

The User Experience of Smart Phones: A Consumption Values Approach

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Abstract

The purpose of this paper is to complement previous research on the adoption and use of smart phones by introducing theories from consumer research. The focus is on both the intrinsic and extrinsic values that users experience when possessing, interacting, and using smart phones. We investigate smart phone usage in a six month field study with 16 participants. As such, it shows how the Theory of Consumption Values and its five value categories: functional, social, emotional, epistemic, and conditional are useful constructs to conceptualize and understand smart phone use experience. We show how smart phone use can be usefully articulated as in terms of consumption. This can be beneficial perspective 1) when designing smart phones and wireless devices in the future and 2) when describing and explaining the diffusion and adoption of smart phones and other technologies in general. The study also reveals that “use” as such is an end by itself and not only a mean to reach some other objectives, e.g. calling, texting or surfing. Furthermore, the study indicates that use as a construct (dependent variable) is too simplistic and needs further development and elaboration to include both the extent (e.g. what features of an artifacts is used) and nature (e.g. how well the artifact is used) of use.

Keywords: Smart phone, consumption values, technology adoption, wireless technology

1. Introduction

Traditional studies of information and communication technology (ICT) often use theories such as Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1985) and Technology Acceptance Model (Davis, 1989; Davis et al. 1989), which is the most widely used IS theory (Benbasat & Barki, 2007; Lee et al. 2003; McMaster & Wastell, 2005). While these theories have made significant contributions when studying individual technologies outside a market context, researching other theories can also enhance the understanding of new technology usage. This paper employs consumption values theories as an alternative perspective in describing and explaining technology usage.

This paper contributes to user behavior research in wireless services by elaborating on user experiences with new technologies. By viewing smart phone use as consumption based on consumer research and the Theory of Consumption Values (TCV), this paper offers an alternative to studying technology in an isolated environment. As such, it addresses the gap pointed out by McMaster and Wastell (2005) and Venkatesh et al. (2007) in their calls for alternative theoretical perspectives that expand the study of technology diffusion to include contingent models. At the same time, it answers Benbasat and Barki's (2007) call to consider as a necessary variable the IT artifact and its design.

This paper is structured as follows: the first section presents an overview of TCV. The next segment details the research methodology. The subsequent section presents the findings. After the findings is a discussion of the theoretical implications and the challenges to using TCV that were encountered during this study. In the final section, concluding remarks bring the paper to a close.

2. Theory of Consumption Values

Consumption values address explicit and implicit reasons and motives when people make decisions in consumer situations and help form the foundation of consumer research. After motivation research reached its height in the 1950s (Sheth et al. 1991a), it gave way to the more rigorous academic discipline of consumer research that emerged in the 1960s (Holbrook, 2006). A number of models, frameworks, and theories have emerged that explain and describe consumer choices, including TCV (Sheth et al. 1991a; Sheth et al. 1991b), experiential value (Mathwick et al. 2001), and Holbrook value typology (Holbrook, 2006). In the past, consumers were considered rational economic decision-makers who process information in order to maximize value (Sheth, 1979); and consumer value was primarily conceptualized as a tradeoff between price and quality (Holbrook, 2006). In the early 1980s, however, researchers began to question the assumption of the economic rational person and the belief that consumers evaluate purchase and usage decisions with a calculator-like approach (Holbrook, 2006). Holbrook and Hirschman (1982) proposed the experiential approach and introduced new concepts such as feelings, fantasies, and fun (Holbrook, 2006). Since its introduction, consumer research has evolved from simplistic assumptions about the consumer decision process to embrace more complex motivation that includes both intrinsic and extrinsic values (Holbrook, 2005; 2006).

Sheth et al. (1991a; 1991b) proposed TCV to integrate different consumption models and frameworks. TCV is based on the synthesis of a large literature review survey and includes five different types of values that underlie consumer choice, providing an encompassing understanding of the consumer experience. A particular choice may be determined by one value or influenced by several values. The five values are described below:

- Functional value follows economic utility theory and assumes economic rationalism. Consumer decisions to buy or use a product or service are based on the attributes of the consumable item and how well they fulfill the consumers' utilitarian needs.
- Social value involves highly visible products or services or objects to be shared with others (such as gifts). According to the theory, such an item may be chosen more for the perceived social image it conveys than for functional performance. Essentially, social value is derived from the symbolic importance of an artifact.

- Emotional value influences decisions because of a product’s potential to arouse emotions that are believed to accompany the use of a product. Aesthetics, such as beauty and artistry, can add emotional value to a product.
- Epistemic value applies when consuming or experiencing new products or services, such as buying a new computer or mobile phone. Epistemic value factors in decisions when a person is bored with a current product, curious about something different, or just wants to experiment with something new.
- Conditional value applies to products or services whose value is strongly tied to use in a specific context. A temporary functional or social value arises when the circumstances create a need. For example, a winter coat may have significant value during a winter snowstorm, but no value during a hot summer day.

The application of TCV has been demonstrated in technology decisions. An early technological application relevant to this study comes from Alpert (1994) who studied the decline in functional, epistemic, emotional, and social value of technology over time.

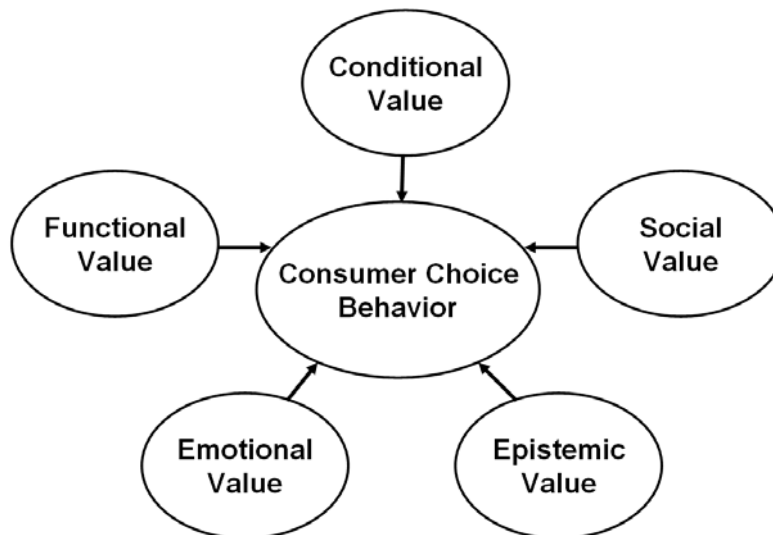


Figure 1. Five values that influence consumer choice
Based on Sheth et al., 1991a, 1991b

3. Methodology

This paper draws upon data from a six-month-long qualitative field study in which iPhones were given to 16 participants after Apple’s release of the 3G iPhone in Denmark. The participants are working full- or part-time and their age varies from 22 to 51. All were recruited from an e-business strategy course. In exchange for their participation, which included access to usage data from the operator and the commitment to fulfill data collection requirements, participants received use of an iPhone with a six-month service subscription that included data, voice, and SMS.

3.1 Research design

The research question loosely centered upon studying pre-adoption beliefs, initial use, and post-adoption attitudes of smart phones in relation to the five consumption values and how the user experience of the smart phone (and related values) evolves over time. Data was

collected through surveys, focus groups, and one-on-one interviews. The participants were divided into three focus groups to discuss the various consumption values that determined their interest in the device and its various uses. Responses from the focus groups and the commencement survey were used to customize questions for the subsequent open-ended interviews. One interview discussed the features most important to them when selecting a wireless device. Another interview conducted at the conclusion of the study discussed the change in behavior and attitudes over the duration of the study.

The focus groups and interviews were taped and field notes were taken continuously. After the focus groups and the interviews, interview protocols were written. Data analysis applied pattern-matching analysis method, whereby the empirical observations were 'matched' and compared with theoretical concepts. Being a field study aimed at generalizing towards theory (rather than population), empirical findings were used to 'challenge' existing theory and concepts related to consumption values. The structure of the presentation of the empirical findings below is based on the pre-existing theory.

4. Empirical Findings

This section presents the findings relating to each of the five consumption values. It reflects longitudinal data collected at different points, beginning shortly before the participants received their iPhones through the end of the study.

4.1 Functional value

A defining functional value of the smart phone offering is born from the integration of many utilitarian attributes into a single, mobile, always-available device. Constant access to the internet, search, and email; coupled with telephony and text messaging satisfy many modern ICT needs. The ability to navigate unfamiliar areas with GPS adds value. The MP3 player, games, and other entertainment features plus productivity tools like the calendar and address books, add additional functional value to the device. The ability to download additional games and productivity tools from a big software library further enhances the user experience.

Study data indicate that functional value changes over time, with significant change occurring from pre-adoption to the end of the study. The functional value increased for some participants, while it decreased for others. After experiencing the iPhone, participants gained a more accurate understanding of what the device could and could not do. As the study progressed, several participants discovered limitations that fell short of their expectations. These were differences based not just on the device, but on assorted reasons that involved the iPhone, the underlying technology (such as 3G's transmission speed), and the quality of service from the telecom provider. Participant #11 summed up the decline in value by explaining:

"It's only when you use it that you find out about the negative things. All you saw before was the Apple website and the commercials"

At the same time, others found that the functional value increased after adoption. Participant #1 indicated that while some things do not work as well as expected, others exceed expectations. Likewise, participant #7 said that when she first adopted it, she was unaware of what the iPhone could do or how easy it would be to use. Therefore, after using it, she sees considerable benefit to having certain features available on her mobile device. Participant #9

describes the growth in functional value over time. She experiences a progression from not using it to not wanting to be without it; and explains that certain uses have become habits, even addictions:

“My fingers automatically go to the email button and then the Facebook button. I know I’m doing it but it is an unconscious action.”

The participants suggest that functional value often does not stand independently. Many of the utilitarian attributes that resonate most strongly with users gain much of their value from the other consumption values: social, emotional, epistemic, and conditional.

4.2 Social value

Significant social value is embedded and conveyed through the iPhone itself. It can generate conversations as people ask questions and strike up conversations. It serves as an icebreaker for users to begin talking to other users, thereby facilitating social interaction and forming new relationships.

The iPhone provides social value by helping the owner convey an image to others in a way similar to many fashion items. Participant #10 explains how the iPhone reflects and projects his personality:

“It must be high tech, cutting edge and fashionably designed. This is important because it tells my surroundings about me, my interests, and my preferences.”

Participant #8 compares it to wardrobe choices because it is a type of personal branding that sends a message to affect friendships and relationships. Participant #11 describes the iPhone’s social value as being:

“like golden chains or expensive cars. It’s a fashion icon. Look I can afford this iPhone. I have money.”

The social value changes depending on settings and groups. For example, participant #16 juxtaposes neutral value in his work environment:

“all my colleagues have one, so it’s not interesting to them”

with the favorable reception at his home:

“I got 30 seconds of attention from the kids.”

While the iPhone may garner admiration for its owner, it can also be deemed unfashionable in certain settings. According to Participant #6:

“in some groups I like to flash it; in other groups I feel like a follower because my friends have it.”

Social value also changes over time, which can result from intrinsic reasons or from social responses. For example, the social value declined for Participant #10. His attitude changed as he realized social confirmation was not as important to him as he thought. He explains:

“Before I got the iPhone, I saw it as a social phenomenon. Over time, I realized that I didn’t get gratification socially by talking about the iPhone.”

Participant #12 experienced a paradoxical change over time. During the study she received much more positive attention because she owned an iPhone, which raised the social value. At the same time, she found much of the attention bothersome and annoying, which lowered the social value. Participant #7 continued to derive strong social value from her iPhone throughout the study; whereas Participant #9 offered a different opinion:

“When it came out it was cool. Now it is common.”

According to Participants #6, 8, and 13, the phone no longer offered the caché that it provided at the beginning. Similarly, at the start, Participants #15 and 16 envied people with iPhones and expected their social groups to share the opinion. However, once they received their phones, they learned that their peers were indifferent. Participants #1, 2, and 11 expressed a drop in social value over time that was causally linked to a decline in functional value. As people gained more familiarity with the iPhone, many began to notice functional shortcomings. Therefore, as the functional value of the phone declined, so did the social value. At the extreme, Participant #11 explained that social value dropped because adopters were viewed negatively – as unwise for spending a lot of money on a product with limited functional value. He found himself defending his iPhone use to the members of his social group.

4.3 Emotional value

Several participants express an emotional need to be connected to others, similar to Maslow’s (Maslow, 1946) need of belonging. Participant #13 explains:

“Connections to other people. It is obvious that whenever we switch off our phones we are not important anymore.”

Constant connectivity helps fulfill this emotional need. For example, access to social networks and Twitter enables people to maintain their social relationships in different ways than other types of communication. Participant #9 uses such sites to see what friends are doing. Participant #2 describes the facilitation of maintaining relationships:

“It’s easy to stay updated on what’s going on in my friends’ lives without really committing to a dialogue.”

Communication features such as telephone and SMS provide a connection to family and friends. Participant #4 indicates that having multiple, different communication media make it easy to maintain relationships with people with whom he might otherwise lose contact.

Aside from facilitating a sense of belonging, a smart phone’s integrated technologies provide tools for altering one’s emotional state. Many participants use the music player because music can change their mood. Others use specific add-on applications. Participant #8 uses a program named ‘Tranquility’ that plays relaxing sounds. In addition to the emotion-enabling features, the device itself can trigger emotions, as described by Participant #15:

“it’s also beautiful [and] the aesthetic feeling.”

According to Participant #7,

“I like to always have my pictures with me -- reminds me that a situation was fun, and I get in a better mood.”

Participant #8, who stores her photo albums on her phone, describes the familiar feeling enabled by her iPhone:

“You can take a little bit of home with you. It makes you feel secure.”

Emotional value changes over time. Some people, such as participant #7, remain excited about having their phones. Others compare their emotional relationship with the iPhone to a love affair – it ignites intense positive emotions at the beginning but flames out quickly.

4.4 Epistemic Value

The iPhone satisfied epistemic value in multiple ways. First, the artifact itself inspires curiosity. People like exploring new technology, learning how to use a new device, and experiencing a GUI. As such, the device itself provides novelty value (“cool factor”) and appeals to those seeking to satisfy their curiosity.

Another way the iPhone derives epistemic value is through the availability of downloadable applications and various media. Thousands of programs are available for download, many of which are free. Access to websites like YouTube also provide a constant stream of novelty. Participant #12 explains:

“The iPhone is a new product. It’s interesting to see what people make. What applications are there? You really have everything in the apps.”

Participant #6 indulges his intellectual curiosity by finding out about the latest programs:

“I read a lot on the web, new ways to use it [the iPhone]. How to make your everyday easier with new applications...”

Participant #11 adds a creative component:

“I’ve been looking at the development tools – how to make things for the iPhone.”

Participant #10 elaborates:

“It can awaken creativity. I’m a musician as well. I can come up with new ideas. Music puts me in different mindset– thinking in a different way when you work.”

Finally, the integration of a standard web browser enables users to find whatever information they seek. This helps satisfy curiosity and cure confusion. Participants #2, #4 and #13 visit Wikipedia to settle informational disagreements.

Of the five consumption values in this study, epistemic value experiences the greatest decline over time. As indicated by the literature, curiosity and novelty are key drivers of epistemic value. Consequently, as familiarity with a device grows the epistemic value declines. In the beginning, participants explored the iPhone features and downloaded applications simply to

experiment with something new. Tinkering declined as the study progressed. Participant #11 sums up this phenomenon by explaining that at the beginning of the study, the iPhone was a toy. It increased his technical knowledge, but by the end of the study a future increase in technology knowledge was unlikely. Epistemic value declines rapidly. He explains:

“If I went out and bought a new iPhone, I wouldn’t be excited. I would just open it up and use it like I have the past few months.”

4.5 Conditional value

The participants almost always have their iPhone with them and are always connected to the internet through the 3G and EDGE. The integrated tools, such as camera, MP3 player, and other applications add value to the iPhone. However, participants view many features as inferior substitutes to single-purpose devices. All believe the iPhone to be a satisfactory, not optimal, device for many of its uses. Participant #10 articulated that smart phones do many things, but they do not do any of them well.

In general, the conditional preference for the iPhone was based on convenience-related measures. Much of the iPhone’s value was conditional depending upon the availability of a laptop computer with an internet connection. Generally, when a computer was close and connected to the internet, the computer was the preferred device. When time was limited, a computer’s long boot up time added conditional value to the iPhone, which was ready for use. When a Wi-Fi or landline internet connection was unavailable, the conditional value of the smart phone rose dramatically because it was the only alternative. While some preferred reading email on their iPhone, even when the computer was ready-at-hand, none saw much value in typing email on the iPhone unless a computer was unavailable, the message could be conveyed in a few words, and it must be sent immediately.

5. Discussion

The empirical data from this study supports the argument that consumption values can make a significant contribution toward understanding the use of ICT by end users. All five values provide insights into the user experience. Participant data indicate an interrelation between different values such that a change in one value may cause a change in others.

Looking at the individual consumption values, a number of observations need to be considered. All values varied over time (decrease or increase) shaping and thereby reflecting the user experience. Why the change? One explanation is time. As an artifact diffuses over time, some intrinsic value decreases, e.g. the “coolness” factor (social and emotional values) and epistemic value. But for many, as time went by the functional value became a more important driver of usage relative to other values. On the other hand, some participants found the functional value to decrease. Before trying a technology, users may have certain assumptions and fantasies about the user experience. People’s assumptions might not be entirely realistic, so value can decrease or increase after experiencing the technology. There is also evidence for a dynamic evolving theory, where we can find initial excitement followed by a decrease and then at the end a new interest, similar to O’Leary’s (2008) hype cycle.

In cases such as this one in which social, emotional and epistemic values decline, the functional and/or conditional value must rise or usage will drop. The path of functional and conditional value varies depending upon on users’ personal preferences. It may drop for some, whereas other users may attach an increased functional value over time with expanded

use of the device. The conditional value may also compensate for a decrease in other values. Debating Trivial Pursuit questions late at night exemplifies conditional value that encourages continued use. The story told emphasizes the ongoing emotional and value-based commitment (or lack of commitment) that makes a multifunctional technology such as the iPhone work. It also demonstrates how functional and conditional value may compensate for decline in the other three values. It is too early to make final claims regarding the relationship between different values, but the study indicates that decrease in some values might be compensated by increases in other values.

Through this longitudinal study we have seen how the iPhone user experience changed (for most participants) from being an object for “conspicuous consumption” (Veblen, 1912; Veblen & Howells, 1965) and intense epistemic curiosity to become a mundane, ordinary artifact. This evolving nature in perceived values could be explained by an initial exploration phase where the participants tried the smart phone’s different features. After the exploration phase (three month) a new phase of exploration took place, where the participants -- through interaction and dialogue -- discovered new features and applications. Not all participants went to this exploitation phase; thus, it is necessary to consider the possibility that this pattern might be explained as much by personal characteristics as by technology.

While the Theory of Consumption Values provides a strong framework to build understanding, during the extensive data collection, it became clear that smart phone use -- in this specific case iPhone use -- is not just a study in technology, but the study of an experiential good. According to participants, smart phones are integrated, convergent devices bringing together many technologies and services that were previously experienced separately. As such, participants had difficulty decoupling different aspects of the smart phone when discussing their values. The fact that the participants approached the iPhone as a whole and did not view the handset, software, cellular technology, and provider separately challenges the predominant view of use in information systems research. “Use” is traditionally portrayed in different forms, such as use (objective or subjective), intention of use, or user satisfaction (Burton-Jones & Gallivan, 2007; DeLone & McLean, 1992, 2003). DeLone and McLean (2003) conclude that there are deficiencies related to the “use” construct and they emphasize that use as a construct is too simplistic and needs to be further developed to include both 1) the extent, i.e. what features that are used, and 2) nature, i.e. how those features are used. What this study revealed is that “use” of smart phones is a complicated phenomenon in which it is difficult to separate the handset, its different technical features, and/or the embedded services. This bolsters the argument that ICT adoption research must consider the context and the different combination of choices available to the user. It also bolsters the arguments to expand beyond TAM and traditional IS constructs as argued by McMaster and Wastell (2005) and Venkatesh et al. (2007). At the same time, it demonstrates the need to heed Benbasat and Barki’s (2007) call to consider as a necessary variable the IT artifact and its design, because while this study seeks to generalize its finding to the smart phone product category, much of the consumption value data was based specifically on the Apple iPhone.

6. Conclusion

This paper uses TCV to understand the user experience of smart phones over time as perceived by its users. TCV provides a rich framework for researchers, marketers, and product developers alike.

According to the data, the way the artifact satisfied consumption values changes over time. Functional value increases for some participants and declines for others. The direction and magnitude of change is affected by pre-adoption expectations. Social value declines over time due to many factors, including the rapidly changing nature of technology, in which the “coolness” factor rapidly wears off as other products mimic an innovative artifact. Emotional value is derived both from the iPhone itself (the aesthetic appearance and way it feels to the touch) as well as by software and associated services. The artifact itself satisfies epistemic value, as do the third-party applications, websites, etc. The epistemic value inherent with the iPhone drops rapidly. And much of the contextual value strongly depends upon whether an internet-connected personal computer is available. For the most part, participants in this study did not differentiate between the artifact, outside software, delivery technology, and service provider. The entire package is considered together, which calls for an integrated approach to researching and understanding “use.”

Using qualitative data for theoretical generalization, this paper makes two significant contributions. First, it complements technology adoption research by demonstrating how consumer research, specifically the TCVs, can be used to explain and understand the adoption of new technology artifacts. Second, it raises the issue of examining “use” when researching a technology offering that involves multiple providers to function.

The study faces a limitation in generalizing toward an entire category of technology (e.g. smart phones) because many of the participants’ comments centered around their experience with the particular model and brand. One way to overcome the iPhone-specific limitations is to convert into a survey instrument the findings of this field study. The instrument can then collect data from a large sample to test collect data on the generic category of “smart phones” and be analyzed according to the statistical methodology detailed by Sheth et al. (1991a).

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