-being and development of people in the organization, and an external emphasis on the well-being and development of the organization itself. The second set of values relates to organizational *structure*, and represents the contrast between stability and control as opposed to flexibility and adaptation. The third set of values is related to organizational *means and ends*, with emphasis on processes and final outcomes.

The three sets of competing values are recognized dilemmas in organizational life (Aram, 1976). The *focus* dilemma of competing values, people versus organization, conceives that on one hand, an organization has an ultimate goal of getting tasks accomplished, and the emphasis is on standardization, measurement, and predictability, and individuality should be removed. On the other hand, the people in organizations are individuals with unique skills and feelings that should be taken into consideration. The dilemma here seems to be that when value on the overall organization is maximized, individual development is reduced. The *structure* dilemma concerns how social theorists have emphasized authority, structure, and coordination while others have stressed diversity, individual initiative, and organizational adaptability. The third dilemma reflected by means versus ends concerns how the means, such as long research and development times, may conflict with the aim of reaching an end, such as short term high profit.

This dialectical approach to organizational effectiveness has been found to be a useful and robust model for organizing and understanding a wide variety of organizational and individual phenomena, including organizational effectiveness (Quinn and Rohrbaugh, 1983), leadership competencies (Yukl, 1989), shared leadership in self-managed teams (Yang and Shao, 1996), organizational culture (Cameron and Quinn, 1999), and leadership roles (Parker, 2004), and it describes the core approaches to thinking, behaving, and organizing in association with human activity (Quinn and Rohrbaugh, 1981). Though the framework has proven to be influential and robust, it has never been applied to adoption and assimilation studies. Still, the long history, wide applicability, and robustness of the Competing Values Framework provides a strong potential to explain how, competing forces shape *effective* adoption and assimilation of information technologies, i.e. how information technologies are adopted and assimilated by both organizations and consumers.

In the following, we therefore adapt the Competing Values Framework into the CFF. The purpose of the CFF is to add to current explanations of human behavior in relation to adoption and assimilation of information technologies. The CFF posits that the degree to which

technologies are adopted and assimilated can be explained based on three sets of forces for which, we have found evidence in the literature on information and mobile technologies. The Competing Forces Framework, adapted from the Competing Values Framework, draws on forces identified in the adoption and assimilation literature and will be elaborated upon in the following. The set of values related to organizational *structure* has been applied to approaches to technology *usage*, distinguishing between exploration versus exploitation of technology. The values related to organizational *focus* have been adapted into individual level and social level forces that shape technology adoption. Finally, the values related to means and ends have been adapted to focus on the objectives, or outcomes, of technology adoption with a distinction between hedonic and utilitarian use of technology.

Exploration and Exploitation Behavior

The first set of forces is related to exploration and exploitation behavior. A central concern in studies of organizational learning is the balancing of exploration of new possibilities and the exploitation of old certainties (March, 1991). The dilemma of balancing exploration and exploitation is revealed in distinctions made between refinement of an existing technology and invention of a new one. Exploration is a long-term process, with a risky, uncertain outcome, and exploitation by contrast is short-term, with immediate, relatively certain benefits. Organizations face the problem of allocating resources between exploration and exploitation. The same holds true for consumer adoption of technologies. Consumers possessing new mobile technologies are constantly faced with the choice of using existing functions and services available or exploring new ways of using these technologies. Consumers, hence, also face the problem of allocating the time between exploration and exploitation. Gupta et al. (2006) note that a definition problem of the dual concepts exists; there seems to be consensus that exploration involves the pursuit and acquisition of new knowledge, while a similar consensus is lacking on whether exploitation involves solely the use of past knowledge or whether it also refers to the pursuit and acquisition of new knowledge, though of a different kind from that associated with exploration. In this framework, exploration has to do with dynamic efficiency and refers to “*learning gained through processes of concerted variation, planned experimentation, and play*” and exploitation has to do with static efficiency and refers to “*learning gained via local search, experiential refinement, and selection, and reuse of existing routines*” (Baum et al., 2000, pp. 768). Hence, learning can be associated with both behaviors.

The literature reveals several examples of how exploration and exploitation of information technologies are conducive for organizational growth. Lee et al. (2003) examine under which

conditions exploration of a new, incompatible technology drives growth and find that exploration of new technologies are more likely to increase growth when there are a significant amount of *power users* or when a technology is introduced before an established technology takes off. Kane and Alavi (2007) investigate the effects of IT on exploration and exploitation in organizational learning by introducing IT enabled mechanisms: email, knowledge repositories of best practices, and groupware.

Individual and Social Orientation

The second set of forces is related to individual and social orientation. Individual orientation refers to adoption and assimilation forces resulting from *individual* behavior within or related to a social group during a considered time period. In contrast, social orientation refers to adoption and assimilation resulting from *social* behavior within or related to a social group during a considered time period. Individual and social orientation has been a research interest in the social psychology field for many decades, since researchers (Bovard, 1951; Deutsch and Gerard, 1955) found that individual psychological processes are subject to social influences. Social influence has generally been referred to as conformity and looked upon as the agreement with a visible majority (Jahoda, 1959). Deutsch and Gerard (1955, pp. 629) distinguish between two types of social influence; informational and normative. They refer to *informational* social influence as “*the influence to accept information obtained from another as evidence about reality*,” that is, as evidence about the state of some aspect of the individual's environment. Katz and Lazarsfeld (1955), similarly, apply the term information transfer. Deutsch and Gerard (1955, pp. 629), furthermore, refer to the term *normative* social influence, which covers “*the influence to conform to the expectations of another person or group*”. Normative pressure is also covered by Coleman et al. (1966). Two additional types of social influence are competitive concerns (Burt 1995), which are expressed through competitive adoption and usage behaviors, and social learning, which occurs through the observation of neighbors' choices (Tarde et al. 2008).

In the literature there are several examples of how individual and social orientation shapes adoption and assimilation of technology. It has for example been established that individual adoption within an organization is impacted by the individual's use context; i.e. as employee, as professional, as private user, or as member of society (Scheepers and Scheepers, 2004). Also Tscherning and Mathiassen (2010) show how an individual's social network may influence the individual consumer's decision to adopt mobile devices at a very early stage. Hence, it can be assumed that when social forces, on the decision to adopt and assimilate a technology are

maximized, the individual intention to behave independently may be reduced, and when individual forces on the decision to assimilate a technology is maximized, the emphasis may shift away from the social norm. In the mobile literature, Lu et al. (2005) acknowledge that social influences and personal traits, such as individual innovativeness, are potentially important determinants of adoption. They model and test these relationships in non-work settings relating constructs such as intention to adopt and social influences, and find that social influences significantly contribute to adoption and use of wireless mobile technology. Cambell and Russo (2003) find that through collective sense-making, perceptions and uses of mobile devices are socially constructed in close personal networks, and are more similar within the networks than for the individuals constituting the entire sample. Tscherning and Mathiassen (2010) distinguish between four types of social influence that impact mobile device adoption; adoption threshold, opinion leaders, social contagion, and social learning and find that the mobile adopters investigated had low adoption thresholds, and that social contagion and social learning impacted early adoption of iPhones, while there was no evidence that opinion leaders impacted the adoption decision.

Utilitarian and Hedonic Objectives

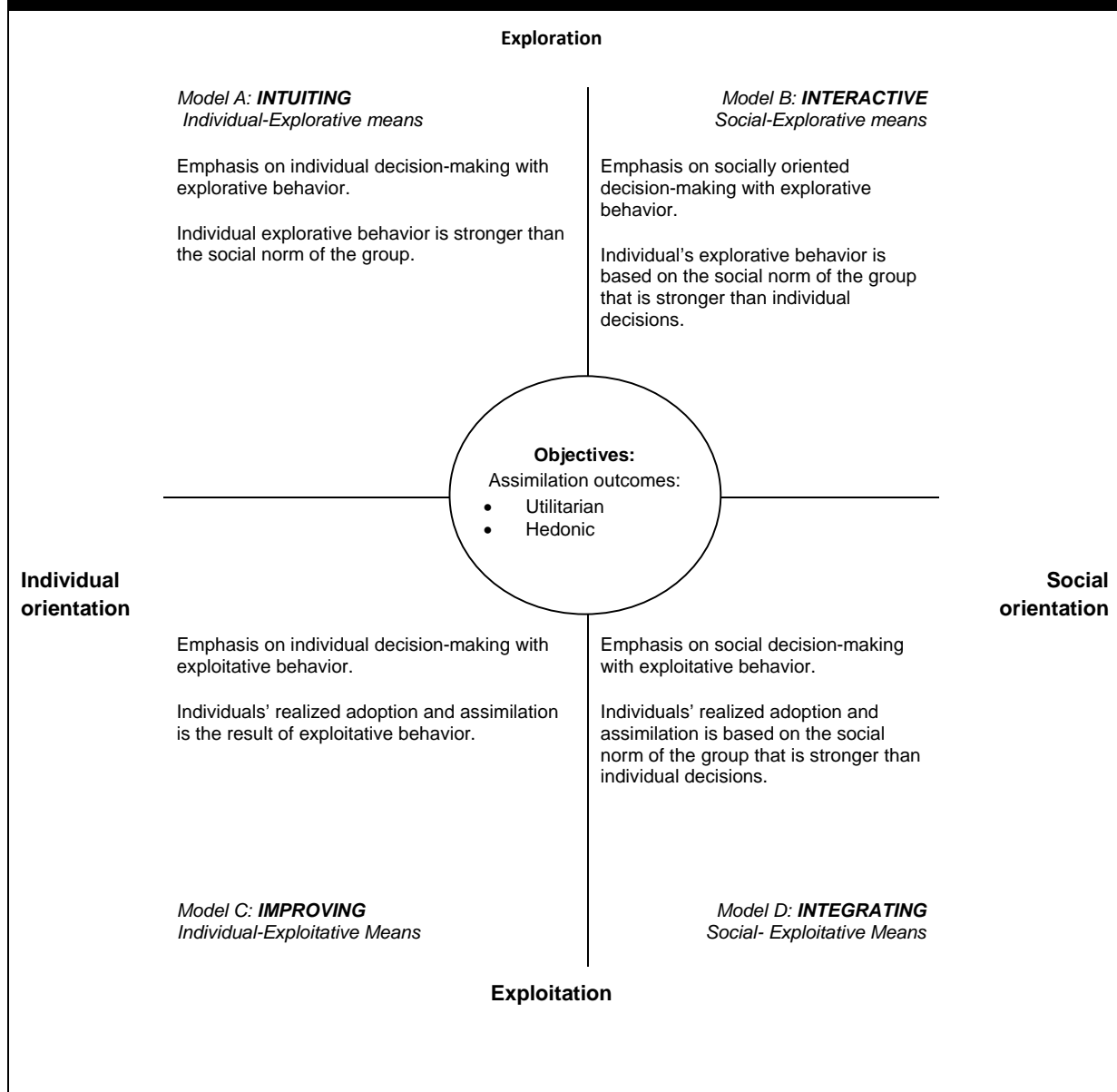
It is our assumption that all technology users attempt to achieve certain objectives, and accordingly, analyses of adoption and assimilation must take into consideration the objectives of the mobile users and the means through which they sustain themselves and attain their objectives (Georgopoulos and Tannenbaum, 1957). The third set of forces is, hence, related to objectives with an emphasis on the final outcome, i.e. adoption and higher assimilation. The means constitute the different activities through which users relate to a technology and they are covered by the two previous dimensions; exploration and exploitation efforts as well as individual and social orientation. The objectives are dependent on the quality of the technology and several researchers have identified product, or technology, qualities that may induce commercial success. Dahlbom and Mathiassen (1993) suggest three quality dimensions for user experience: functional quality, aesthetic quality and symbolic quality; and Hassenzahl et al. (2000) identify three similar quality layers: objective quality, subjective quality, and behavioral and emotional consequences for consumers. Finally, Creusen and Schoormans (2005), based on a literature study, identify six quality dimensions: functional, aesthetic, and symbolic quality as well as ergonomic, attention drawing, and categorization quality. However, in regard to the adoption and assimilation of mobile technologies, appropriate objectives can be productivity-oriented; *utilitarian*, or pleasure-oriented; *hedonic* (van der Heijden et al., 2004). The terms

hedonic and utilitarian traces back to the 1950's when motivational research was a core field of interest in consumer research (Deci, 1975; Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982). Hedonic uses of mobile devices provide self-fulfilling rather than instrumental value to the user, are strongly connected to home and leisure activities, focus on the fun-aspect of using the devices, encourage prolonged rather than productive use, and are intrinsically motivated (van der Heijden et al., 2004). Utilitarian uses of mobile devices provide instrumental value to the user, which implies there is an objective external to the interaction between user and device, such as increasing task performance, and are extrinsically motivated (van der Heijden et al., 2004). Table 2 provides an overview of the constructs used in the CFF.

Table 2. Constructs in the Competing Forces Framework			
Dimension	Construct	Definition	References
Use	Exploration	Exploration refers to learning gained through processes of concerted variation, planned experimentation and play.	March (1991), Baum et al. (2000), Lee et al. (2003), Gupta et al. (2007).
	Exploitation	Exploitation refers to learning gained via local search, experiential refinement, and selection and reuse of existing routines.	March (1991), Baum et al. (2000), Lee et al. (2003), Gupta et al. (2007).
Orientation	Individual	Individual orientation refers to adoption and assimilation forces resulting from individual behavior within or related to a social group during a considered time period.	Bovard, (1951), Deutsch and Gerard (1955), Jahoda (1959), Scheepers and Scheepers (2004).
	Social	Social orientation refers to adoption and assimilation forces resulting from social behavior within or related to the social group during a considered time period.	Bovard, (1951), Deutsch and Gerard (1955), Jahoda (1959), Tscherning and Mathiassen (2010),
Objective	Utilitarian	Utilitarian objectives provide instrumental value to the user, are external to the interaction between user and device; e.g. increasing task performance, and are extrinsically motivated.	Hirschman and Holbrook (1982), Holbrook and Hirschman (1982), Van der Heijden et al., (2004).
	Hedonic	Hedonic objectives provide self-fulfilling value to the user, are connected to home and leisure activities, focus on the fun aspect, encourage prolonged use of devices, and are intrinsically motivated.	Hirschman and Holbrook (1982), Holbrook and Hirschman (1982), Van der Heijden et al., (2004).

These competing forces and objectives are all part of the decision-making process when organizational actors and consumers adopt and assimilate technologies. Individual orientation may change the norms in the immediate social network, the organization, or even within an industry or society; however social orientation of a higher order may also impact the individual's adoption and assimilation behavior. Similarly, a certain approach may be the result of exploitative behavior; however, the objectives may drive the organizations or consumers to conduct explorative usage behaviors. Figure 1 is a visualization of the CFF.

Figure 1. The Competing Forces Framework



Research Methodology

To validate the CFF of adoption and assimilation of IT, we conducted a field study. A field study is useful, when researchers wish to apply scientific methods to examine an intervention in naturally occurring environments rather than in the laboratory (Harrison and List, 2004). This field study is part of larger project with the aim to investigate the future of mobile devices and services, and the project organization consisted of two PhD students, one post doc and one associate professor.

Research Design

The field study was conducted to understand how fifteen mobile users assimilated an iPhone over time. It was conducted in Denmark, which is among the leading countries in the use of mobile devices and services (Economist Intelligence Unit, 2008) and therefore an appropriate venue for studying assimilation of the iPhone. The iPhone was chosen for this study, as it had just been introduced on the Danish market, and thus comprised a novelty factor that would possibly engage the study subjects. Furthermore, the iPhone combines multiple gadgets into one, and represents an ideal object when studying assimilation behaviors. Purposive sampling provided access to rich data about the participating individuals, their interactions with each other, and their usage behavior. Purposive sampling techniques are primarily used in qualitative studies, when the aim is to select individuals based on a specific purpose associated with answering the research question (Teddlie and Yu, 2007) and extending emergent theory (Eisenhardt 1989). In this study, the aim was to gain access to a group of individuals that were part of the same social group to examine how competing forces influenced each individual's and the group's assimilation of the iPhone over the considered time period.

The selection of participants for the study was based on an initial evaluation of forty four students, enrolled in the same master's program at a Danish University. The potential participants completed a survey on the topic and on specific diversity criteria. The selected fifteen participants consisted of seven males (47%) and eight females (53%) with age ranging from 22 to 51 years. The participants also diverged in regard to family demographics, income level, Scandinavian nationality, and experience with mobile devices, which ensured a dispersion of attitudes, experiences, and habits in adoption and assimilation patterns. It was, however, important that all participants were part of the same social group in order to examine the impact of social forces. We argue that this is in fact the case, as master students in Denmark in the same program all take the same courses for the duration of two years. This particular group of

students had just started their studies one month prior to the beginning of the study. The participants were offered a free iPhone in the study period including a subscription plan with the network provider. If the participants were to use the phone outside the subscription plan they would have to finance this use themselves. The reason for this decision was to mitigate false usage as the participants were prompted to think about usage, as they would have been if they were to pay themselves. Table 3 summarizes the demographic variables of the fifteen participants.

Table 3. Demographic variables of participants			
<i>Demographic construct</i>	<i>Variables</i>	<i># of participants</i>	<i>% of participants</i>
Sex	Female	8	53%
	Male	7	47%
Age	< 30 years	10	67%
	30 > < 40 years	4	26%
	40 > < 51 years	1	7%
Income level	< 6000 DKK	5	33%
	6000 DKK > < 10000 DKK	5	33%
	10000 DKK >< 15000 DKK	4	27%
	No reply	1	7%
Nationality	Danish	13	86%
	Norwegian	1	7%
	Swedish	1	7%

Data Collection

The data collection took place from mid September 2008 to ultimo March 2009. The study was a cross-sectional study with multiple snapshots (Orlikowski and Baroudi, 1991), as thirty semi-structured interviews, three surveys, three focus group interviews, and fifteen 24-hour diaries were conducted and collected during this period in order to get rich insights into the assimilation process. Furthermore, data from the network operator were collected, in order to analyze all

fifteen participants' actual usage behavior. The resulting opportunities for data triangulation provide strong support in the investigation of the research objectives (Eisenhardt 1989). The triangulation of data had several advantages: the interviews, diaries, and focus groups increased the likelihood of capturing the mobile users' subjective connotations and their constructed reality in an attempt to uncover what they give status and meaning and why. The three surveys conducted during the study period provide insight into beliefs, intentions, and usage behavior and the changes that occurred over time. The actual usage data from the network provider allows us to capture actual usage and compare this data with the interview and survey data. Table 4 provides an overview of the collected data in the field study during the seven month period.

Table 4. Field Experiment - Data Collection				
<i>Data collection method</i>	<i>Participants</i>	<i>Time (MM-YYYY)</i>	<i>Duration (H:M)</i>	<i>Content / Constructs</i>
Semi-structured interviews #1	15	11-2008	0:20	Adapted user interface of the iPhone, functions and applications used.
Semi-structured interviews #2	15	02-2009	0:20	Usage behaviors.
Survey 1: pre-study	15	08-2008	0:39 (average)	Demographics, emotions, social network, PC usage, mobile device usage, the iPhone.
Survey 2: mid-study	15	12-2008	0:35 (average)	
Survey 3: end-of-study	15	03-2009	0:50 (average)	
Focus group #1a	4	11-2008	1:45	Functional, social, emotional, epistemic, and conditional value. Ranking of values.
Focus group #1b	5	11-2008	1:45	
Focus group #1c	5	11-2008	1:45	
Diaries	15	11-2008	24:0	Usage within a 24 hour period.
Actual usage data	15	08-2008 – 03-2009	Whole period	Call, text messaging, and access to mobile internet.

The project team conducted the data collection. Two of four researchers conducted the interviews/focus group interviews. The first survey was printed and conducted on paper, in order to decide, which respondents were offered participation in the study, while the second and third surveys were available to the respondents via the survey web site *SurveyMonkey*. All interviews were tape-recorded with the permission from the respondents and were then transcribed. The

interview guides included different topics of interest (see table 4). These topics were chosen for their relevance to individual researchers and relevant theories. Interviews lasted approximately 20 minutes and the focus group interviews lasted between 90 and 120 minutes. During the interviews, one researcher was leading the interview and discussions, while one researcher was taking notes.

As mentioned above, the data were collected from mid-September 2008 to ultimo March 2009. The data collection has been divided into three phases; the *probing* phase from mid-September to ultimo November 2008, the *informed* phase from primo December 2008 to ultimo January 2009, and the *proficient* phase from primo February to ultimo March 2009. This division allows us to detect changes in assimilation patterns over time.

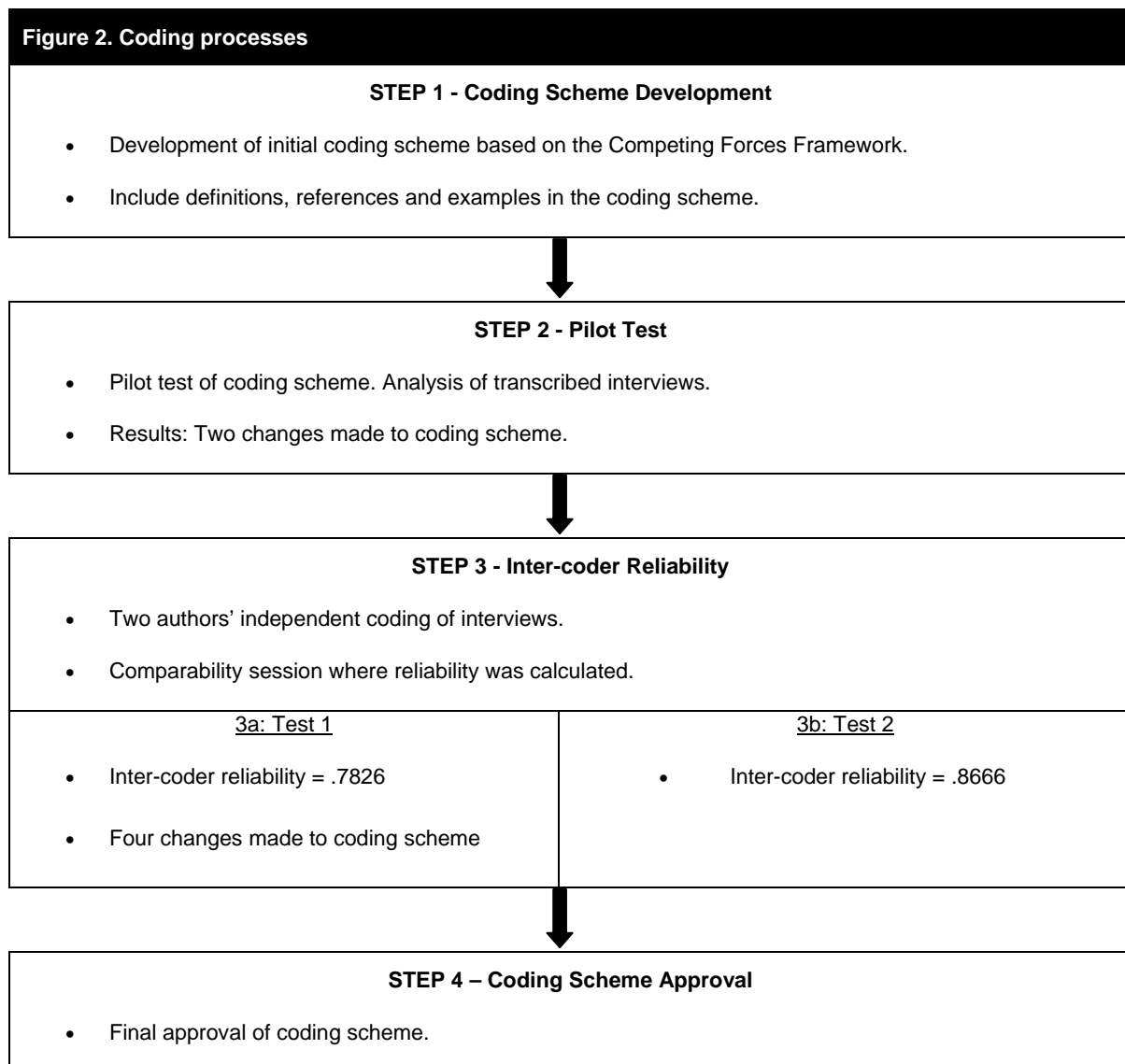
Table 5 shows the type of data collected and at what time during the study.

Table 5. Data Collection Methods and Timeline							
	09 2008	10 2008	11 2008	12 2008	01 2009	02 2009	03 2009
<i>The probing phase</i>							
Survey 1: pre-study	x						
Diaries		x					
Semi-structured interview #1			x				
<i>The informed phase</i>							
Focus group #1a			x				
Focus group #1b			x				
Focus group #1c			x				
Survey 2: mid-study				x			
<i>The proficient phase</i>							
Semi-structured interview #2						x	
Survey 3: end of study							x
Actual usage data	x	x	x	x	x	x	x

Data Analysis

The data were analyzed using the qualitative data analysis (QDA) software, *Atlas.Ti*. Specific coding principles were adopted to establish common ground before the coding began; quotes had to be specific for the chosen code, and therefore not all quotes should necessarily be coded. As data were collected to fulfill the research objectives of four researchers, some quotes would necessarily not be relevant to this research purpose. Furthermore, consistency in the coding was required, so that for certain top-level codes one or more sub-level codes should be coded as well.

A coding scheme was then developed based on the following procedure:



First, the two authors identified, discussed and agreed upon an initial coding scheme based on the developed Competing Forces Framework. This scheme included the constructs identified previously in this paper with a number of sub-domains for the top-level domains. The scheme included detailed definitions of top-level domains and sub-domains.

Second, a pilot was conducted. During this pilot, one author independently coded one interview. The coded interview was reviewed by the second author and was then discussed to resolve any differences, and the coding scheme was revised so that it was clearer and more concise and applicable. Two changes were added to the coding scheme.

Third, an inter-coder reliability test (or inter-coder agreement) was conducted (Tinsley and Weiss, 1975, 2000). As observed by Singletary (1993, pp. 294) *“if the coding is not reliable, the analysis cannot be trusted”*, and it is therefore important to adequately establish and report inter-coder reliability. Inter-coder reliability is the most well known measurement for determining whether independent coders evaluate a text and reach the same conclusion. It measures *“the extent to which different coders tend to assign exactly the same rating to each object”* (Tinsley and Weiss, 2000, pp. 98).

The inter-coder reliability test involved the two authors independently analyzing an interview transcript and assigning codes to quotes in the text. The authors then had a comparability session, where each coded quote from the text was compared. The authors noted the following: 1) total number of codes in the text, 2) the number of codes the authors agree on, and 3) the number of codes the authors disagree on. Then the number of codes, the authors agree on was divided by the total number of codes in the text and the inter-coder reliability was found.

There are no established standards to what constitutes an acceptable level of reliability, however Neuendorf (2002) has, based on an extensive review, determined that *“coefficients of 0.90 or greater would be acceptable to all, .80 or greater would be acceptable in most situations, and below that, there exists great disagreement”* (pp. 145). The inter-coder reliability was measured to .7826. The authors then discussed the coding to resolve any differences. The coding scheme was revised again and a second inter-coder reliability test was conducted, and the inter-coder reliability was measured to .8666. It was then determined that this level is acceptable, and the coding scheme was approved. The coding scheme was then created in *Atlas.Ti*. Each of the transcripts were also imported into *Atlas.Ti* and coded according to the scheme. Table 6 shows the final coding scheme consisting of two top-level and six sub-level codes used for analyzing the data.

Table 6. Coding Scheme		
Sub-level code	Description	References
Means support adopters in relating to a technology and attaining specific outcomes.		
Exploration	Exploration results in learning gained through processes of concerted variation, planned experimentation and play.	March (1991), Baum et al. (2000), Lee et al. (2003), Gupta et al. (2007).
Exploitation	Exploitation results in learning gained via local search, experiential refinement, and selection and reuse of existing routines.	March (1991), Baum et al. (2000), Lee et al. (2003), Gupta et al. (2007).
Individual orientation	Individual orientation result in individual behavior within or related to a group during a considered time period.	Bovard, (1951), Deutsch and Gerard (1955), Jahoda (1959), Scheepers and Scheepers (2004).
Social orientation	Social orientation results in social behavior within or related to the group during a considered time period.	Bovard, (1951), Deutsch and Gerard (1955), Jahoda (1959), Tscherning and Mathiassen (2010).
Objectives are intentions and preferences that impact behaviors and outcomes during technology assimilation.		
Utilitarian	Utilitarian objectives are motivated by an outside benefit, external to the system-user interaction, such as improving to performance. Motivated extrinsically.	Hirschman and Holbrook (1982), Holbrook and Hirschman (1982), Van der Heijden et al., (2004).
Hedonic	Hedonic objectives specify the extent to which enjoyment can be derived from using the system as such. Motivated intrinsically.	Hirschman and Holbrook (1982), Holbrook and Hirschman (1982), Van der Heijden et al., (2004).

The coding of the collected data resulted in 1293 coded quotes from the analyzed interview, focus group interviews, diaries, and surveys – some quotes cover more codes. Table 7 shows an overview of the number of coded quotes per study participant.

Table 7. Number of Coded Quotes Per Person

Dimension	Use		Orientation		Objectives		Number of Codes
Code	Exploration	Exploitation	Individual	Social	Utilitarian	Hedonic	
A	12	23	10	7	13	17	72
B	10	26	10	7	16	17	86
C	13	18	22	7	18	22	100
D	5	10	7	1	5	5	33
E	11	34	21	5	17	27	115
F	18	23	23	10	20	19	113
G	21	41	33	8	35	24	162
H	6	6	10	2	6	7	37
I	11	25	22	3	14	10	85
J	8	20	9	3	8	15	63
K	10	18	15	1	7	14	65
L	22	35	25	9	24	26	141
M	13	31	10	1	9	34	98
N	3	16	6	6	11	8	50
O	10	20	6	6	7	14	63
	173	346	229	76	210	259	1283

Results

In the following, we conduct two separate analyses based on the data collected from the longitudinal study; first, the three sets of competing forces identified in the Competing Forces Framework; use, orientation, and objectives, are analyzed. We do this by summarizing the framework dimensions and providing group level aggregated results from the empirical data. We, furthermore, analyze the changes that occur over time to detect changes in assimilation patterns in the three time line classifications: the *probing* phase, the *informed* phase, and the *proficient* phase. The second analysis presents five distinct types of users that have been identified as part of the study based on the collected qualitative data.

Analyzing Competing Forces

Objectives: Utilitarian versus Hedonic

Users of mobile devices attempt to achieve certain objectives when choosing to adopt and assimilate a mobile device and it has been established that such objectives can be productivity-oriented; utilitarian, or pleasure-oriented; hedonic.

The analysis of the usage behavior of the fifteen mobile users shows that utilitarian objectives of the iPhone can be categorized in the following categories: standard functionality, communication, work, and other. *Standard functionality*, or applications, that are part of the iPhone and are used frequently by users. These are the call function, text message function, calendar, email, and browser. *Communication* covers functionality that enables communication for utilitarian purposes, e.g. Skype for conducting inexpensive calls and modem for accessing the Internet. *Work* refers to functions that improve work-related use of the iPhone, such as the remote desktop, which allows users to access their desktop computer at home, or work, from the iPhone, file sharing, using Microsoft Office readers, reading documents associated with work, and finally dictionaries or translators. *Other* covers functionality that can be used for other utilitarian purposes that do not fit into the above categories, such as maps, the alarm clock and a password saver.

Hedonic use of the iPhone is mainly related to the following five categories: music, entertainment, Web 2.0, camera, and other. *Music* includes listening to music on the integrated iPod, listening to information-related content, such as radio, podcasts and audio books. Other applications downloaded are applications that provide the possibility of controlling the stereo at home or applications that recognize music tunes intercepted at any location. *Entertainment* objectives cover to pure entertainment, such as watching YouTube clips or downloaded movies, as well as downloading TV guide applications, and games. *Web 2.0* technologies include Facebook as the most popular application, LinkedIn and Twitter. Also, Skype and Messenger is used to chat with friends, and information is accessed through Web 2.0 websites – including Wikipedia and del.icio.us. Furthermore, the *camera* function is widespread and several users downloaded a video camera application. The last category covers *other* applications, such as health related applications, e.g. a run-tracking application and food applications. Table 8 summarizes the mobile use objectives related to utilitarian and hedonic use of the iPhone.

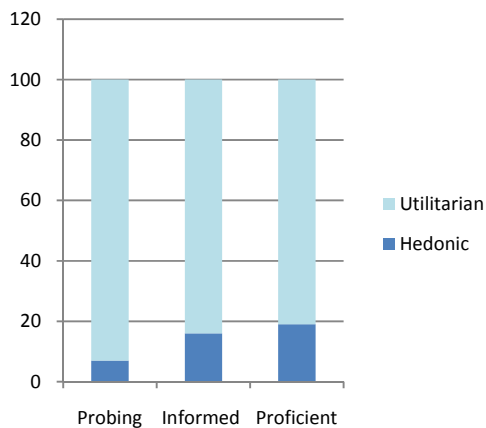
Table 8. Mobile Use Objectives			
Utilitarian Objectives		Hedonic Objectives	
Standard functionality	<ul style="list-style-type: none"> • Call • Short Message Service (SMS) • Calendar • Email • Browser 	Music	<ul style="list-style-type: none"> • iPod music playlists • Information: Radio, podcasts, audio books • Functionality: Stereo remote, music recognition
Communication	<ul style="list-style-type: none"> • Voice over Internet Protocol (VoIP) • Modem 	Entertainment	<ul style="list-style-type: none"> • TV: YouTube, movie download, TV guide • Games: Puzzles, adventure, sports • Reading (non-work)
Work	<ul style="list-style-type: none"> • Remote desktop client • File Sharing • Microsoft Office • Reading (work) • Dictionaries 	Web 2.0	<ul style="list-style-type: none"> • Social media: Facebook, LinkedIn, Twitter • Chat through Messenger, Skype • Information: Wikipedia, del.icio.us
Other	<ul style="list-style-type: none"> • Maps • Password Saver • Alarm • Subway map 	Camera	<ul style="list-style-type: none"> • Camera • Camera zoom • Video camera
		Other	<ul style="list-style-type: none"> • Sport • Food

The aggregated survey data show different interesting results related to utilitarian and hedonic usage objectives of the iPhones. The surveys show the perceived functional usage over time, and reveal that the study participants mainly use their mobile device for utilitarian purposes though they use it increasingly for hedonic purposes over time. However, when asked how much of their mobile device usage is for personal, or social, activities and how much is work- or school related activities they respond that their mobile usage is mainly for personal activities – see table 9. This result implies that even though the study participants use their mobile phone primarily for utilitarian purposes, the perception is that they only use it for work approximately twenty five percent over the seven-month period.

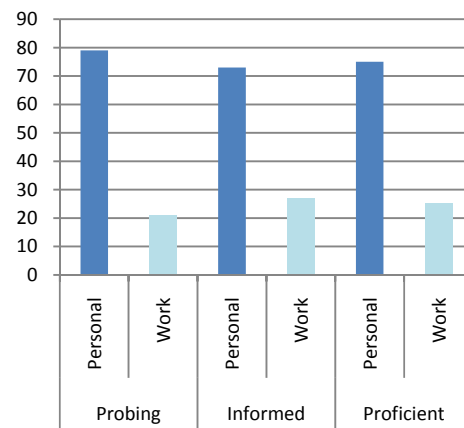
Table 9. Mobile Usage Over Time in Percent

<i>Utilitarian Usage</i>				<i>Hedonic Usage</i>			
Phase	<i>Probing</i>	<i>Informed</i>	<i>Proficient</i>	Phase	<i>Probing</i>	<i>Informed</i>	<i>Proficient</i>
Standard functions	85	67	67	Music	1	1	3
Communication	0	1	3	Entertainment	2	6	6
Work	1	5	2	Web 2.0	1	5	7
Other	7	11	9	Camera	3	4	3

Utilitarian and Hedonic Usage over Time



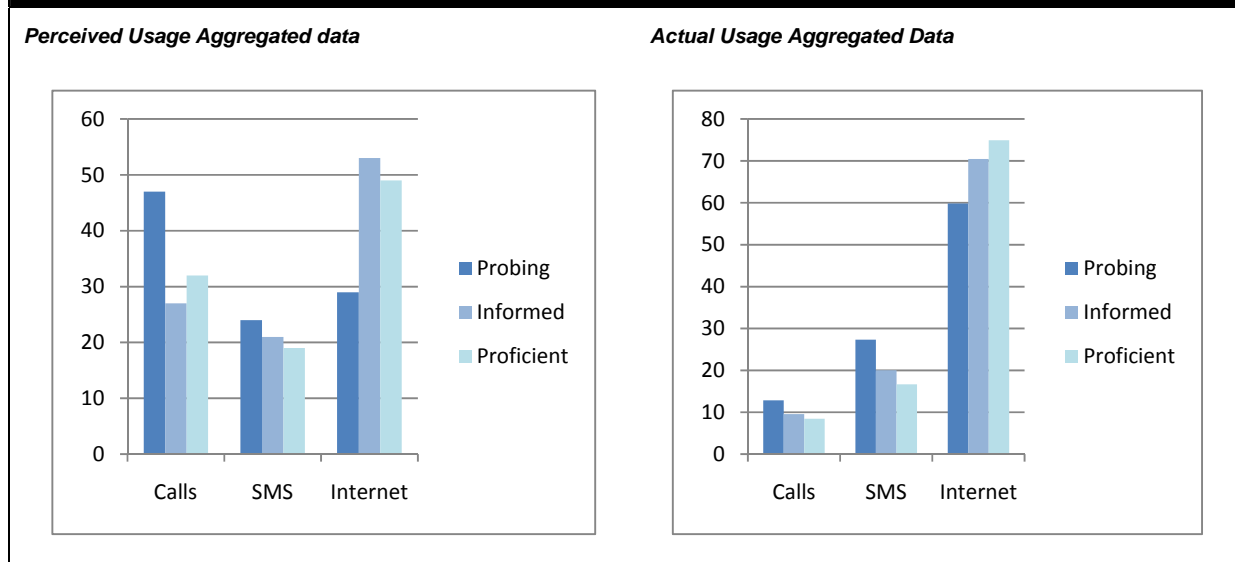
Personal and Work-related Usage over Time



The actual usage data from the network provider and the perceived usage data from the surveys allow for a comparison of the perceived versus actual usage related to phone calling, text messaging and Internet access. As the iPhone is a new type of mobile device that allows easy access to the Internet through the large touch screen as well as the App store, which contains several hundred thousand third party applications, it is of interest to observe whether Internet usage has changed over time and how this may have changed overall usage over time. Perceived usage over time has been studied through the surveys, where study participants stated how much of their time they spent on different functions on their mobile device. Actual usage data per person were aggregated and calculated into percent of overall usage per person and then aggregated again to find overall usage in percent. The results show that the mobile users perceive their mobile usage overall to be high in the probing phase, then it declines in the informed phase to increase again in the proficient phase. The actual usage pattern, however,

shows that over time both phone calls, text messages and Internet access increases. The mobile users have, hence, embraced the new utilities offered by the iPhone extensively.

Table 10. Mobile Usage Over Time



In the following the means, or the usage processes, are presented. Means are the forces through which the users sustain themselves and attain the utilitarian and hedonic outcomes, and the means are expressed through focus; i.e. individual and social orientation; and use; i.e. exploration and exploitation.

Focus: Individual Orientation versus Social Orientation

Prior research has demonstrated that individual psychological processes are subject to social influences, and that emphasis may shift from social influence when individual orientation is prevailing. On the other hand, social influence may prevail, and social influence can be informational, normative, based on competitive concerns, or based on social learning. Individual orientation seems to be prevalent; however, social forces also influence the usage behaviors of the fifteen study participants.

[Here we will describe the individual orientation results]

Social orientation is evident at different levels; the social group, the wider network, and web communities influence individual members. Furthermore, individual members of the social group experience that they seem to influence others – in the group and in the wider network.

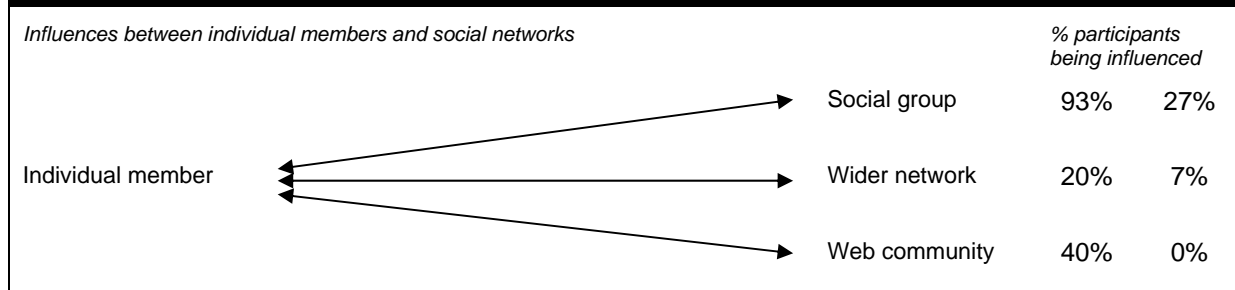
Figure 3. Individual and Social Influences

Figure 3 shows the possible individual and social influences observed by the study participants. Individual members can be influenced by the social group participating in the study, their wider network; i.e. their relationships outside the group; and through information from web communities. Similarly, the participants observed that they in some cases influenced the social group, their wider network, or a web community by posting reviews based on their iPhone usage. 93% of the study participants state that they have been influenced by the social group in their usage behaviors, and 27% claim to have influenced other members of the group as well. 20% of the users have been influenced by their wider network and 7% note that they have influenced their wider network as well. Finally, 40% of the users have been influenced by a web community in their assimilation behaviors, while none of the users believe they have influences a community.

Table 11. Mobile Usage Over Time

Social Influence				Group Behavior	
<i>Informational</i>	<i>Normative</i>	<i>Competitive</i>	<i>Learning</i>	<i>Fact finding</i>	<i>Entertainment</i>
93%	0%	53%	27%	27%	33%

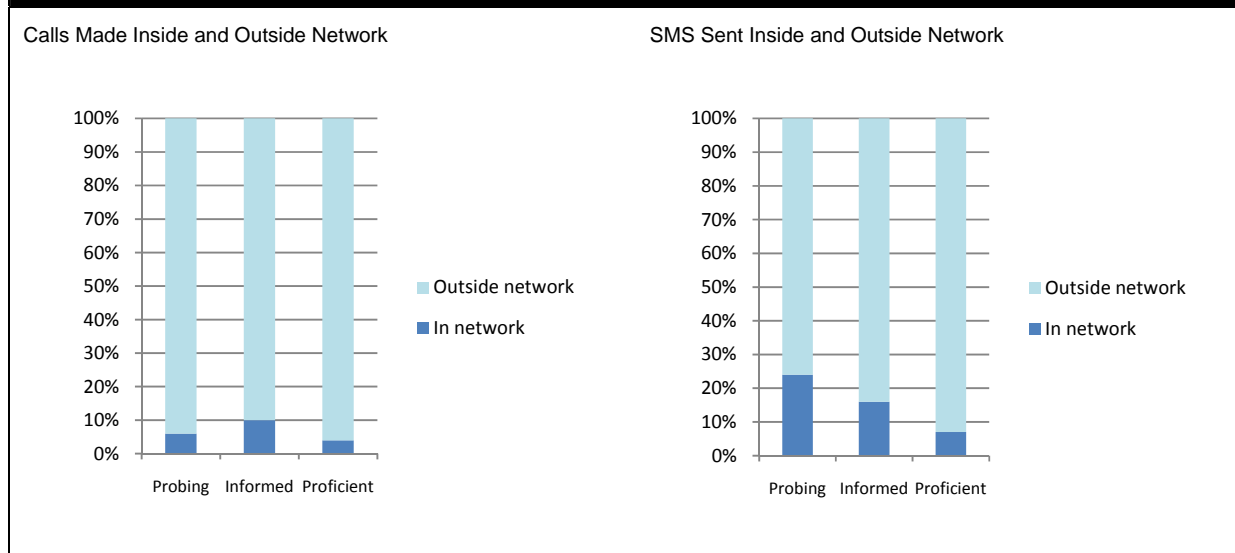
When looking closer at the types of social influence, experienced by the users', it is evident that almost all users – 93% - have experienced informational influence, 0% has experienced normative influence, 53% have competitive concerns, and 27% have experienced social learning. While social influences among members of the group are interesting observations, it is furthermore useful to consider group behavior, which covers iPhone usage behaviors with two or more users. We found evidence that such group behaviors exists, as 27% of the users explicitly state that they use the iPhone as a fact finding tool when discussing with friends. 33%

of the mobile users note that they listen to music, watch YouTube or TV, or play games with their friends.

Apart from the above results, the collected data also provide information about actual interaction with others in the group during the study period. The actual phone usage over time reveals how often the fifteen users are in contact with each other through phone calls and text messages, and how large a percentage of their calls and text messages are sent within the network. These numbers are interesting, as they tell us whether the strength of the ties in the network changes over time or whether changes in assimilation behavior can be attributed stronger relations with others in the network.

The actual network data reveal that a very small percentage of calls occur within the social network; the percentage of calls within the group of fifteen resembles a bell curve: in the probing phase, on average 6% of all calls were made within the network and 94% of all calls were made to people outside the network. In the informed and proficient phases, 10% and 4% of all calls were made within the network. A higher number of text messages were sent within the network, however, still a rather small percentage of all messages – and declining over time; in the probing phase, 24% of all sent text messages were sent inside the network, and in the informed and proficient phase, the numbers had declined to 16% and 7%.

Table 12. Call and SMS Inside and Outside Social Network Over Time



The call data, furthermore, show that 33% (five users) do not call anybody in the group at all during the study period. 33% call other subjects in the group 1% of the time during the period, and 33% call others in the group approximately 7-8% of the time.

For text messaging, the data show that 33% (five users) do not text any of the others in the group during the study period. Of the five people, four (27%) are the exact same persons, who do not call any of the others during the study period either. It can, hence, be assumed that these 4-5 people primarily interact with the rest of the social group for study purposes while on premises. The rest of the group seems to be communicating more with each other; 27% send on average 1% of their text messages, and 40% send on average 16% of their text messages, to others in the social network.

Focus: Exploration versus Exploitation

[This section will contain an analysis of the aggregated group data on the exploration versus the exploitation dimension. The section starts by summarizing what the core idea behind exploration and exploitation is, and continues with the analysis, and again, we try to look at changes occurring over time.]

Analyzing Types of Adopters

The fifteen adopters were prompted to adopt the iPhone in September 2008, and subsequently they assimilated the iPhone following different patterns of behavior. In the following, four different types of users encountered in the study, are presented based on primarily interviews, focus groups and media diaries. We have identified the following mobile user types: the skeptically interested, the openly attracted, the emotionally possessive, the casually playful, and the minimally engaging.

Table 12. Types of Adopters			
<i>The Openly Attracted Mobile User</i> <ul style="list-style-type: none"> • Curious • Open • Aesthetic • Positive 		<i>The Minimally Engaging Mobile User</i> <ul style="list-style-type: none"> • Anonymous • Majority • Disengaged • Provisional use of phone 	
<i>The Skeptically Interested Mobile User</i> <ul style="list-style-type: none"> • Technical • Conservative • Curious • Gadgets 		<i>The Emotionally Possessive Mobile User</i> <ul style="list-style-type: none"> • Annoying • Supercilious • Do not need it • “Stealing” • Open • Possessive • Emotional 	

[A description of the four types will follow in this section.]

Discussion

[In this section, we discuss the results and the analysis in relation to previous literature on identified forces.]

Conclusion

[In this section, we discuss the implications for academics as well as practitioners and conclude the paper.]

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