Research Article

The Role of Signaling Identity in the Adoption of Personal Technologies

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Abstract

We explore symbolic determinants of technology acceptance to complement more functional frameworks and better predict decisions to adopt information appliances. Previous research has investigated such variables as "need for uniqueness" and "status gains" to capture relevant aspects of technology acceptance. However, the more we move toward personal and ubiquitous technologies, the more we need to broaden and deepen our understanding of the symbolic aspects of adoption. This study reinterprets the symbolic dimension of adoption by broadening its scope to include the self-concept. Results support a prominent role for self-identity in predicting intentions to adopt mobile TVs. Self-identity is shown to complement the effects of "need for uniqueness" and "status gains" in this regard.

Keywords: *IT Adoption, Personal Technologies, Self- Identity, Extended Selves, Status, Need for Uniqueness.*

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1. Introduction

Only one year ago, Judge Colin Birss declared that Galaxi Tab was not "cool enough" to be confused with the iPad (Arthur, 2012). These words undergird a legal decision concerning the patent and intellectual property dispute between Apple and Samsung in which Samsung was decreed the legal victor. The Washington Post now declares a market victory for Samsung; both Apple and Samsung are competing to be the "coolest". It seems that "being cool" is a yearned for core characteristic of Apple and Samsung smart phones, and consumers adopt their products because of their desire to be "cool" themselves, building and enhancing their self-image in the eyes of others.

Tornatzky and Klein (1982) identified "self" and "image" as neglected variables for study in decision making processes to adopt innovations. Their proposal addressed a long-standing research question in information systems (IS): how can we accurately explain users' acceptance of information technology (IT) innovations (DeLone & McLean, 1992; van der Heijden, 2004)? We propose that a need exists to redefine the concept of "image" by specifying symbolic aspects of adoption and their relationship to decisions to adopt information appliances.

Recent work by Hong and Tam (2006) highlights "[t]he ubiquitous nature of these services and their impact on a person's lifestyle [which calls] into question the appropriateness of applying traditional organization-centric IT adoption models" (p. 162). Understandably, traditional models have focused on "usefulness", which is a functional criterion linked to such goals as productivity, effectiveness, and efficiency. However, as IT innovations come more and more to define our private and social lives, there is a need to also consider the symbolic value of adopting new technologies (e.g., Brown & Venkatesh, 2005). This study conceptualizes the symbolic value of adopting personal technologies, incorporates it into IT adoption models, and empirically tests it.

In previous studies, variables such as "image" and "status gains" have proven effective in capturing important facets of symbolic drivers. Nevertheless, the more we move toward personal and ubiquitous technologies (as has been the case in recent years), the more we need to refine theoretical frameworks to deepen and generalize symbolic roots of decision-making and their implications for adopting personal technologies.

Drawing on theoretical contributions from contiguous disciplines, we argue that the adoption of personal technologies in public settings both promotes and impairs the expression of certain meanings. This capacity (incapacity) represents the actual symbolic value (disvalue) ascribed to innovations by potential adopters.

Interestingly, a symbolic value might become negative, turning from a facilitator of adoption into an impediment. For example, individuals might decide not to adopt mobile TVs merely to avoid being seen as "geeks" or television-addicted "couch potatoes". First, such reactions are distinct from evaluations of usefulness or enjoyability. Secondly, and more important here, such reactions are clearly symbolic issues and not simply matters of "need for uniqueness" or "status gains". Rather, such symbolic aspects of adoption decisions as "being cool" are currently unexplored in the adoption literature. Practitioners risk underestimating or even missing important antecedents of decision-making and thereby risk failing to stimulate demand or respond to real consumer needs. Such needs for symbolic value require new marketing and communication vehicles and communication tactics, but informed by sound theory and its empirical testing.

Thus, we argue that symbolic outcomes of adoption can be reinterpreted in a broader sense than previous treatments, which were performed primarily in organizational adoption contexts and largely focused on prestige and status gains in the social or professional hierarchy. As technologies come to reflect personal and social meanings outside of organizations, however, a theoretical perspective is needed that better takes into account symbolic aspects of adoption.

2. Background

2.1. Symbolic Value and Self-Identity

To address limitations in IT adoption studies and propose a new conceptualization of symbolic value for personal and ubiquitous technologies coming to market, we need first to clarify the meaning of symbolic value and its relationship with self-identity. We draw on ideas and research from consumer behavior, psychology, and various social science and applied disciplines to provide a precise description of what these concepts are about, clarify the links between them, and supply grounding for our measures.

The definition of symbolic value in consumption behavior should not neglect the notion of consumer needs (Smith & Colgate, 2007). Park, Jaworski, and MacInnis (1986) identify three basic consumer needs: functional needs (i.e., those that satisfy consumption-related problems; e.g., a GPS meets a functional need when it provides localization); experiential needs (i.e., those that express a desire for products that provides sensory pleasure and cognitive stimulation; e.g., kinesthetic enjoyment provided by home video game consoles); and symbolic needs (i.e., those that empower self-enhancement, role position, group membership, or ego-identification; e.g., acquiring and expressing "coolness" by using an iPad). These consumer needs underlie value perceptions (Smith & Colgate, 2007).

Symbolic value is concerned with the extent to which consumers attach personal meaning to a product (Smith & Colgate, 2007). From this perspective, products serve symbolic means of communication between individuals and their significant referents (Grubb & Grathwohl, 1967). The symbolic value of a product is the possession's value that derives from its meaning (Richins, 1994) and includes social and personal significance.

This conceptualization of symbolic value relates too to the concept of self: the basis for relating meaning to value is the important role that possessions play in expressing the self (Richins, 1994). As a consequence, individuals may desire to enhance their self concepts through consumption of goods as symbols (Sirgy, 1982). A key point of view here is the concept of the extended self which refers to the "definition of self created by *external objects* with which one surrounds oneself" (emphasis added) (Solomon, 1994, p. 620). In consumer behavior, a growing number of studies have focused on the way people use consumption to maintain and promote their sense of identity through extended selves (e.g., Belk, 1988; Berger & Heath, 2007; Kleine, Kleine, & Kernan, 1993).

Researchers in this tradition use the terms "self" and "identity" as synonyms for how people subjectively perceives who they are. While the origin of self as a psychological dimension is attributed to James (1890), who established the importance of the distinction between the knower (self as I) and the known (self as Me), modern scholars now define self identities using multifaced labels such that one's Me is recognized by oneself and multiple members of society (Kleine, et al., 1993; Stryker, 1980). Given this distinction between self and identity, self-identity is here conceptualized as comprising multiple aspects of a person, including the central values, personality traits, commitments, and goals one has, that are reflected in one's beliefs, dispositions, emotions, and personal and group relationships with others (Bagozzi, 2012). Thus, self-identity is defined as any category label to which a person self-associates or disassociates by choice or endowment (Reed, Forehand, Puntoni, & Warlop, 2012). These category labels (e.g., being "cool") "invokes a mental representation (i.e., clear picture) of what that kind of person looks like, thinks, feels, does" (Reed et al., 2012, p. 312).

These category labels may shape one or both of the two components of self-identity: personal identity and social identity. Social identity theorists (e.g., Tajfel, 1978) maintain that self-identity is made up of personal and social reactions, and our definition of self-identity is flexible enough to apply across these different aspects of self-identity. More specifically, personal identity refers to how people see themselves as individuals and focuses on personal characteristics and goals that are not based on membership but rather on unique attributes, while social identity deals with how people define themselves in relationship to a group and/or members in the group (Oyserman, 2009). Personal identity is the self that exhibits the highest degree of distinctiveness of the multiple identities one

might have, while social identities are categorizations of the self into more inclusive social dimensions (Brewer, 1991). Brewer (1991, p. 476) exposes a similar perspective: "Personal identity is the individuated self—those characteristics that differentiate one individual from others within a given social context. Social identities are categorizations of the self into more inclusive social units that depersonalize the self-concept, where I becomes We".

Given the distinction between personal and social identity, we maintain that possessions are used by consumers to define themselves as either separate from others, empowering their personal self-identity, or connected with others, fostering their social self-identity (Belk, 1988; Berger & Heath, 2007; Kleine et, al., 1993). According to identity-based motivation theory, consumers engage in identity-congruent activities and judge products more favorably when the product is connected closely with an aspect of personal or social identity that is viewed as important for the consumer (Kleine, et al., 1993; Oyserman, 2009). Possessions may signal that people seek autonomy when they reveal individual accomplishments, distinctiveness, uniqueness, or other aspects of individual integrity, whereas possessions reflect that people seek affiliation when they strive to reduce power or status disparities and preserve group harmony (Bagozzi, 2012; Kleine, Kleine, & Allen, 1995). In other words, self-identifying possessions reflect both who I am as a unique individual and who I am as a group member (Escalas, 2004) or in a social role (Stryker, 1980).

As Section 2.3 explores, innovations occupy a special place among these "external objects" functioning to express self-identities (Ma & Agarwal, 2007). Nevertheless, we first show in Section 2.2 that the aspect of the self considered in the IT literature only partially captures essential symbolic values associated with the adoption of new technologies.

2.2. Symbolic Values in IT studies

The IS field contains several models explaining the individual adoption of IT innovations. Although these models are rooted in general frameworks of human behavior—for example, the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), the theory of planned behavior (TPB) (Ajzen, 1985, 1989), and the social cognitive theory (SCT) (Bandura, 1977, 1986, 1989)—the way that they have often been used is to view decision makers as members of firms or institutions where organizational requisites, particularly utilitarian ones, take center stage.

Given the widening scope of IT usage (e.g., DeMaria, 2002), traditional models tend to overemphasize functional values of technology acceptance (e.g., "performance expectations", Compeau, Higgins, & Huff, 1999; "perceived usefulness", Davis, 1989; "task-technology fit", Goodhue, 1995), while understudying experiential and symbolic values (e.g., Bagozzi, 2007; Bunker, Kautz, & Nguyen, 2007; Howcroft, Mitev, & Wilson, 2004). With regard to hedonic values (Rokeach, 1973), Davis, Bagozzi, and Warshaw (1992) introduced the construct "enjoyment" (sometimes called "enjoyability" or "fun" in later hybrid models; see Dabholkar, 1996; Dabholkar & Bagozzi, 2002; Gilbert, Balestrini, & Littleboy, 2004; Liao & Cheung, 2001), which is defined as the pleasurable experience associated with intrinsic motivation to use a technology (see also Venkatesh, 2000, and van der Heijden, 2004).

Although hedonic needs are certainly essential concerns in many decision processes, a related, but neglected, issue concerns more broadly the symbolic antecedents in adoption decisions. Existing conceptualizations of symbolic value focus on limited aspects of information appliances and are less applicable to multipurpose innovations adopted in everyday consumer contexts.

The IS literature has used different labels to express the symbolic value of adoption, including "personal outcomes" in the work setting (e.g., Compeau et al., 1999) and *"social outcomes"* or "status gains" in non-work settings (e.g., Brown & Venkatesh, 2005). Indeed, one of the first contributions to recognize the relevance of symbolic drivers was by Moore and Benbasat (1991). Drawing on ideas by Tornatzky and Klein (1982), Moore and Benbasat (1991) and Karahanna, Straub, and Chervany (1999) introduced the decision variable "image". Image is defined as the degree to which the use of an innovation is perceived to enhance one's reputation or status in their social system. They operationalized image with "status", "status symbol", and prestige. Similarly, the definition of image

proposed by Venkatesh and Davis (2000) in their study of technology acceptance refers to concepts of prestige and status. As Rogers (1983) notes, "undoubtedly one of the most important motivations for almost any individual to adopt an innovation is the desire to gain social status" (p. 215).

We argue that limiting the definition of "symbolic value", as expressed through the possession of an innovation, to status or prestige captures only one, albeit important, aspect of the self. Hybrid cars, for example, are valuable products to the extent that they convey the message that owners care about the environment. On the other hand, the symbolic value of the product is at risk if hybrid cars generate "smug" consumers, which characters in, for example, the popular cartoon show South Park frequently insinuate. Being "smug" is not a useful attribute to convey status or prestige because it communicates arrogance or hubris and can lead to disparagement and ridicule.

The fact that status expresses only one aspect of the self is especially true in the case of personal technologies (i.e., technologies exhibiting a kind of one-to-one binding with the user) and ubiquitous technologies (technologies which also involve public usage). Previous research has focused primarily on prestige and status gains in one's social or professional hierarchy. In doing so, much research takes into consideration a particular aspect of the personal self (i.e., expressing an image of superiority), but neglects: (1) other possible aspects or drivers of the personal self and (2) the global social self, which includes group norms, role relationships, and other aspects of collective behavior. The latter facets of the social self are at different levels of discourse than interpersonal behavior (Bagozzi & Lee, 2002; Tsai & Bagozzi, 2013). Important aspects of the personal self that have been neglected in the IT literature include different functions and needs that the same technology may serve for different adopters. One person may feel that an iPhone 5S, for example, helps express an image of high status or even superiority vis-à-vis others, whereas someone else might feel it communicates that one is simply open to new ideas. By contrast, someone else may decide not to adopt this innovation to avoid being perceived as a conformist or "fashion victim". For example, consider Google Glass, the head-mounted display that shows information in a smartphone-like format hands-free, and can interact with the Internet via natural language voice commands. Google Glass may present the owner as "tech-savvy" and/or a "geek". Clearly, being a "fashion victim", "tech-savvy", or "geek" are characterizations that go beyond "status gains".

Another approach to modeling the role that symbolic value plays in the adoption of personal technologies has been recently proposed for mobile data services (Hong & Tam, 2006). Here a personality trait known as the "need for uniqueness" is singled-out for consideration (e.g., Fromkin, 1970; Snyder & Fromkin, 1980; Tepper, Bearden, & Hunter, 2001). Need for uniqueness is the individual's tendency to seek individuality through the adoption and use of symbolic products or innovations, which represents a kind of counter-conformism. Also in this case, we maintain that "uniqueness" is not necessarily—or at least not solely—what people wish to convey through new adoptions. Again, as in the case of "status", uniqueness might capture only part of the personal self-identity that technology adoption may express: it conveys a specific aspect of the personal self, and not even the whole personal self, and it fails to consider the social self.

For example, whereas some individuals might decide to adopt a mobile TV in public to express "uniqueness", others may avoid adopting it so as not to be seen trying to stand-out from others or offend friends or fellow group members. Counter-conformity, being perceived as a "geek", "couch potato", or antisocial, are all possible personal selves some persons desire or want to avoid. Such self-conceptions can affect the adoption of technologies, depending on how the potential adopter construes the innovation as corresponding to their self-identity and one's desired relations with others.

Hence, through engaging in certain visible social behaviors, such as the adoption and use of personal technologies, individuals may not necessarily want to convey prestige or uniqueness per se; instead, their focus may be on other possible unique aspects of their whole self-. Of course, it is feasible that some individuals may wish to express both social and personal selves through adoption and use of the same technology. Accordingly, a broader conceptualization of self-identity, such as mentioned above, is needed. In fact, from this perspective, "status" and "uniqueness" turn out to be merely particular antecedents of particular identity-signaling goals related to personal self-identity (i.e., the

goals of affirming and expressing a prestigious or nonconformist identity, respectively). In Section 2.3, we consider other identity-signaling goals that our broader conceptualization of self-identity encompasses.

2.3. Symbolic Values of IT Beyond "Status" and "Uniqueness"

To paraphrase Levy (1959), people adopt new personal technologies not only for what they do (i.e., their functional value), but also because of what they mean (i.e., their symbolic value), and, as maintained above, innovations occupy a special place among products able to express self-identity. Innovations may convey: (1) personal selves beyond status and uniqueness and (2) social selves. We have already considered both the personal self and social self as components of one's self-identity in Section 2.1.

The personal self may be empowered by new technologies. Berger and Heath (2007) note that possessions owned by a majority of people do not necessarily provide clear signals of any one particular identity. By definition, innovations are owned by a minority of persons, at least in the early stages of a product's life-cycle. As a consequence, innovations and new technologies hold great identity-signaling potential also because they allow the user to express their personal self in relation to other adopters and non-adopters, signaling, for example, their status or their need for uniqueness. This might also signal or reflect "being cool" (as Mac owners often declare) or "not being a fashion victim" (as PC owners sometimes assert). Status, need for uniqueness, and "coolness" are some of the possible personal selves that a new technology may express: they are subsets of possible symbolic drivers of the personal self but do not express the social self in terms mutuality, harmony, or jointness with a group entity.

Still other drivers of self-identity, going beyond status and uniqueness that nevertheless are felt and expressed personally, are envy, pride, shame, guilt, embarrassment, and regret. When one envies the owner of a new technology, this can be a positive defining quality of one's personal identity in the sense of spurring one on to acquire the innovation so as to confirm or strengthen one's identity, or it can be a negative defining quality if it induces bitter feelings of personal deficits and leads to malicious disparagement of other people or even the firm selling the innovation. Being the target of envy can also be an ambivalent experience, leading to feelings of pleasure and concern at the same time (Romani, Grappi, & Bagozzi, 2013).

Anticipated pride in future ownership of a new technology can likewise constitute a double-edge sword so to speak. If one attributes acquisition and ownership to efforts put forth ("getting this innovation was due to my hard work"), then pride may be an attribute others see as a positive defining quality in the person, but, if a person brags or exudes arrogance in acquisition or ownership, then others may see this as excessive pride or hubris ("getting this innovation proves I am the best or better than others") and communicate negative reactions to the innovator's self-identity. Shame occurs when the core self is threatened, such as might occur in anticipation, or after purchase, of a new technology, where people might be expected to judge one as frivolous, materialistic, a showoff, and so on. Embarrassment, by contrast, happens when the presented self is threatened. It is less intense than shame but has a different meaning and consequences. Observers of embarrassment in the purchaser of a new technology might regard this as an expression of self-regard towards the observer in the sense that the embarrassed person is judged to respect the observer. Anticipated guilt on the other hand could prevent one from adopting an innovation, or guilt after purchase might lead one to return a purchase in order to repair the relationship with the person towards whom one feels guilty. Finally, anticipated regret might contribute to one's personal identity and prevent one from considering adopting an innovation because purchase would be seen as casting self-blame or negative self-esteem on one's self-image. In sum, various self-conscious emotions can reflect or shape one's personal self-identity, and, in turn, have consequences for purchase or ownership of new technologies.

According to Bagozzi and Lee (2002), the adoption of innovations in relation to the personal self attempts to convey one's individuality, to find or express "oneself", or to stand out from others.

Symbolic drivers such as need for uniqueness and status largely convey a "Western" view of social relationships where a person tries to be different from others and to achieve more, or do better, than others. The personal self thus reflects such attributes as status seeking, need for uniqueness, or coolness as expressions of a self that contrasts one with "other people" (Bagozzi & Lee, 2002). To the extent that the social self entails a "shift towards the perception of self as an interchangeable exemplar of some social category and away from the perception of self as a unique person" (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987, p. 50), status and need for uniqueness are not parts of one's social identity but rather reflect one's personal identity.

Nevertheless, the adoption of new technologies may also be determined by the need for identification (Kelman, 1958, 1974). Identification influences the adoption of IT products when it is useful to maintain a positive self-defining relationship with another person (Kelman, 1958, 1974). Kelman (1958, 1974) states that this kind of influence is characteristic of interpersonal relationships. Bagozzi and Lee (2002) argue that identification may be also applied to group behavior, such as a person's relationship to communities, organizations, one's family or ethnicity, gender, and specific cultural heritage. The fulfillment of a need for identification enhances one's social self-identity, which reinforces and solidies one's group membership.

To exemplify one role played by new technologies in enhancing social self-identity, we note that brand and product communities often emerge around IT products. Belonging to such a community, defined as a group of members with communalities of purpose and identities (Muniz & O'Guin, 2001), may represent a response to the needs of identification and thus constitute an expression of the social self (Tsai & Bagozzi, 2013). Participation in a community such as the Apple Newton, for instance, a product no longer marketed, but for which aficionados desperately try to maintain in existence (Schau, Muniz, & Arnould, 2009), conveys an expression of a social self that goes beyond need for uniqueness and status. Indeed, members of brand communities share a "we-ness" and differentiation from non-members that creates a mutual identity (Bagozzi, Bergami, Marzocchi, & Morandin, 2012; Muniz & O'Guin, 2001). Moreover, such communities also form and express themselves in virtual communities through such online venues as e-mail lists, bulletin boards, usenet newsgroup, online chat forums, and web-based chat rooms (Bagozzi, 2012; Muniz & O'Guin, 2001; Bagozzi & Dholakia, 2002). All this implies that IT products may play a double role in conveying a social self-identity: as a fulcrum of the shared identity or as an essential communication tool to build it.

In sum, we argue that it is fruitful to introduce and model the construct of self-identity so as to be able to capture a broader view of symbolic value and its relationship to the adoption of IT products not currently incorporated in extant models. The goal of our study is to reinterpret the symbolic outcomes of adoption by extending its scope to a broader notion than in the Hong and Tam (2006) model to include self-identity and by deepening the precision of measurement of self-identity. We also show how self-identity functions in adoption decision-making processes. We propose that the "self-identity" construct, developed in Sections 3, captures different expected symbolic values associated with the adoption of a new technology beyond need for uniqueness.

3. Hypothesis

The transition of more and more technologies from the workplace to non-work settings (Brown & Venkatesh, 2005; DeMaria, 2002; Venkatesh, 1996) and the development of multipurpose information appliances (Hong & Tam, 2006) have brought forth a plethora of adoption possibilities. Our starting point for the innovation analyzed in this study—Mobile TV—is the model proposed by Hong and Tam (2006) to reflect the distinctive characteristics and usage contexts of multipurpose information appliances (Figure 1). From a conceptual point of view, the IT appliance model introduced by Hong and Tam (2006) is especially relevant for our purposes because mobile TV devices: (1) represent personal possessions not shared much with others in terms of interpersonal communication and thus are likely to be perceived as an extension of the self, (2) offer ubiquitous accessibility in both spatial and temporal senses, and (3) deliver value propositions going beyond performance gains or work-related usefulness to include hedonic and symbolic values..
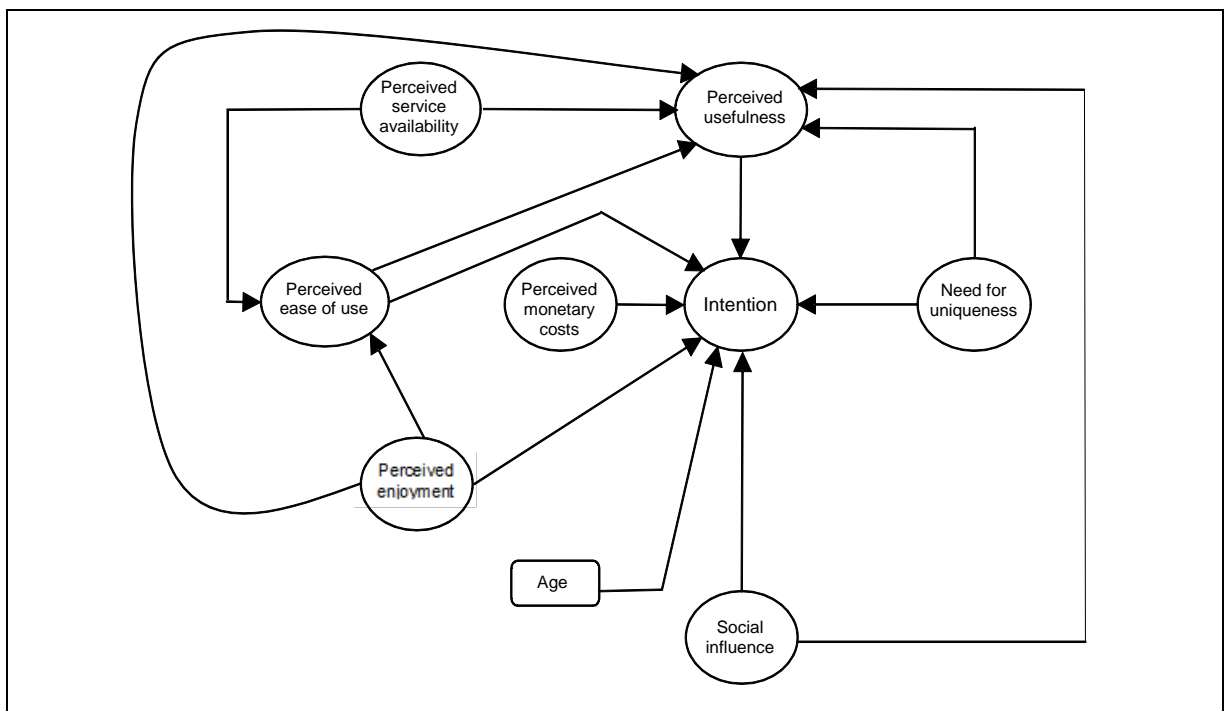
Figure 1. Hong and Tam (2006) model

Hong and Tam (2006) hypothesize that behavioral intention for a multipurpose information appliance is influenced by:

- Perceived usefulness and perceived ease of use, where these have been identified as the most influential predictors of adoption in the IS literature (Venkatesh, Morris, Davis, & Davis, 2003)

- Technology-specific beliefs, namely perceived service availability and perceived monetary cost. The former is expected to affect the perceived usefulness of the technology (Islam & Fayad, 2003); without pervasive and timely connections, the usefulness of information appliances would be clearly undermined. At the same time, service availability can be considered as a facilitating condition (Venkatesh et al., 2003), which increases the perceived ease of use of a system (Venkatesh, 2000). Perceived monetary cost is related to the expected economic sacrifice for the potential adopter, which then directly affects intention to adopt (Monroe & Krishnan, 1985)

- User psychographics, specifically perceived enjoyment and need for uniqueness. An enjoyable usage experience has been previously shown to be a salient driver with a direct impact on the intrinsic motivation to adopt (Davis et al., 1992) and an indirect influences on both perceived ease of use (Venkatesh, 2000) and perceived usefulness (Starbuck & Webster, 1991). Hong and Tam (2006) note: "if a user needs to kill time while he or she waits for a train, services such as … video clips can be perceived as very useful, because these services can be instrumental in providing an outlet for passing the time" (Hong & Tam, 2006, p. 166). As for need for uniqueness, Hong and Tam recognize that the adoption of an innovation can support a person's need to feel different from others (Fisher & Price, 1992). Accordingly, need for uniqueness is expected to influence behavioral intention directly by satisfying such a desire and indirectly via perceived usefulness since adoption could be instrumental to the individual goal of self-distinctiveness (Tepper et al., 2001)

- Social influence is based on the extent to which potential adopters believe that "important others" would approve or disapprove of one adopting a given behavior (e.g., Childers & Rao, 1992), and produces its effects both directly (e.g., Venkatesh & Morris, 2000) and indirectly via perceived usefulness (e.g., Venkatesh & Davis, 2000); the adoption of technologies that are widely accepted by friends and colleagues should be instrumental in maintaining good relationships, and

- Demographics, namely gender and age; men tend to show a greater interest in IT products (Mitchell & Walsh, 2004), while younger people tend to show a greater acceptance of innovations (Brancheau & Wetherbe, 1990; Morris & Venkatesh, 2000; Rogers, 1983, 1995).

Notice in Figure 1 that need for uniqueness is the sole symbolic antecedent contained in Hong and Tam's (2006) model. We test the model shown in Figure 1 to to compare it to our proposed model.

With regard to our proposal to overcome the underrecognition of symbolic factors to date in IT models, we reconceptualize self-identity as the symbolic meaning of an innovation (as developed in Section 2) and argue that multipurpose information appliances are characterized intrinsically by significant symbolic values. Self-identity then becomes the direct, proximal, symbolic determinant of intentions to adopt the innovation (see Figure 2). Consumer behavior scholars maintain that readiness to engage in identity-congruent actions is a key factor prompting consumer to engage in consumer behavior activities (e.g., Herd & Moreau, 2011). Nevertheless, previous adoption models have not investigated self-identity per se. Hence, we hypothesize

> **H1:** *Self-identity directly and positively influences adoption intentions.*

Hong and Tam (2006) investigated one aspect of personal identity, need for uniqueness, but did not consider other aspects of identity. In Section 2.2, we present status and need for uniqueness as aspects of personal-identity in the IT domain (see Figure 2). In Section 2.3, we further specify that the set of drivers of personal identity may be wider and it may include other characteristics such as "coolness", "being tech-savvy", "being open-minded", and so on. These are means of expressing a specific level of self-identity, in the sense of one's personal identity reflecting who a person is as a unique individual. That is, symbolic signaling as a strategy for constructing one's self-identity is function of the set of drivers of personal-identity, but goes beyond that in that these characteristics (being cool, unique, high status, and so on) are not the only thing that a person might wish to convey about one's self. As previously highlighted, self-identity may also be shaped by drivers of social identity, such as need for identification. In line with the theory in Sections 2.1, 2.2, and 2.3, we argue that a) the set of drivers of personal identity may include other means beyond status and need for uniqueness, and b) this set constitutes a partial antecedent of self-identity because consumers may want to express also social identities when they adopt an IT: self-identity can be influenced as a result of one's social identity where group or collective requisites are salient (not shown in Figure 2).

Thus, we hypothesize that:

> **H2:** *The set of drivers of personal identity (personal self) determines self-identity.*

Our reconceptualization of self-identity and our new model specification leave open the possibility that, in addition to to need for uniqueness and status, other forms of personal and social determinants of self-identity might be discovered and modeled in certain contexts. Nevertheless, all such drivers are hypothesized to work through one's total self-identity, which functions to integrate aspects of personal and social selves and to influence decisions and actions that express or give meaning to the self.

In sum, we propose that consumers fulfill their desires to signal their selves through adoption decisions, and the desire to signal is shaped by two aspects of personal-self: need for uniqueness and need for status. Change agents desiring to influence adoption, we suggest, should design

persuasive information campaigns and design innovations to influence either or both a need for uniqueness and/or need for status. Technology adoption is a function, in part, of one's personal self or identity, and targeting either or both need for uniqueness or status can be a means for inducing trial or adoption of a new technologies. Moreover, other aspects of personal identity might be targeted in the future.

In testing our hypotheses, we first replicated Hong and Tam's (2006) results, and show that their model also applies applies to the context of mobile TV adoption. We then reformulate Hong and Tam's (2006) model to take into account self-identity (where self-identity is the proximal symbolic determinant of behavioral intentions). Finally, we introduce need for status (e.g., Brown & Venkatesh, 2005) and need for uniqueness (from Hong and Tam's original model) as aspects of personal identity and antecedents of self-identity. Therefore, since our conceptualization of the symbolic driver is broader than need for uniqueness, we hypothesize that more variance intentions will be explained by self-identity under the proposed model than by need for uniqueness under the Hong and Tam (2006) model:

> **H3**: *Self-identity will be a stronger antecedent of intention to adopt than need for uniqueness alone.*

There is a connection between our conceptualization of self-identity and social influence[1]. Social influence is defined by Hong and Tam (2006, p. 167) as "the extent to which users believe that important others would approve or disapprove of their performing a given behavior". Kelman (1974) terms this mode of social influence compliance, which is based on the need for approval. Kelman (1958, 1974) also suggests that social influence may be based on identification (discussed earlier) and internalization processes, where the latter are defined as the congruence of one's values or goals with the values or goals of others. All three types of influence are distinct subdimensions of social influence (Bagozzi, 2007; Karahanna & Straub, 1999). For example, a manager may adopt a Blackberry in order to control their relationship with their supervisor so as to be available at a moment's notice to provide needed information(compliance), to be professional (internalization), or to became an emulator of business elites (identification). As Section 2.1 mentions, self-identity, as a component of social identity, encompasses only one proces described by Kelman (1958)— identification—while social influence is a term often used to characterize all three in their collective effects. On the other hand, note that the operationalization of social influence used by Hong and Tam (2006) employed measures of compliance only and did not address the "we-ness" character of social influence, which is part of the content of our construct of self-identity. According to the theory underlying the concept of self-identity, a new technology may be adopted to foster the personal self and promote a self-defining relationship with another person or group (Bagozzi, 2007). Based on these theoretical roots, self-identity is empirically linked to social identity (see dashed line in Figure 2). Thus, we hypothesize that:

> **H4:** *Social influence is positively correlated with self-identity.*

Figure 2 presents our full re-specification of Hong and Tam's (2006) model.

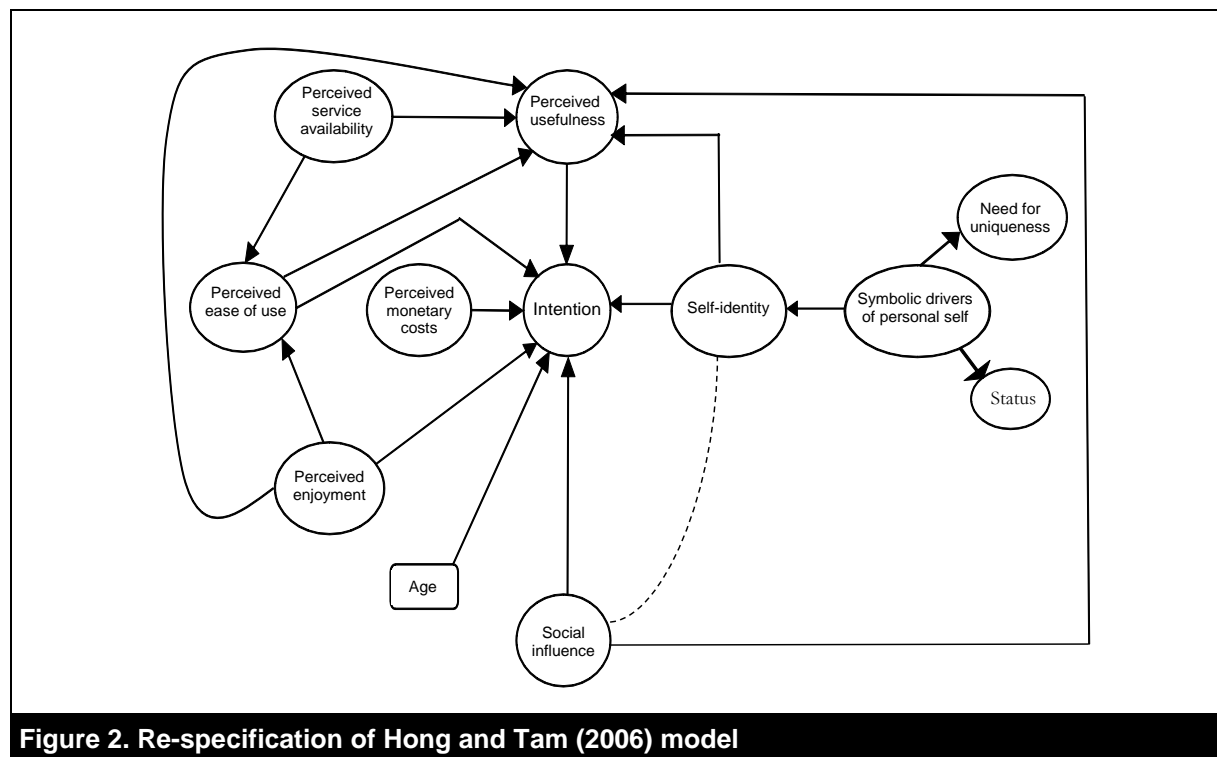[1] We thank an anonymous reviewer for pointing out this possibility.

Figure 2. Re-specification of Hong and Tam (2006) model

4. Method

4.1. Study Context and Data Collection

We gathered data from a survey of graduate business students in Milan, Italy. A monetary reward was given for participation (Rosenthal & Rosnow, 1984). Italy is an especially apt location for research on mobile TV adoption because the country has a vibrant mobile telephone market supported by a large population inclined to try new services (BuddeComm, 2008). Since the mid-1990s, Italy has been considered a benchmark in terms of the acceptance and diffusion of mobile telecommunications. Along with a few Asian countries, Italy has been used by such global operators as Hutchison Whampoa (H3G) for early testing of both third generation (3G) services and digital video broadcasting to mobile devices (DVB-H).

We asked a total of 351 Italian participants to fill out the questionnaire containing the independent, mediating, and dependent variables for the measurement models. Of the total questionnaires distributed to different classes, 350 were returned. Of the returned questionnaires, 5 contained incomplete responses. We then analyzed information from 345 completed questionnaires: 176 men, 169 women. The average age was 21 (SD = 1.57). None of the respondents owned a mobile TV.

We measured all research variables using multiple-item scales adapted from prior studies (in other words, we made minor wording changes to tailor them to the mobile TV context). All responses were recorded on seven-point scales (1 = strongly disagree; 7 = strongly agree).

We measured behavioral intentions as our focal dependent variable, which has been shown to be a reliable predictor of technology acceptance and future adoption (Agarwal & Prasad, 1999; Davis, Bagozzi, & Warshaw, 1989). Our model is similar to Hong and Tam's (2006) in this regard. Agarwal and Prasad (1999) recommend that actual adoption "not [be] measured …[when] data [are] gathered at a single point in time … [because adoption] in a current time period would be based on beliefs and attitude in a preceding time period. For such a research design, intentions are more appropriate since they are measured contemporaneously with beliefs" (p. 367).

To measure all variables other than status and self identity, we adapted the multi-item scales used by Hong and Tam (2006) to the mobile TV context of our study (see Table 1). We measured status with three items drawn from Brown and Venkatesh (2005; see also Moore & Benbasat, 1991). The three items were (1) "people who have a mobile TV have more prestige than those who do not", (2) "people who have a mobile TV have high profiles", and (3) "having a mobile TV is a status symbol".

Table 1. Variables and measures		
Latent variable	**Source**	**Measures**
Perceived usefulness	Hong & Tam (2006) Original source: Davis (1989)	I would find mobile TV devices to be useful in my daily life Using mobile TV devices would increase my chances of achieving things that are important to me Overall, I find the application of a mobile TV device to be useful
Perceived easy of use	Hong & Tam (2006) Original source: Davis (1989)	I expect that learning how to use a mobile-TV would be easy for me I expect that my interaction with a mobile-TV would be clear and understandable I would find mobile TV to be easy to use I expect that it would be easy for me to become skillful at using a mobile-TV device
Perceived enjoyment	Hong & Tam (2006) Original source: Davis et al. (1992)	I expect that using mobile TV would be enjoyable I expect that using mobile TV would be pleasurable I expect to have fun using mobile-TV I expect that using mobile TV would be interesting
Social influence	Hong & Tam (2006) Original source: Mathieson (1991)	People who are important to me would support my decision to have a mobile TV People who influence my behaviors would think I should have a mobile TV People whose opinions I value would like me to have a mobile TV
Perceived monetary costs	Hong & Tam (2006) Original source: Dodds et al. (1991)	I find that mobile TV is reasonably priced Mobile TV offers a good value for the money I believe that, at the current price, mobile TV provides good value
Perceived service availability	Hong & Tam (2006) Original source: Venkatesh (2000)	Thinking at the availability of the service, I expect that I would be able to use mobile TV at anytime, anywhere I would find mobile TV to be easily accessible from different places I think that mobile TV would be available to use whenever I need it
Behavioural intention	Hong & Tam (2006) Original source: Davis (1989)	I intend to adopt a mobile TV in the future I predict that I would adopt a mobile TV in the future I expect to adopt a mobile TV in the future
Need for uniqueness	Hong & Tam (2006) Original source: Tepper et al. (2001)	I often think of the things I buy and do in terms of how I can use them to shape a more unusual personal image I am often on the lookout for new products or brands that will add to my personal uniqueness I actively seek to develop my personal uniqueness by buying special products or brands. Buying and using products that are interesting and unusual assists me in establishing a distinctive image
Status gains	Brown & Venkatesh (2005) Original source: Moore & Benbasat (1991)	Having a mobile TV is a status symbol People who have a mobile TV have more prestige than those who do not People who have a mobile TV have a high profile
Self identity	Adapted from "self-brand connection" (Escalas 2004)	Having a mobile TV would reflect my identity Having a mobile TV would reflect who I am Having a mobile TV would express the personality that I want to communicate to others Having a mobile TV would reflect the way that I want to present myself to others Having a mobile TVsuits me well

To measure self-identity as reflected in the identity signaling value of the mobile TV innovation, we adapted measures from Escalas (2004). The five items were (1) "having a mobile TV would reflect my identity", (2) "having a mobile TV would reflect who I am", (3) "having a mobile TV would express the personality that I want to communicate to others", (4) "having a mobile TV would reflect the way that I want to present myself to others", and (5) "having a mobile TV suits me well". The items capture aspects of a person's symbolic valuing of the mobile TV. Table 1 lists all the measures for these constructs.

We used a double back-translation procedure to produce translation equivalence for our sample (Brislin, 1980). A bilingual speaker translated the English questions into Italian. Afterward, another bilingual speaker independently translated the questions back into English. At the end of this process, we asked a research assistant at the University of Pennsylvania to compare the original questions with the twice-translated version, and no serious discrepancies were found.

We tested hypotheses by using confirmatory factor analysis and structural equations models with LISREL, with which we used maximum likelihood estimation. The assumptions behind this method can be found in Bollen (1989). See also Bagozzi and Yi (2012).

4.2. Instrument Reliability

Before analyzing the data, we verified the reliability of the measurements of the scales and obtained satisfactory results. Table 2 reports Cronbach's Alpha for each scale. Table 3 reports the descriptive statistics of the construct items.

Table 2. Reliability			
Latent variable	**Number of items**	**Source**	**Cronbach's alpha**
Perceived usefulness	3	Hong & Tam (2006); Original source: Davis (1989)	.92
Perceived easy of use	4	Hong & Tam (2006); Original source: Davis (1989)	.93
Perceive enjoyment	4	Hong & Tam (2006) ; Original source: Davis et al. (1992)	.95
Social influence	3	Hong & Tam (2006); Original source: Mathieson (1991)	.96
Perceived monetary cost	3	Hong & Tam (2006) ; Original source: Dodds et al. (1991)	.92
Perceived service availability	3	Hong & Tam (2006); Original source: Venkatesh (2000)	.86
Behavioral intention	3	Hong & Tam (2006); Original source: Davis (1989)	.97
Symbolic value: need for uniqueness	4	Hong & Tam (2006) ; Original source: Tepper et al. (2001)	.93
Symbolic value: status gains	3	Brown & Venkatesh (2005); Original source: Moore & Benbasat (1991)	.84
Symbolic value: self identity	5	Adapted from "self-brand connection" (Escalas, 2004)	.94

Table 3. Statistics of the contruct items

Latent variable	Items	Mean	Mode	Standard Deviation
Perceived usefulness	PU1	3.21	2	1.65
	PU2	3.47	3	1.78
	PU3	3.35	3	1.77
Perceived ease of use	PEOU1	5.86	7	1.29
	PEOU2	5.79	7	1.22
	PEOU3	5.73	6	1.29
	PEOU4	5.86	7	1.20
Perceived enjoyment	PENJ1	4.49	5	1.67
	PENJ2	4.48	5	1.68
	PENJ3	4.48	6	1.70
	PENJ4	4.01	4	1.73
Social influence	SI1	3.17	1	1.82
	SI2	3.21	1	1.82
	SI3	3.22	1	1.82
Perceived monetary costs	PMC1	3.31	3	1.34
	PMC2	3.32	3	1.43
	PMC3	3.26	3	1.41
Perceived service availability	PSA1	3.94	4	1.63
	PSA2	4.16	4	1.62
	PSA3	4.55	4	1.73
Behavioural intention	BI1	3.02	1	1.69
	BI2	2.89	1	1.66
	BI3	3.05	1	1.78
Need for uniqueness	NU1	3.78	5	1.95
	NU2	3.95	5	1.93
	NU3	3.96	5	1.89
	NU4	3.87	3	1.91
Status gains	STATUS1	3.37	1	1.92
	STATUS2	3.58	2	1.91
	STATUS3	3.47	4	1.85
Self identity	IDSIG1	2.37	1	1.53
	IDSIG2	1.98	1	1.38
	IDSIG3	2.15	1	1.48
	IDSIG4	2.08	1	1.45
	IDSIG5	2.40	1	1.56

5. Results

The findings are presented in Figure 3, where goodness-of-fit criteria demonstrate an excellent fit (see Table 4). For purposes of comparison to the original Hong and Tam (2006) model (see Figure 4), we focus attention on the effect of symbolic drivers of the personal self (i.e., need for uniqueness and status) on self-identity, and the effect of self-identity on intention in Figure 3. We see that need for uniqueness and status both contribute strongly to the meaning of symbolic drivers, with status yielding the stronger contribution (0.72 vs 0.47). Symbolic drivers, in turn, have a strong effect on self-identity, explaining 69 percent of its variance. Self-identity then affects intention strongly (β=0.30; R^2 = 0.61)

| Table 4. Re-specified Hong and Tam (2006) model: Fit indices for structural models (N=345)		
Fit indices	**Thresholds**	**Results**
χ^2 (d.f.)		974.42 (560)
Non-normalized fit index (NNFI)	$\geq$.95	.98
Comparative fit index (CFI)	$\geq$.95	.99
Root mean square error of approximation (RMSEA)	$\leq$.06	.04

Unlike the Hong and Tam (2006) model, which only examined need for uniqueness, we hypothesize that self-identity functions to signal the symbolic self and is the proximal determinant of intentions to adopt the mobile TV. Self-identity, in turn, is determined by personal-identity (personal self), which is comprised by need for uniqueness and status. As hypothesized under H4, social influence was significantly and positively correlated with self-identity (but at a low level: r =.13, p< .01) (not shown in Figure 3), which supports the premise that the measures of the constructs are distinct.

We next tested Hong and Tam's (2006) original model to compare it with our data. This served as a baseline model for our tests of our proposed signaling model of self-identity. Figure 4 presents the findings for the Hong and Tam (2006) model.

As Table 5 summarizes, this model fits the data well. For purposes of comparison, we focus on the influence of need for uniqueness on intentions (see Figure 4, right center). Need for uniqueness had a weak significant positive effect on intentions. Explained variance in intentions was .58, which was due largely to the impact of perceived usefulness. This compares to .59 in Hong and Tam's (2006) original study. We thus conceptually replicate Hong and Tam's (2006) model and findings.

If we compare our respecification of Hong and Tam's (2006) model with the original one, we note that the explained variance for intention increases to .61 from .58 (compare Figure 3 with Figure 4) as H3 hypothesized. Importantly, from an explanatory point of view, self-identity had a significantly stronger positive direct effect on intention compared to need for uniqueness (.30 vs .08), and a stronger indirect effect via perceived usefulness (.37 vs .08). On the other hand, our broader conceptualization of identity signaling became a relatively more important determinant of intention in that the causal link between perceived usefulness and intention declines in magnitude (.34 vs.48). In other words, symbolic determinants of intention become more salient than functional ones in our model. Hong and Tam's (2006) model captures little if any of the effects of symbolic determinants of intentions.

Again our respecification of Hong and Tam's (2006) model provides a fuller explanation of symbolic signaling by representing it as a series of constructs: symbolic drivers of self (measured by need for uniqueness and status) and self-identity. Hong and Tam did not examine self-identity or status.
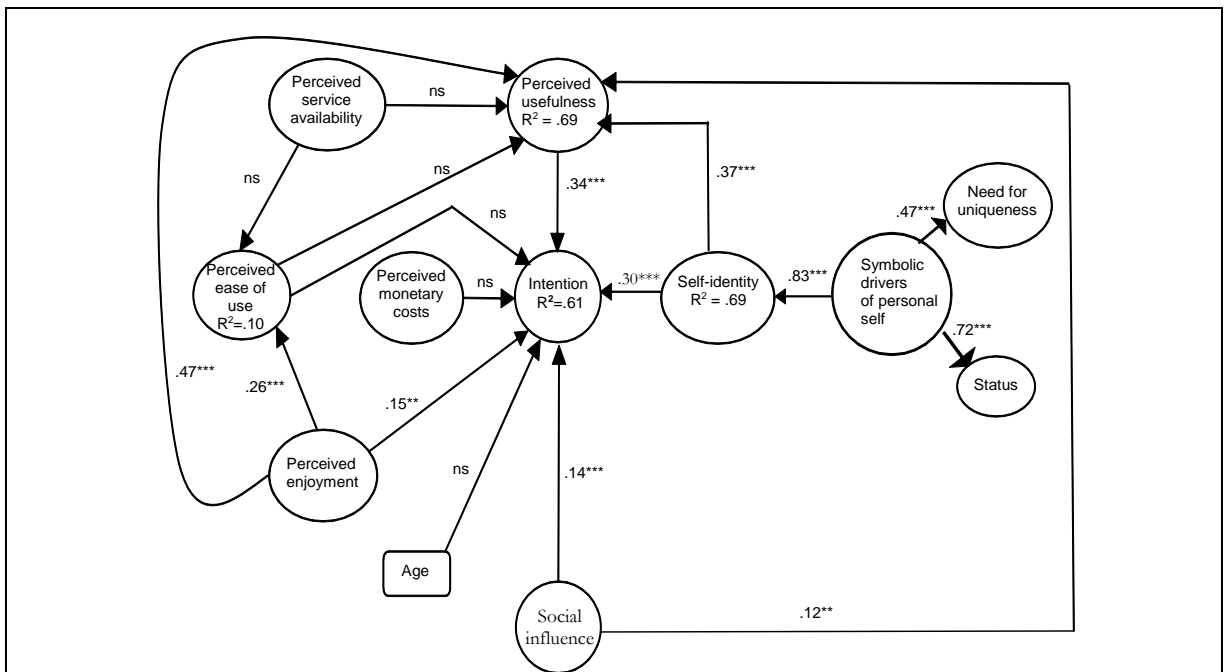
Notes: *p < 0.05; **p < 0.01; ***p < 0.001; ns = not significant
Circles/ellipses are latent variables; boxes/rectangles are single-item variables. Measures of latent variables and corresponding factor loadings and error variances omitted for simplicity.

Figure 3. Re-specification of Hong and Tam's (2006) Model: Results (Standardized Parameter Estimates)
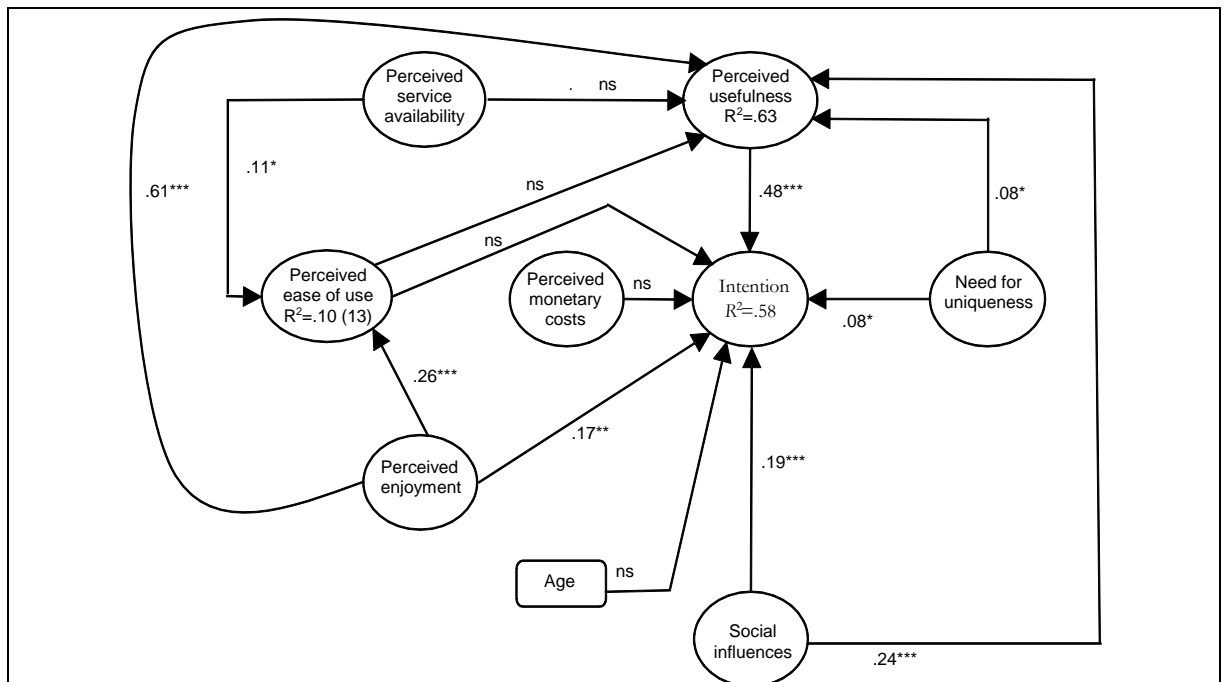
Notes: *p < 0.05; **p < 0.01; ***p < 0.001; ns = not significant
Circles/ellipses are latent variables; boxes/rectangles are single-item variables. Measures of latent variables and corresponding factor loadings and error variances omitted for simplicity

Figure 4. Application of Hong and Tam's (2006) Original Model: Results (Standardized Parameter Estimates)

Table 5. Hong and Tam's (2006) Original Model: Fit Indices for Structural Models (N=345)

Fit indices	Thresholds	Results
χ^2 (d.f.)		597.28 (322)
Non-normalized fit index (NNFI)	$\geq$.95	.98
Comparative fit index (CFI)	$\geq$.95	.98
Root mean square error of approximation (RMSEA)	$\leq$.06	.04

6. Discussion

We developed a new conceptualization of the nature and representation of the symbolic meaning of personal technologies. Our reconceptualization suggests that self-identity functions to signal one's desired self through personal self-identity. Personal self-identity, in turn, depends on both need for uniqueness and status. These findings expand and deepen the role of self-identity in the adoption of personal technologies compared to extant models in the literature.

6.1. Theoretical Implications

We proposed a specific scale for measuring the symbolic value of an innovation: the self-identity scale, which was adapted from self-brand connection measures employed before in consumer research. We used this scale to test a structural equation model specifically designed for multipurpose information appliances. The results suggest that self-identity is an important variable in technology acceptance required to capture symbolic aspects of adoption. Notably, self-identity proved to be the second most important predictor of adoption intentions and nearly as important as the first, usefulness, for the specific case of mobile TV, an innovation with particular symbolic significance for adoptors.

In our study, we compared our model, where the construct of self-identity may potentially include both personal and social identities, with Hong and Tam's (2006) model, where the only source of symbolic meaning is conveyed by one particular variation of the personal self (namely, need for uniqueness). We found that the influence of our broader expression of symbolic value was more powerful than need for uniqueness in predicting intention to adopt the innovation. To state it differently, we found that personal technologies were recognized as a relevant part of the "extended self" beyond need for uniqueness, and this substantially affected participants' final decision to adopt. When considering a new personal technology, then, our results suggest that people evaluate its consistency with their desired self-identity: what will possessing this innovation tell about me? Is this consistent with my identity-signaling goals? In addition, our specification of self-identity showed its influence on perceived usefulness. We interpret this as a form of utilitarian support for one's identity signaling goals. This support, on the other hand, weakened the direct influence of perceived usefulness on intention to adopt: it seems that the latter plays a less crucial role in the adoption of new technologies, at least for personal and ubiquitous innovations. Not surprisingly, perhaps, these kinds of innovations satisfy better one's symbolic needs than functional ones.

We think it is important also to investigate the role of self-identity in adoption decisions for functional products, although its relative weight might vary depending on the innovation in question and on the self-presentational concerns of potential adopters. As mentioned above, the symbolic value of adopting (or not adopting) an innovation is only one driver among others, such as perceived usefulness, ease of use, enjoyment, and other factors addressed in the literature. That said, the empirical evidence on multipurpose information appliances is consistent in demonstrating how technologies become personal accessories tied to one's self-identity, which played a leading role in our study.

In line with the results found for mobile data services, both symbolic and hedonic outcomes, such as enjoyment, proved critical for adoption of mobile TV devices in our study. Indeed, functional values, such as ease of use, were not important for this technology for our respondents, who might be considered relatively sophisticated adopters.

Our study demonstrated that, through possessions, individuals will often try to maintain their sense of identity and that the latter predicts adoption. Our findings provide empirical evidence to the identity-based motivation theory (Oyserman, 2009) (mentioned in Section 2.1) that focuses attention on the motivational pull toward identity-congruent actions. According to this theory, consumers avoid undesired identities and avoid taking action according to their desired identity goals. This theory and our findings highlight the necessity to value products that allow for identity expression. When a consumption choice is identity congruent, it is an important one: products linked with identity-based concerns are more likely to have a loyal consumer base (Oyserman, 2009).

We stressed the idea that certain IT devices, such as multipurpose information appliances, can be counted among the personal possessions that individuals likely perceive as extensions of the self, which in turn accentuates the relative weight of symbolic outcomes in adoption decisions. Importantly, we claim that the way researchers interpret symbolic outcomes must change accordingly. To the extent that personal technologies become extensions of the self, the symbolic value of new personal technologies will lie in their consistency and correspondence with the self-identity of potential adopters (i.e., their personal identity and social identity), and will not necessarily be limited to status enhancement ambitions, as implied by previous research.

We maintain that this change of interpretation of symbolic outcomes from status enhancement ambitions to self-identity is even more important and urgent in the IT domain (particularly in the web domain) than in the other consumption areas. While status enhancement is typically connected to possessions, the desire for appropriations of "objects" such as images and links to websites are hardly explained by seeking prestige. By reducing the primacy of physical possessions, the digital milieu is a unique arena in which the semiotic rules (Schau & Gilly, 2003): the expansive arrays of devices available in the digital environment allow consumers to construct self-identities beyond status. Moreover, the possibility for a person, through the possession of digital objects, to create a "digital self" that can differ in important characteristics from the person's "offline" self opens many important new research questions (Shau & Gilly, 2003; Reed et al, 2012).

Consumers may use IT possessions that they desire to express their personal and social selves. With regard to the former, consumers, through purchasing and using goods and services, can differentiate themselves from others and create or maintain an identity that enhances their reputation, power, and status. Without a doubt, innovations occupy a special place among products able to express the personal self in this regard. Indeed, when possessions are held by a majority of people, they fail to provide clear signals of one's unique personal identity (Berger & Heath, 2007). By contrast, innovations are, by definition, distinctive possessions typically owned by a minority of people. The adoption of innovations, especially those that have high social visibility, conveys remarkable symbolic implications, especially "identity-signaling" consequences. Eventually, these either foster or discourage adoption, depending on the meaning of adopting the innovation for one's personal identity. Previous IS and IT research has looked primarily into one of two specific symbolic antecedents of personal self in adoption decisions (namely, need for status or uniqueness). As Section 2.3 shows, such self-conscious emotions as envy, pride, shame, guilt, embarrassment or regret also constitute aspects of personal identity and contribute to one's self-identity and decisions to adopt or not and deserve future inquiry.

Nevertheless, as Section 2.1 discusses, not only is it possible to identify further antecedents of personal identity beyond need for uniqueness and status, self-identity also reflects one's social identity, where innovations convey what we called a sense of "we-ness". This means that innovations may also be adopted with the aim of contributing to group harmony and reducing personal power and status disparities in favor of social, shared meanings. Facebook played such a role in the Arab spring in 2011 (Howard et al., 2011).

In sum, the framing of self-identity through innovations may involve processes of differentiation from other individuals, but also convergee with certain reference identities or groups. In these senses, we can see why "status" and "uniqueness" only partly define personal identity and, in the process, fail to fully convey one's broader self-identity. Other antecedents of the personal self beyond status, the need for uniqueness, and the social-self suggest the need to broaden and deepen criteria entering IT models for explaining adoption of personal technologies. Thus, future research into technologies should explore one's self-identity, and study both personal and social implicationsof the ownership and use of technologies.

6.2. Managerial Implications

Our research shows that personal technologies hold remarkable identity-signaling potential, especially for the early stages of diffusion. The management of this potential becomes a critical issue for innovating firms.

When an innovation is presented to the market for the first time, it does not benefit much from particular cognitive associations in the minds of potential adopters because these are ill-formed and require special communication programs to create and time to develop. Accordingly, this presents perhaps the most valuable (yet risky) moment to create the right (or wrong) positive associations in memory and to prevent negative ones in order to maximize the identity-signaling value of the new technology.

Managing communication and advertising policies to this end is certainly a critical issue. Recent Apple campaigns in the US provide examples of how this form of promotion works. Through various scripts, Apple has gone out of its way to associate a positive identity with Mac owners and an unpleasant or unsophisticated identity with PC owners. Pepsi has also used this strategy against Coke in the past (White & Dahl, 2007).

Such brand-positioning strategies can be employed to successfully position new personal technologies. In this case, the "competing brand" would be portrayed as the "adoption" behavior to avoid. Accordingly, different guidelines can be suggested to IT marketers in this respect:

- Instead of focusing on usefulness or ease of use alone, firms should activate key identity associations to foster symbolic drivers.

- At the very outset, risky negative associations with personal technologies should be identified through qualitative research. This is critical in order to foretell and combat harmful mental links that could potentially represent symbolic barriers to adoption (e.g., "mobile TVs are for geeks"). In Italy, for example, there is strong cultural resistance to adopting automatic transmissions in cars because they are mentally associated with the thought that "people who purchase automatic transmissions as less capable drivers". For years, this has been a conspicuous (and widely misunderstood) identity-signaling issue, which has effectively blocked the diffusion of this technology. Making people aware of, and helping them overcome, negative associations make it possible to educate the market and open the way to increased adoptions. Sometimes, firms unintentionally create the wrong symbolic associations. This happens when firms focus on different communication goals, such as creating awareness of the new technology, but ignore identity-signaling effects. For example, this mistake was made in the Italian launch of a new medical treatment for erectile dysfunction. The initial commercial campaign used a testimonial from a well-known senior septagenerion politician, but this created a strong detrimental identity link of the product with "elderly people past their prime". Since the potential market for the innovation was far broader, such a strategy actually created—or at least reinforced—an identity barrier to adoption. Being aware of and pre-testing such identity-signaling issues should reduce the risk of making similar errors. By the same token, too young or "hip" spokespersons in ads, for example, may be dissociative target groups for many IT adopters, such as middle managers and executives. Communications should then avoid creating such mental associations but rather match an innovaton's image to the self-identity of the target audience.

- The reverse use of dissociative identities in advertising campaigns (cf., White & Dahl, 2007) can be an innovative approach to promoting the adoption of personal technologies. This strategy consists in activating dissociative associations (i.e., cognitive links to undesired identities or groups) with a non-adoption behavior. For example, a campaign might deride a stereotypical non-adopter, who could be portrayed with a less appealing personality for the target group. In addition, such a campaign could make fun of the reasons attributed to the protagonist for not adopting. Those reasons would be the actual symbolic barriers observed in the market or revealed by qualitative marketing research.

7. Conclusion and Limitations

As a growing number of IT innovations become ubiquitous and personally grounded—that is, unique and not shared with others—they will increasingly tend to be perceived as extensions of the self. In order to address this unique context, we suggest revising the traditional ways of interpreting symbolic outcomes in technology acceptance studies, and we tested our reinterpretation of the symbolic dimensions of IT adoption.

As with any empirical field study, caution should be observed in generalizing the findings of our study. First, as a cross-sectional analysis, conclusions of causation must be tempered. Although the directions of significant paths found in our tests were consistent with theory, there is still the possibility of reciprocal or feedback effects over time. Secondly, we used a sample of graduate students in Italy, and therefore it should not be presumed that the findings will apply to people whose underlying characteristics differ substantially. We must also acknowledge the exploratory nature of our study. Additional research is required to assess the impact of self-identity for other technologies and in different contexts, and will need to consider control variables besides gender. For example, in our study, even though the relationships between self-identity and behavior were in the hypothesized directions, the average evaluations of these two variables were found to be slightly less than the mid-points of the scales used. A possible reason for this is that mobile TVs were in a phase of "early adoption". As a result, it is likely that respondents knew less about the innovation and could not be considered experts. Further studies should consider technologies in different life cycle stages and for potential adopters with different levels of interest in, and involvement with, innovations.

Given these limitations, our work represents an initial effort to re-conceptualize—and operationalize accordingly—symbolic facets of technology acceptance in the emerging era of personal and ubiquitous innovations. In order to deepen this re-conceptualization, new research in the technology field should study the role played by the social self in fostering self-identity and try to identify the antecedents of social identity. In Section 2.3, we suggest that one variable for inquiry might be associations of the innovation to brand and product communities. Another variable that social-identity might depend on is represented by national culture. According to Markus and Kitayama (1991), in most Western cultures, self–identity is characterized by an emphasis on personal goals and recognition of one's distinctiveness from others: "the normative imperative is to become independent from others and to discover one's uniqueness" (Abe, Bagozzi, & Sadarangani, 1996, p. 99). On the other hand, in many non-Western cultures, the goals of a group to which one belongs and consideration of one's role in the group are important expressions of self-identity. According to these studies, culture plays a significant role in shaping self-identity. The IT literature recognizes that national culture is a critical variable in explaining how customers interact with IT (Leidner & Kayworth, 2006). This needs to be considered when identifying the mix of communication and marketing strategies to employ in IT and IS industries (Sia, Lim, Leung, Lee, Huang, & Benbasat, 2009). Scholars have demonstrated that national culture influences the adoption and diffusion of IT (e.g., Straub, 1994; Straub, Keil, & Brenner, 1997). Our research further suggests the possibility that such influence may be mediated by social identity. We suggest that future research investigate the indirect effects of culture on adoption through their shaping of social identity and, in turn, personal identity. Moderating and motivational effects of self-conscious and even moral emotions might regulate such relationships.

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