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Xiaofei Zhang
Nankai University, xiaofei.zhang2008@gmail.com

Joseph Valacich
University of Arizona, valacich@arizona.edu

Jeffrey L. Jenkins
Brigham Young University, jeffrey_jenkins@byu.edu

Xitong Guo
Harbin Institute of Technology, Harbin, China, xitongguo@hit.edu.cn

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(Completed Research)

Xiaofei Zhang
Business School, Nankai University
xiaofei.zhang2008@gmail.com

Joseph S. Valacich
Eller College of Management, University of Arizona
valacich@arizona.edu

Jeffrey L. Jenkins
Marriott School of Management, Brigham Young University
jeffrey_jenkins@byu.edu

Xitong Guo
School of Management, Harbin Institute of Technology
xitongguo@hit.edu.cn

ABSTRACT

IT-based mobile devices (i.e., smart devices), especially those with health monitoring features, are popular gifts. However, little is known about a recipient's commitment to using the smart device when it is obtained as a gift. To explore the influence of gift-giving on user perceptions and usage, three studies are reported. These studies build on the IT use literature, the gift-giving literature, and social exchange theory to investigate whether and how gift-giving leads to device commitment. Specifically, we found two contextual factor – receiving the smart device as a gift (versus buying for yourself) and providing emotional support when giving the gift – can increase recipients' symbolic of the smart device. Additionally, recipients' cognitive value of the smart device negatively moderates the effect of symbolic value on device commitment. The results provide novel insight into the relationship between IT use and gift-giving and provide implications for future research and the smart device industry.

Keywords

Gift giving, human-IT interaction, emotional support, cognitive value, device commitment.

INTRODUCTION

A large body of prior research has investigated various factors influencing technology adoption and use (Venkatesh et al. 2003) as well as long-term continuous use (Bhattacherjee 2001). Much of this work has focused on personal-productivity IT (Venkatesh and Brown 2001) and organizational-workplace IT (Davis et al. 1989). Factors such as a technology's ease of use and usefulness, as well as a myriad of contextual factors, have been found to play a significant role in shaping adoption intentions and decisions (Venkatesh et al. 2003). Today, in addition to the workplace and personal productive IT, there is a seemingly never-ending array of new gadgets and mobile devices, including phones, smart watches, and various types of personal health improvement and monitoring IT-devices (e.g., fitness trackers, glucose monitoring, smart glasses, etc.). The number of these and other personal IT-devices is predicted to nearly 40 billion by 2025 (Huawei 2018). However, the global market research indicates that most users do not make long-term usage of such IT-devices (Askci 2017; Ledger and McCaffrey 2014).

One very important characteristic of the personal IT-device marketplace is the extent to which individuals receive such devices as gifts, especially for those related to personal health. For instance, Consumer Technology Association indicates that 66% US adults plan to purchase a smart device as a gift (CTA 2018). A survey among users of wearable activity trackers shows that 43.5% of the trackers were received as gifts from family (Maher et al. 2017). A national survey by Gandhi and Wang (2015) reports that over 25% of those with a wearable mobile device received it as a gift. With gift-giving playing such a large role in the personal IT-device marketplace, there is an important and compelling gap in the literature investigating the role of gift-giving on personal IT-device commitment and use.

When a person receives a gift, it can have both cognitive and symbolic value (Antón et al. 2014). Cognitive value is an *objective* overall assessment of benefits and costs of using the IT-device (Kim and Kankanhalli 2009). Symbolic value is a *subjective* assessment of the symbolic feeling embraced in the gift (Antón et al. 2014). It is intuitive that both cognitive and symbolic value will influence a person's commitment to using to an IT-based gift. As a first step to understand the interplay between the IT features and gift features in determining device commitment, we put forth the following research question (RQ1): *How do symbolic value and cognitive value influence a recipient's commitment to using an IT-based gift?*

As the generalization of cognitive value has been extensively studied, this work focuses on the development of symbolic value from the gift-giving process. To inform our work, we have also drawn upon the gift-giving literature that has extensively examined how various characteristics of the gift, the relationships between givers and recipients, and gift-giving occasions influence various factors (Joy 2001; Qian et al. 2007; Segev et al. 2012). For instance, prior gift-giving literature proposes that giving a gift is viewed as being nobler by the recipients than giving nothing or giving equivalent money because giving a gift not only includes giving the economic value, but also the efforts involved in selecting and sending the gift (Cheal 1987). As such, this suggests that users may feel differently about an IT-device's cognitive or symbolic value, as well as downstream device commitment when they receive it as a gift versus when they purchase a product for themselves. This leads to our second research question (RQ2): *How does the way a person acquires an IT-based device (i.e., gift, cash to buy, or self-purchase) influence Cognitive and symbolic value perceptions?*

Another factor influencing how a recipient feels after receiving a gift relates to how the giver is perceived to feel about having the recipients utilize the gift. Different from the non-health IT-based gifts, IT-based gifts for health purposes enable the giver to show his/her care not only through giving a gift but also by caring about the recipients' use of the device after the giving. This is because, as a relative or friend of the recipient's, the giver may concern recipients' health more than other affairs, and therefore will pay attention to their compliance to the treatments or potential treatments (Boyer et al. 1990), such as using the IT-device to deal with an ongoing health issue. Whether the giver is perceived to having concern regarding how the recipient utilizes the gift should play a role in shaping the recipients' perceptions on the IT-based gift. Such concern by the giver can provide emotional support to the recipients, gratifying their emotional needs to solve the health issues (Brouwers et al. 2001). This leads to our third research question (RQ3): *How does the giver's concern for the recipient's use of the IT-based gift influence symbolic value perception?*

To answer the aforementioned research questions, a research model based on social exchange theory is developed, which is also informed by the prior gift-giving and IT use literature. The model proposes gift-giving is a social exchange process that instrumental support (i.e., the IT-based gift) and emotional support embraced in the gift-giving induce symbolic value and downstream device commitment perceptions. The model is empirically tested using four laboratory experiments and one field experiment. Results show that 1) cognitive value and symbolic value of the IT-based gift moderate each other's impact on device commitment, 2) giving a gift induces more symbolic value than giving cash or doing nothing, and 3) providing emotional support along with the gift induces more symbolic value.

This research contributes to the current literature in fourfold. First, our work is one of the first that empirically explores how users make use decisions in the gift-giving context, enriching the IT use literature by introducing and testing a new aspect of factors, i.e., subjective influences from gift-giving. Second, even though the gift-giving literature had extensively explored how gift-giving influences recipients' reactions, few empirical studies have investigated the impact of gift-giving on their further interaction with the gift. By investigating whether and how giving an IT-based gift influences recipients' use decision, this research sheds light on understanding the effects of gift-giving on recipients' behavior. Third, by exploring the effects of gift-giving and emotional support along with the gift, this research provides a new approach for exploring social influences to increase the utilization of personal IT-devices. This research also provides some practical implications for the IT-device industry, IT users, and potential gift givers.

This paper is organized as follows. The next section presents the theoretical foundations, after which the research model and hypotheses are proposed. Then five studies are reported. The Discussion section summarizes the key findings and implications and the last section concludes this work.

THEORETICAL FOUNDATIONS

Gift giving

Gift-giving is a pervasive phenomenon that benefits a wide range of industries and retailers (Segev et al. 2013; Sherry 1983). It has been widely explored in a diverse array of disciplines including marketing, psychology, economics, sociology, consumer behavior, and behavioral science (Qian et al. 2007; Segev et al. 2013). Gift-giving is a process of selection, transfer, and evaluation of material and intangible objects for the purpose of achieving certain goals of givers or recipients (Sherry 1983).

There are three common stages in gift-giving (Sherry 1983). The first is gestation, which focuses on a giver's behaviors preceding the giving, such as giving motivations, gift search, and gift preparation. Second, the presentation stage is the transmission of the gift from the giver to the recipient. Finally, the reformulation stage focuses on the recipient's response to the gift and the evaluation of the relationship with the giver (Segev et al. 2013). Prior work on the reformulation stage has focused on the effects of gift-giving on the relationships between givers and recipients after giving (Cavanaugh et al. 2015; Joy 2001; Ruth et al. 2004; Ruth et al. 1999; Segev et al. 2012). Even though some studies have investigated the effects of gift-giving on recipients' initial reactions to the gift (Green and Alden 1988; Shen et al. 2011; Taute and Sierra 2015), such as negative or positive emotions elicited by receiving the gift, little is known about whether gift-giving influences recipients' further

interactions with the gift. There are two primary reasons for this gap in understanding of gift-giving. First, recipients' further interactions with an IT-based gift are a Human-Computer Interaction (HCI) context that is beyond the research scope of marketing, psychology, economics, or sociology. Second, in the HCI realm, the phenomenon of using personal IT-based devices as gifts has not yet been extensively explored.

IT-based devices with health features are portable and reflect the givers' concerns, thus making them popular gifts (ParksAssociates 2015). The main value of these kinds of gifts derives from recipients' positive interactions with them and frequent usage to keep informed of or better monitor their health. However, there is a significant gap in the gift-giving literature regarding the use of the gift by the recipients after the gift-giving. Therefore, to narrow this research gap and provide implications for the IT-based device industry, this research investigates the effects of gift-giving on recipients' utilization of the IT-based gifts. Specifically, this research will explore the effects of gift-giving related factors, i.e., whether the IT-based device is a gift and how the gift is given on recipients' further use decisions and behavior. In doing so, this research not only links the HCI and gift-giving literature but also supplements the gift-giving literature by incoporating recipients' use decisions into the reformulation stage.

IT Use

IT use is a popular topic in the HCI literature. With the rapid development of IT and its significant role in modern society, HCI issues, such as whether individuals adopt IT and how adopters use IT, are increasingly important (Zhang et al. 2009). Prior literature has developed new models or applied previous theories to explore IT use, such as Theory of Reasoned Action (Fishbein and Ajzen 1977), Theory of Planned Behavior (Ajzen 1991), Technology Acceptance Model (Davis et al. 1989), Motivation Model (Calder and Staw 1975), Innovation Diffusion Theory (Rogers 2010), Social Cognitive Theory (Bandura 1986), and the Unified Theory of Acceptance/use of Technology (Venkatesh et al. 2003) to name a few. However, many of these models or theories primarily focus on productivity IT in an organizational workplace settings, marketplaces, and social environments (Zhang et al. 2009). Other studies examine personal productivity IT (Venkatesh and Brown 2001), such as personal computer use at home. Even though personal IT-devices are emerging in recent years, relatively less work has been devoted to exploring how these devices are used, let alone how IT-based gifts are used.

IT-based gifts are different from the workplace-oriented ITs, i.e., the IT is provided by the organizations and usage of such IT by employees is mandatory (Hsieh et al. 2012). They are also different from the personal productivity-oriented IT because such IT is mainly purchased by the users and resulting in a selecting effect on use behavior (i.e., they bought the productivity-oriented IT, and are therefore they tend to use) (Venkatesh and Brown 2001). Therefore, the interactions and decisions regarding IT-based gifts can be different from the non-gift IT, suggesting a need for further investigation. The reasons are threefold. First, most of prior models or theories were developed to study productivity-oriented IT, making them suboptimal to capture decision processes related to non-productivity-oriented ITs in the gift-giving context. Second, the prior models or theories are focused on objective evaluations, but do not consider subjective evaluations that are important in a gift-giving scenario (Kim and Kankanhalli 2009). Third, this research attempts to explore the effects of subjective influences of gift-giving on IT use, which have been largely neglected by the prior models or theories.

Given that the primary context for the prior IT use models or theories was workplaces or personal productivity settings, they generally treat IT as productivity tools. While the personal IT-devices are mainly for personal intrinsic purposes, such as for monitoring health issues, they are much closer, emotionally and cognitively, to the users than the productive IT. These IT-devices can serve as personal organizational tools for users and users are more likely to develop an internal bond with them (Kolsaker and Drakatos 2009), which is largely neglected by the prior IT acceptance/use models or theories. Given that user commitment is a psychological bond between users and IT, it can act as an internal bond that holds users in a line of behaviors and affects their behavior persistently (Newman et al. 1996). To explore personal IT-device use in the gift-giving context, this research adopts device commitment as a proxy of the outcome of the interactions with personal IT-devices. *Device Commitment* is defined as a psychological disposition that implies a positive attitude towards the device and a willingness to maintain a valued long-term relationship with it (Albert et al. 2013).

Most of the IT acceptance/use models or theories were developed based on users' objective value perceptions on whether and how the IT can enable them to achieve their productivity goals, such as usefulness, ease of use, trust, and expectancy (Venkatesh et al. 2003). Some subjective feelings from their affective evaluation of using IT, such as enjoyment, anxiety, and satisfaction, have also been informed by these models or theories. Subjective feelings, however, can also be influenced by social factors, such as others' motivations and behaviors (Curhan et al. 2006). This aspect of factors has received little attention thus far in IT use literature, except social norm. IT use in gift-giving provides a unique setting to explore the effects of subjective influences on use behavior. The interactions with an IT-based gift are different from previous HCI contexts due to the social factors in gift-giving, such as the giver, the relationship between the giver and recipient, and the giving behavior. These factors may play a distinct role in use decision regarding IT-based gifts. To predict

device commitment, this research adopts *symbolic value* to measure the subjective influences from gift-giving. Symbolic value is defined as the IT-based gifts' subjective value that is embraced in the gifts and reflects emotional exchange between the givers and recipients (Belk and Coon 1993). We also use cognitive value to measure users' objective feelings as the prior models or theories did. *Cognitive value* is the outcome of the cognitive process in the interactions with IT-devices, which refers to the overall cognitive evaluation of using the IT-based gifts based on the comparison between benefits and costs (Kim and Kankanhalli 2009).

Social Exchange Theory

Social exchange refers to the interactions between two or more individuals engaging in joint activities directly related to one another (Homans 1958). Social exchange theory posits that the social interaction process begins when one provides input, resulting in subsequent response behavior by others based on their evaluation of the input (Blau 1964). Gift-giving can be conceptualized as a social exchange process in which a giver provides a gift and the recipient reciprocates in some particular ways (Belk and Coon 1993; Qian et al. 2007).

Social exchange theory has been characterized as a social support exchange process (Dowd 1975; Qian et al. 2007). According to the tangibility of support, reflecting either instrumental support or emotional support (Adams et al. 1996). Instrumental support is the tangible assistance that an individual receives that is aimed at solving problems or achieving certain goals, such as an IT-based gift which is the focus in this research. Emotional support refers to the extent to which an individual's basic emotional needs to solve a problem are granted through the interaction with others (Brouwers et al. 2001). Prior social exchange related research has posited that both instrumental and emotional support are delivered in parallel and independently (Adams et al. 1996; King et al. 1995). For instance, in a gift-giving context, when the gift is an IT-device that helps a recipient to deal with a health issue, it reflects instrumental support. Likewise, the giver can also provide emotional support by caring about the recipient's usage of the IT-based gift. As such, we leverage social exchange theory to explore the subjective influences of IT-based gift giving, i.e., instrumental and emotional support, on recipients' symbolic evaluations.

RESEARCH MODEL

To answer the research questions and to narrow the gaps in the extant literature, we present our research model that builds on the IT use, gift-giving, and social exchange related research (see Figure 1). In this model, we will explain four hypotheses.
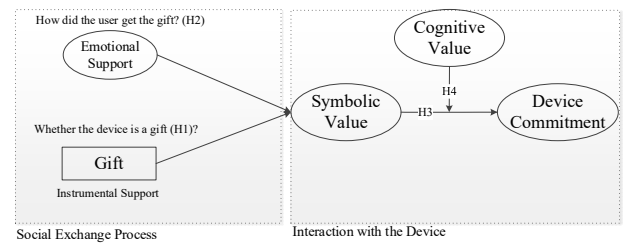

Figure 1. Research Model

A gift comprises both utilitarian value and subjective value from givers to recipients (James and Weiner 1994; Wolfinbarger 1990). The utilitarian value comes from the economic value, functional value, and social value of the gift that enables the recipients to achieve certain goals (Antón et al. 2014). The utilitarian value of the IT-based gift can enable recipients to deal with their health issues. When having interactions with the IT-based gift and realizing the potential benefits of using it, the recipients will form positive emotional reactions to it (Yang and Galak 2015). As the utilitarian value originates from the gift, the positive emotional reaction will be partly attributed to the emotional rewards from the givers and their relationships (Belk and Coon 1993; Lawler 2001). The recipients will feel the care and love from the givers embedded in the IT-based gift and perceive symbolic value (Lawler 2001). Therefore, we hypothesize:

H1: *When an IT-device is received as a gift, it positively influences symbolic value.*

Drawing on the social exchange theory, the IT-based gift can be treated as instrumental support from the giver (Ekeh 1974). Besides the instrumental support, the giver can also provide emotional support through gift-giving by caring about how the recipients deal with their health problems and whether the IT-based gift can help. When recipients faced with health issues, recipients will perceive the love and caring from the givers through the gift, which can meet their emotional needs (Belk and Coon 1993; Cheal 1987). This emotional support, expressed from the gift-giving process, will be attributed to the gift in the interactions (Lawler 2001). Therefore, emotional support in gift-giving, reflecting love and care from the giver, positively influences recipients' symbolic value perceptions on the IT-based gift (Lawler 2001). Therefore, we hypothesize:

H2: *Emotional Support with the IT-based gift positively influences on symbolic value.*

In the consumer behavior literature, the effect of a consumer's emotional reactions on brand commitment has been widely studied and supported (Albert and Merunka 2013; Albert and Valette-Florence 2010), i.e., the higher the brand love, the stronger the brand commitment. Symbolic value is not derived from the device itself but from the emotional exchange between the givers and the recipients. Thus, symbolic value can be treated as a kind of emotional reaction to the gift that reflects the caring and love from the givers (Belk and Coon 1993). As such,

symbolic value can facilitate device commitment in two ways. First, symbolic value, derived from the givers and then transferred onto the device, will induce the recipients to perceive the caring and love from the givers, which motivates them to utilize the device, and reduces their desire for alternative devices (Gonzaga et al. 2001). Second, symbolic value, as an outward expression of caring and love from the givers, will enhance recipients' desire to maintain their relationship, which strengthens their commitment to the bond—the IT-based gifts in this context (Gonzaga et al. 2001). Therefore, we hypothesize:

H3: *Symbolic value positively influences recipients' Device Commitment*.

Cognitive value is derived from the cognitive evaluation of the benefits and costs regarding usage of the IT-device (Kim and Kankanhalli 2009). We focus on two levels of cognitive value: high and low. High cognitive value means that recipients' benefits surpass costs and form a positive cognitive evaluation on using the device. In the contract, low cognitive value refers to a less positive cognitive evaluation. Symbolic value is derived from the emotional exchange and embedded in the IT-based gifts (Belk et al. 1993). Thus, it can be treated as part of recipients' affective evaluations. With high cognitive value perceptions, the users will be more cognitively driven and will rely less on their affective evaluations (Millar and Tesser 1986). On the other hand, if they have low cognitive perceptions, they will be more affectively driven and rely more on their affective responses (Millar and Tesser 1986). Therefore, we hypothesize:

H4: *Cognitive value moderates the influence of symbolic value on Device Commitment, such that the effect is weaker when Cognitive value increases*.

STUDY 1

Study 1 was conducted to answer RQ1 and RQ2 as a 2×2 between subject experimental design. We manipulated the source of the IT-based device (gifted vs. self-purchased) and the level of emotional support (positive vs. neutral) to examine the effects of IT source (i.e., whether is gift or not) and emotional support on symbolic value development and the interplay between symbolic value and cognitive value in determining device commitment.

Procedure and Manipulation

Respondents were randomly assigned to one of the four conditions, which were described in a scenario. After reading the scenario, all participants completed a follow-up survey to measure their interactions with the IT-based device to test the hypotheses. The scenario described a hardworking person who had very little time for his/her favorite exercise (running). As a result, his/her quality of life and sleeping had declined. His/her spouse noticed that Fitbit may help, which can motivate users to be more active by tracking daily movement, sending reminders, and providing feedback.

IT Source: In the gift condition, the person's spouse purchased a Fitbit Alta ($130) and gave it to him/her as a gift to deal with his/her health issue. In the self-purchasing condition, the person purchased a Fitbit Alta ($130) to deal with his/her own health issue.

Emotional Support (EMSP): This treatment was developed based on the definition and measures of emotional support proposed by Stoner et al. (2011). In the positive emotional support condition, before noticing the Fitbit, the spouse worried about his/her partner's health issue and planned to do something. When noticed about the Fitbit, the spouse informed the person (this setting makes the emotional support and symbolic value questions meaningful in the self-purchasing scenario). After the person started to use the Fitbit, the spouse asked about the usage of the IT-device and the person's physical condition weekly. In the neutral emotional support condition, before noticing the Fitbit, the spouse did not believe his/her partner's health was a serious issue and suggested the person should not pay attention to it. Likewise, when the spouse noticed the Fitbit, the spouse let the person know. After the person got the Fitbit and started to use it, the spouse expressed little concern about the usage of the Fitbit.

Participants: Mechanical Turk (MTurk) was used to recruit participants. Only those whose approval rating were greater than 90% and were located in the U.S. were allowed to participant in the study. By completing the experiment, participants obtained US$0.50. To ensure that participants were not automated, two control questions were used at the end of the survey to enquire how the person got the Fitbit and whether the spouse cared about the person's health issue. After removing the participants failing the control questions, a total of 215 valid participants were collected. Table 1-1 shows the sample size and demographic characteristics of the analyzed respondents. There were no significant differences among the participants assigned to each of the four conditions regarding age, gender, and education.

|		Gift & Positive EMSP	Gift Neutral EMSP	Self-purchase Positive EMSP	Self-purchase & Neutral EMSP
Sample size		45	64	45	61
Gender	Female	22	34	22	32
	Male	23	30	23	29
Age	18-25	9	16	10	16
	26-35	14	26	20	13
	36-55	17	16	11	77
	>55	5	6	4	5

Table 1. Demographic Information of Study 1

Measures

Five items measuring emotional support were adapted and revised from Stoner et al. (2011). Four items measuring symbolic value were adapted and developed based on Antón et al. (2014). Three items measuring cognitive value were adapted from Kim and Kankanhalli (2009). Five items measuring device commitment were adapted from Aaker et al. (2004). All items were measured by a seven-point Likert scale, ranking from 1 (strongly disagree) to 7 (strongly agree). The items are presented in Appendix A.

Results

The manipulation check showed that the participants in the positive EMSP conditions perceived higher emotional support than those in neutral conditions (5.98 vs. 3.70, t = 13.60, $p < 0.001$). This indicates that our manipulations on emotional support were successful. ANOVAs were conducted to test the effects of IT source and emotional support on symbolic value. The results revealed that those in the gift conditions have significantly higher symbolic value perceptions than those in the self-purchasing conditions (4.65 vs. 3.79, $F(1, 213) = 20.67$, $p < 0.001$), and those in the positive EMSP conditions also have significantly higher symbolic value perceptions than those in the neutral conditions (4.89 vs. 3.74, $F(1, 213) = 39.00$, $p < 0.001$). We then conducted post hoc tests among the four conditions, indicating that except Condition 2 and Condition 3, any two of the four conditions have significantly different symbolic value perceptions. Figure 2 summarizes the symbolic value of four conditions.
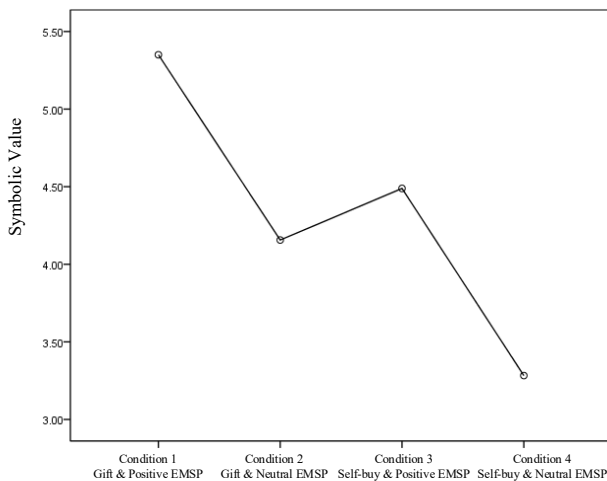

Figure 2. Symbolic Value by Conditions of Study 1

To further test Hypotheses 1-4, PLS-SEM was used to test the baseline model with the effects of IT source and emotional support on symbolic value and the interplay between symbolic value and cognitive value in determining device commitment. The IT source was measured by a binary variable (1 for gift and 0 for self-purchasing). First, the measurement model was tested.

The results are presented in Appendix B. The results showed composite reliabilities exceeded 0.870, significantly above 0.707, indicating composite reliability; and most of the loadings of construct items were above 0.7, indicating convergent validity (Chin 1998). Furthermore, the loadings of each construct were much greater than the cross-loadings on other constructs, and the correlations of any two constructs were much smaller than the square root of their AVEs (average variance explained), indicating discriminant validity (Chin 1998).

Then the structural model was tested and Figure 3 presents the results. The results showed that emotional support (β = 0.565, t = 10.84, $p < 0.001$) and IT source (β = 0.258, t = 4.90, $p < 0.001$) positively influence symbolic value, and explain 40.3% of symbolic value's variance. Symbolic value positively influences device commitment (β = 0.182, t = 2.92, $p < 0.01$), and cognitive value negatively moderates the relationship between symbolic value and device commitment (β = -0.170, t = 2.47, $p < 0.05$), leading to 26.7% of device commitment's variance is explained. Therefore, H1, H2, H3, and H4 were supported.
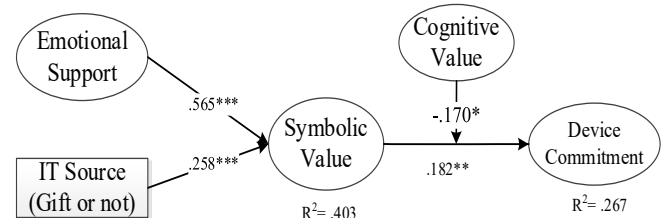
Figure 3. Structural Model Results of Study 1

STUDY 2

The primary purpose of this Study 2 was to answer RQ1 by further testing the interplay between cognitive and symbolic value by manipulating cognitive value. A secondary objective of Study 2 was to replicate the findings of Study 1 in a different context with a 2×2×2 between subject design. The scenario in this study focused on the father-child relationship and the IT-based gift was a pair of smart glasses. In this task scenario, the children are students facing increasing nearsightedness problems, and they got a pair of smart glasses from their father as a gift or bought them for their own use (i.e., a gift vs. self-purchasing). The fathers also had two conditions; i.e., where cared about their children's usage of the glasses and nearsightedness problem or not. The procedures of this study are quite similar to Study 1, except the manipulation of cognitive value.

Cognitive Value. In the high cognitive value condition, the students find the smart glasses fit his/her condition very well: the light condition where their study is very unstable, they have unhealthy eye usage habits, and the smart glasses provide more useful features than the normal eye glasses. Therefore, they believe the smart glasses will help them a lot in dealing with the eye

problem. In the low cognitive value condition, the students find the smart glasses do not fit their condition: the light condition where they study is very stable, they have healthy eye usage habits, and the smart glasses do not provide more useful features than the normal eye glasses. Therefore, they believe the smart glasses will help them little.

MTurk was used to recruit participants. Only those whose approval rating was greater than 90% and located in the U.S. participated in this experiment. By finishing the experiment, they obtained US$0.50 incentives. A total of 192 participants finished the experiment. After removing the invalid data (those who failed the control questions or chose the same answer to most questions), 156 valid samples were collected. The measures in Study 1 were used in this study.

The manipulation checks showed that the participants in positive EMSP conditions perceived higher emotional support than those in neutral conditions (5.98 vs. 4.33, t = 9.16, $p < 0.001$), and participants in high cognitive value conditions perceived higher cognitive value than those in low conditions (6.05 vs. 4.17, t = 9.33, $p < 0.001$). This indicates that our manipulation checks on emotional support and cognitive value were successful. Then ANOVAs were conducted to test the effects of IT source and emotional support on symbolic value. The results revealed that receiving as a gift significantly influences symbolic value (5.09 vs. 4.20, $F(1, 154) = 14.65$, $p < 0.001$), and positive emotional support significantly also influences symbolic value (5.98 vs. 4.33, $F(1, 154) = 83.85$, $p < 0.001$).

Then we further tested the baseline model. IT source and cognitive value were measured by binary variables. The results of the measurement model showed that composite reliabilities exceeded 0.803, significantly above 0.707, indicating composite reliability; and most of the loadings of construct items were above 0.700, indicating convergent validity (Chin 1998). Furthermore, the loadings of each construct were much greater than the cross-loadings on other constructs, and the correlations of any two constructs were much smaller than the square root of their AVEs (average variance explained), indicating discriminant validity (Chin 1998).

We then tested the structural model. Figure 4 presents the results. The results showed that emotional support (β = 0.616, t = 13.80, $p < 0.001$) and IT source (β = 0.231, t = 4.78, $p < 0.001$) positively influenced symbolic value and explained 46.1% of symbolic value's variance. Symbolic value positively influences device commitment (β = 0.346, t = 4.45, $p < 0.001$), and cognitive value negatively moderates the relationship between symbolic value and device commitment (β = -.254, t = 2.658, $p < 0.001$). 31.5% of device commitment's variance is explained. Therefore, H1, H2, H3, and H4 are all supported, and the moderating role of cognitive value on the relationship between symbolic value and device commitment is also verified when cognitive value is manipulated.
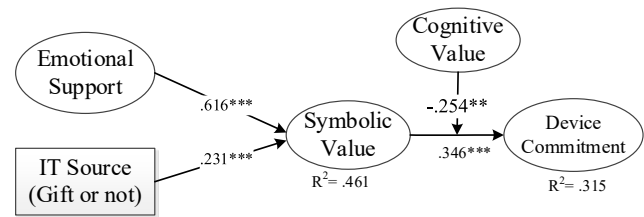

Figure 4. Structural Model Results of Study 2

STUDY 3

Even though we found that a gift can make a difference in human-IT interaction, it is unclear about whether the economic value of the gift or the giving behavior induced the differences. This study further answers RQ2 with a 3×2 between subject design by testing a third IT source, receiving cash as a gift to purchase the personal IT-device. The scenario in Study 2 was used without the treatment of cognitive value. Instead, the students had three sources to get the smart glasses: 1) received the glasses as a gift, 2) received equivalent cash as a gift from their fathers and they purchased the smart glasses, and 3) purchased the glasses all by themselves.

MTurk was used to recruit participants. We only recruited those whose approval rating was greater than 90% and were located in the U.S. We provided them US$0.50 for participating in this experiment. A total of 355 participants finished the experiment. After removing the invalid data (those who failed the control questions or chose the same answer to most questions), 286 valid samples were collected. The measures in Study 1 were used in this study.

The manipulation checks showed that the participants in positive EMSP conditions perceived higher emotional support than those in neutral conditions (6.34 vs. 4.37, t = 17.36, $p < 0.001$). This indicates that our manipulation on emotional support was successful. Then ANOVAs were conducted to test the effects of IT source and emotional support on symbolic value. The results revealed that receiving the smart glasses as a gift induced higher symbolic value than receiving the cash to buy (5.25 vs. 4.67, $F(1, 183) = 12.51$, $p < 0.010$) or self-purchasing (5.25 vs. 4.40, $F(1, 189) = 19.34$, $p < 0.001$). There was no difference between receiving cash as gift and self-purchasing (4.67 vs. 4.40, $F(1, 194) = 1.893$, $p > 0.100$). Figure 5 shows the changes of symbolic value perceptions among the three IT source conditions. Positive emotional support significantly influences symbolic value (5.98 vs. 4.33, $F(1, 154) = 83.85$, $p < 0.001$).
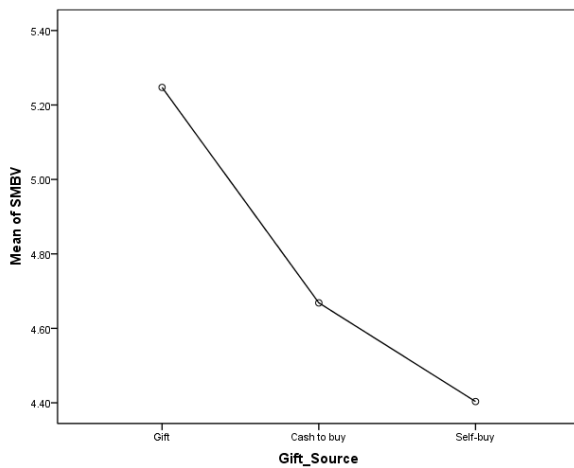
Figure 5. Symbolic Value by IT Sources of Study 3

Then we further tested the baseline model. IT source was measured by a binary variable. The results of the measurement model showed that composite reliabilities exceeded 0.914, significantly above 0.707, indicating composite reliability; and most of the loadings of construct items were above 0.700, indicating convergent validity (Chin 1998). Furthermore, the loadings of each construct were much greater than the cross-loadings on other constructs, and the correlations of any two constructs were much smaller than the square root of their AVEs (average variance explained), indicating discriminant validity (Chin 1998).

We then tested the structural model. The results showed that emotional support ($\beta = 0.502$, t = 9.028, $p < 0.001$) and IT source (Gift vs. Self-purchase, $\beta = 0.502$, t=4.14, $p < 0.001$; Cash to buy vs. Self-purchase, $\beta = 0.115$, t = 1.88, $p > 0.050$) explain 31.8% of symbolic value's variance. Symbolic value positively influences device commitment ($\beta = 0.121$, t = 2.03, $p < 0.001$), and cognitive value negatively moderates the relationship between symbolic value and device commitment ($\beta = -0.121$, t = 2.09, $p < 0.001$). Further, 27.2% of device commitment's variance is explained. Therefore, H1, H2, H4, and H5 are all supported, and we found that the gift-giving behavior, rather than the economic value of the gift, induces more frequency IT use.

DISCUSSION

Key Findings

We conducted three studies to explore how gift giving influences device commitment. In these studies, we explored the interplay of symbolic value and cognitive value, and the effects of gift-related factors—i.e., IT source and emotional support symbolic value—on device commitment. By doing so, this research provides several key findings.

First, receiving an IT-based gift can induce symbolic value perceptions, thus leading to stronger use commitment. We also found that this effect is more effective when users have low cognitive value perceptions derived for the personal IT-device. This finding confirms that when individuals received an IT-based gift, they were more likely to use it. It further indicates that in gift giving, not only users' cognitive perceptions determine their use decisions, but rather their subjective feelings from receiving the gift can also influence their use behaviors. Interestingly, cognitive value moderates symbolic value. When cognitive perceptions are low, the effect of gift giving is stronger in determining use behavior.

A second key finding relates to the gift source. Receiving the device as a gift significantly increases symbolic value perceptions while receiving cash equivalent as a gift is no different than receiving no gift. This finding is consistent with the earlier conclusions in the gift giving literature that money is not equivalent to a gift (Pieters and Robben 1999; Webley et al. 1983). This result occurs because the economic value of the gift does not arouse the same emotional response as the symbolic meaning of the gift itself. Giving a health related non-monetary gift implies that the giver cares about the recipient's health condition and spends not only money but also time and effort by selecting the gift (Webley et al. 1983). Our research verifies this general conclusion of the IT use literature by showing that money is not a good gift to motivate the frequent use of personal IT-devices.

A third important finding relates to how emotional support of gift giving influences symbolic value. We found that when providing emotional support along with giving the gift (i.e., implying that the giver cares about how the recipient can use the device to deal with their health problem and whether the device works for the recipient), the recipient will gain more symbolic value from the gift. This finding suggests that not only giving a gift but providing emotional support from the gift giving event can also increase the effectiveness of gift giving on recipients' further use of the IT-based devices.

Implications for Research

This research has several significant theoretical implications. First, this research extends the IT use research into a new context, gift-giving. Prior literature has extensively studied IT use in the last decades, and many IT acceptance/use models or theories have been developed (Zhang et al. 2009). However, most of the relevant studies are focused on productive IT in workplace (Davis 1986; Davis et al. 1989; Venkatesh and Brown 2001), and few has explored the gift-giving phenomenon in the IT use literature. By investigating the effects of gift-giving factors on symbolic value and exploring the interplay between symbolic value and cognitive value, our research is one of the first that empirically explores IT use in the gift-giving context. The findings of this research confirm that the subjective influences from gift-giving are vitally important in human-IT interaction.

Second, this research also contributes to the gift-giving literature by extending the literature concerning recipients' further interactions with the gift. The prior literature has investigated the effects of a gift on recipients' perceptions of the gift and their relationship with givers (Cavanaugh et al. 2015; Joy 2001; Ruth et al. 2004; Ruth et al. 1999; Segev et al. 2012), and on recipients' initial reactions to the gift (Green and Alden 1988; Shen et al. 2011; Taute and Sierra 2015). However, little research has examined the effects of gift-giving on recipients' future behavior decisions regarding the gift. By investigating whether, how, and when an IT-based gift is given influence recipients' future interactions with it, our results inform the gift-giving research to take recipients' long-term interactions with the gift into consideration.

Third, this research provides a new approach to invetigating and measuring social influences in the IT use literature. Previous IT acceptance/use models or theories either neglected social influences or handle social influence by testing the effect of social norms (Mathieson 1991). To incorporate whether the IT-device is a gift and whether the giver cares about the recipients' usage, this research proposes the significant role of subjective influences from the society, i.e., the gift-giving, draws on symbolic value to measure the subjective evaluation, and further examines the interplay between subjective evaluation and cognitive evaluation. Doing so allows this research not only figures out how the characteristics of gift impact user decision, but also provides a new perspective to study the social influences in human-IT interaction.

Implications for Practice

This research also provides important implications for the personal IT-device industry. First, the results show that gift-giving plays a significant role in individuals' use of the IT-based devices. Therefore, device providers or sellers should try to target the potential gift-givers, such as the relatives, friends, and employers of those who are currently experiencing health issues, as their potential consumers, especially when the cognitive value of the device is difficult to figure out for non-users. The providers or sellers can first convince potential givers to pay attention to the health issues their loved ones have or potentially have, and then giving such devices as a gift will show their love and caring, which will induce the recipients' further device usage to deal with their health issues. By doing so, the providers or sellers will attrack more potential consumers and increase their consumers' effective usage of the IT-devices.

Second, we found that giving a gift and providing emotional support can lead to high device commitment. For the relatives, friends, and employers of those who are experiencing health issues, they can influence their loved ones by giving them an IT- device. During and after giving the gift, they should also provide emotional

support to encourage usage. By doing this, they can effectively influence their relatives, friends or employees' further usage of the device. On the contrary, it also suggests that givers should better not provide money as a gift for health purpose or during holidays or birthdays for the Westerners.

Finally, our findings also provide some insights into increasing patients' compliant behavior, especially the usage of health devices for health monitoring. The low patient compliance has been a worldwide issue for a long time, especially for chronic diseases (Roter et al. 1998). Although social support has been verified can increase patient compliance (DiMatteo 2004), there are no specific measures proposed to provide this support. As IT-devices provide a new approach for health management, such as monitoring chronic conditions, this research provides the patients' relatives, friends, and employers an effective approach to increase their loved ones' compliant behavior by giving the IT-device as a gift and providing emotional support.

CONCLUSION

As the development of mobile ITs and personal IT-devices emerge, devices with health related features are becoming popular gifts. Drawing on the gift-giving literature, social exchange theory, and IT literature, we developed a theoretical model to explore the effects of gift giving on user commitment to the IT-based device. In three experiments, we demonstrate that cognitive value moderates the effect of symbolic value on use commitment, giving a gift induces more symbolic value than giving equivalent cash and doing nothing, and providing emotional support along with the gift induces more symbolic value. Our findings show that how one gives an IT-based device as a gift can influence IT use frequency. In summary, by incorporating social exchange theory and IT use literature to study how gift giving influences use commitment, this research provides new understanding of human IT-use behavior. This research also provides implications for the smart device venders, organizations, and those concerned for loved ones.

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Appendix A (Construct Items)

Construct	Items	Description	Source
What is your agreement/disagreement with the following statements regarding using the __ ?			
Device Commitment	DVCC1	I am willing to make small sacrifices in order to keep using it	(Aaker et al. 2004)
	DVCC2	I would stick with it even if it let me down once or twice	
	DVCC3	I am so happy with it that I no longer feel the need to watch out for other alternatives	
	DVCC4	I am very loyal to it	
	DVCC5	I am likely to be using it one year from now	
What is your agreement/disagreement with the following statements about the value of using the __ ?			
Cognitive Value	CGNV1	Considering the time and effort that I had to spend, the new way of protecting my __ is worthwhile	(Kim and Kankanhalli 2009)
	CGNV2	Considering the loss that I may incur, the new way of protecting my __ is of good value	
	CGNV3	Considering the hassle that I have to experience, the new way of protecting my __ is beneficial to me	
What is your agreement/disagreement with the following statements regarding the __ and your relationship with your __ ?			
Symbolic Value	SMBV1	The __ symbolizes the close relationship between my __ and me	(Antón et al. 2014)
	SMBV2	The __ implies my __ is committed to maintaining our relationship	
	SMBV3	The __ shows my __ and I are emotionally close to each other	
	SMBV4	The __ means my __ is doing me a favor	
How do you feel about your __ 's involvement when you use the __ to deal with your __ ?			
Emotional Support	EMSP1	My spouse is interested in my ___	Developed by (King et al. 1995) and selected by (Stoner et al. 2011)
	EMSP2	When I'm frustrated with my __, my __ tries to understand	
	EMSP3	My __ is sympathetic when I'm upset about my ___	
	EMSP4	That he/she wants to know about my ___	
	EMSP5	That he/she shows concerns about how I can deal with my __	
In the scenario, how did the person get the __ ?			
He/she bought the __			
The __ was a gift			
He/she bought them using his/her personal savings			
I do not know			
How concerned was the spouse about his/her physical condition?			
Did not believe this was a serious problem			
Worries about the problem a lot			
I do not know			