# Towards an understanding of intention to use mobile videos: Impression management, perceived facilitation, and social norms[1]


## Abstract

Due to prevalent use of phablets and 3G/4G cellular networks, watching mobile videos has become increasingly popular worldwide. This study identifies multi-level psychosocial factors predicting individual intention to use mobile audiovisual services. The national telephone survey obtained a random sample of 503 respondents. The findings show variables of the Theory of Planned Behavior (TPB) (i.e., attitude, subjective norm, and perceived behavioral control) and social norms are key predictors for mobile video consumption. In the research model, impression management is significantly associated with attitude, subjective norm, and individual social norms while perceived government and operator facilitation are associated with collective social norms. The hierarchical multiple regression analysis reveals that the extended TPB model accounts for 62% variance of intention to use mobile videos.


**Keywords: mobile video use, Theory of Planned Behavior, social norms, impression management, perceived government facilitation, perceived operator facilitation**

[1] This is pre-printed version: Lin, T. T.C., Jung Y., & Sim, C. (Forthcoming). Towards an understanding of intention to use mobile videos: Impression management, perceived facilitation, and social norms. *Mobile Media and Communication*.

## Introduction

Due to the growing numbers of larger screen phablets and advancements in 3G/4G mobile networks, watching audiovisual content on the move has become increasingly popular and convenient. Nielsen's study (2012) in 55 countries showed that the percentage of global online users using mobile videos increased five times compared to 2010. According to Strategy Analytics' recent survey, 72% of the respondents among 3,000 mobile users in the US, China, Germany, France, and Spain used mobile devices to watch videos (Lomas, 2014). This study defines mobile videos (MV) as audiovisual content available for viewing on various mobile devices, regardless of technologies (mobile cellular or broadcasting networks) or delivery modes (live, streaming, or on-demand). They broadly encompass mobile TV programs or even Internet Protocol television (IPTV) and user-generated videos (UGV) (e.g., YouTube) accessed via mobile Internet. Nowadays mobile video use (MVU) offers opportunities for passive "couch potatoes" who watch fixed, one-way broadcasting type of TV services to become empowered viewers to control timing and locations for video viewing. Some users treat MV as a complement to traditional TV and use it for catching scheduled live broadcasting programs or retransmitted shows (Miyauchi, Sugahara, & Oda, 2009) while others prefer using mobile devices as primary screens to watch original MV or UGV (Kaasinen et al., 2009).

Despite a promising forecast for MV services, some studies argued that the early prediction of consumers' adoption was too optimistic (Von Pape & Karnowsi, 2012). Prior studies focused either on investigating the socio-technical development of the mobile TV industry (Lin, 2012; Lin & Liu, 2011) or examining consumer behavior and determinants for adopting mobile TV and videos (Buchinger et al., 2011; Kaasinen et al., 2009; Lee, Ryu, &

Kim, 2010; Lin & Chiu, forthcoming; Miyauchi, Sugahara, & Oda, 2009). Predictors of MV consumption and consumer usage patterns are under-investigated (Ericsson Consumerlab, 2012). Little research has been conducted to examine how multi-level psychosocial factors are associated with MVU. With high mobile penetration and smartphone ownership, Singapore has savvy consumers and sophisticated wireless technologies which provide a suitable context to diffuse MV services. Thus, this study conducted a national phone survey to examine factors associated with consumer attitudes and intention to use MV. It integrates multi-level psychosocial determinants such as impression management and perceived facilitation, with the constructs of the Theory of Planned Behavior (TPB) and types of social norms to further investigate their relations to intention for MVU.

## Literature Review

Prior studies primarily identified perceived attributes of MV services as key determinants for adoption and examined the motivations of different age groups to use MV (Pagani, 2004; Lin & Chiu, forthcoming). To the best of our knowledge, none has incorporated consumer socio-psychological factors in the TPB model and examined their associations with various social norms, attitude, and perceived control of MVU which influence intention to use the new media. This study aims to integrate multi-level, context-specific factors to the TPB model in order to enhance the understanding and explicability of MVU intention.

### Theory of Planned Behavior (TPB)

TPB has been applied to diverse research areas such as consumer behavior (Lee, Murphy, & Swilley, 2009), Internet usage (Lee & Choi, 2009) and technology adoption (Ajjan & Hartshorne, 2008). In TPB, Ajzen (1991, p. 181) pinpoints three determinants (i.e.,

attitude, subjective norms, and perceived behavioral control) affecting behavioral intention that refers to the effort involved in performing the behavior. According to Fishbein and Ajzen (1975, p. 302), "attitude" means the degree of an individual's evaluation of self-performing a particular behavior, while subjective norm is an individual's perception of the majority's responses to the behavior in question. Perceived behavioral control builds on both the degree to which people believe that performing the behavior is up to them (i.e., controllability) and people's perceived ease to perform the behavior (i.e., self-efficacy) (Ajzen, 2006; Conner & Armitage, 1998). Controllability can be understood as people's beliefs about their possession of mobile devices or having time to use them to watch videos. Self-efficacy is related to people's confidence in their ability to use a mobile device to watch videos.

When attitude and subjective norm are positively associated with a behavior, the greater the perceived behavioral control, and the stronger the intention of an individual to perform the behavior (Ajzen, 1991). However, the relative importance of the three factors in predicting intention is expected to vary depending on specific behaviors and contexts (Ajzen, 1991). Hence, we propose the following hypothesis:

*H1: (a) Attitude, (b) subjective norm, and (c) perceived behavioral control are positively associated with people's intention for MVU.*

The TPB model has been criticized for its failure to provide a full understanding of behavior formation as it does not have a uniform standard for attitude and subjective norms (Taylor & Todd, 1995). In order to investigate the factors affecting MVU, it is necessary to incorporate context-specific factors to the TPB model. Three variables from psychological (i.e., impression management) and societal levels (i.e., perceived government facilitation and perceived operator facilitation) are added to examine their influence on TPB's three determinants. This study further investigates how specific types of social norms (i.e., individual injunctive norm, individual descriptive norm, collective injunctive norm, and

collective descriptive norm) may be associated with intention for MVU based on the social norm approach (Lapinski & Rimal, 2005). The following sections review relevant literature to explain relationships among new variables integrated to the TPB model in the context of MVU.

**Subjective Norm and Social Influences**

Subjective norm is found to play an instrumental role in predicting behavior intentions to adopt new media technologies (Hopp, 2013). It is positively related to the expanded intention to use mobile videophones (Chen et al., 2013). Group norm can be used to predict adolescents' intentions to use social network sites and related behavior (Baker & White, 2010). Relative influences of subjective norms on behavior vary across different cultures and populations in their predictive power (Fishbein & Ajzen, 1975). While some studies have attempted to remove subjective norms from TPB because they have the weakest explanatory power among the three components (e.g., Armitage & Conner, 2001), others made efforts to re-conceptualize subjective norms by examining the role of social influences and normative factors in attitude-behavior relationships (Cialdini, Kallgren, & Reno, 1991; Terry, Hogg, & White, 1999). The social norms approach is one instance of the latter, positing two types of social norms: injunctive norms and descriptive norms (Berkowitz, 2004; Perkins & Berkowitz, 1986).

Injunctive norms refer to people's perceptions about what ought to be done while descriptive norms are perceptions about what is actually performed by others in one's social group (Cialdini, Reno, & Kallgren, 1990). The former highlights potential social consequences for engaging or not engaging in certain behaviors (Lapinski & Rimal, 2005). The latter is closely related to concepts such as critical mass (Markus, 1990) and perceived popularity. The impact of injunctive norms can be understood when people watch MV to keep up with latest happenings and avoid being left out in conversations. People use MV

because many in their social networks regard it as a popular and trendy activity, which can be explained by descriptive norms.

Another approach in which researchers distinguish subjective norms is whether they are collective or individual, equivalent to that of societal and personal norms (Park & Smith, 2007; Park, Jung, & Lee, 2011). Collective norms function at the level of social groups or communities which represents a collective social entity or society's guidelines on expected behavior (Bettenhausen & Murnighan, 1985). In contrast, individual norms operate at the psychological level, representing an individual's interpretation of prevailing collective norms (Lapinski & Rimal, 2005) or an individual's internalized moral rules (Parker, Manstead, & Stradling, 1995).

Social norms in TPB have been largely utilized for intentions related to socially desirable behaviors such as organ donation (Park & Smith, 2007) or taboos such as adolescent smoking (Conner et al., 2006). In this regard, it is worth investigating social norms of MVU in TPB since personal entertainment activities involve less moral judgment and their influence by social norms has not been previously examined. Taken together, this study attempts to increase the predictability of TPB by extending the concept of subjective norms in the traditional TPB model and proposes the following hypotheses to investigate how the four additional norms are related to MVU:

*H2: (a) Individual descriptive, (b) individual injunctive; (c) collective descriptive; and (d) collective injunctive norms are positively associated with people's intention for MVU.*

In order to further clarify conceptual differences of the four social norms, we test impression management, perceived government facilitation, and perceived operator facilitation from individual and collective levels.

**Impression Management**

According to Goffman (1959), impression management refers to how a person manages his own image to make good impressions on others. Social norms shape this type of self-perception (Britton, et al., 2006) which often influences people's social behavior (Jones & Pittman, 1982). Widely studied in Computer Mediated Communication (CMC), impression management involves active engagement of self-presentation strategies (Walther & Burgoon, 1992) to control online information of the self and form virtual images in audiences' minds (Jung, Song, & Vorderer, 2012; Schlenker, 2004). Impression management is regarded as an integral part of Facebook communication (Rosenberg & Egbert, 2011) and social network site users' communication behavior is closely related to impression formation (Tong et al., 2008; Walther et al., 2008).

Comparatively, there has not been much research about impression management in mobile communication. Katz and Sugiyama (2006) found youths in US and Japan considered using mobile phones as a way of self-expression and as fashion lens to evaluate others. Early adopters of WAP-enabled mobile phones were considered trendy or technology-savvy in UK (Mackenzie & O'Loughlin, 2000). When watching MV is likely to enhance one's image or status in a social system, people may be motivated to use it as a self-presentation strategy. Moreover, people who pay attention to making a good impression on others may have more positive attitudes and be more sensitive to others' perception and behavior (i.e., individual social norms), with respect to MVU. As impression management is related to social norms (Britton et al., 2006), it is integrated into this proposed model as a predictor for MVU.

Hence, we propose the following hypotheses regarding impression management:

*H3: Impression management is positively associated with (a) attitude, (b) subjective norm, (c)individual injunctive, and (d) descriptive norm for MVU.*

**Perceived Government and Operator Facilitation**

Perceived government and operator facilitation are societal-level factors that may influence collective injunctive and descriptive norms. As of March 2014, Singapore's wireless broadband penetration and mobile penetration reached 184.8% and 156.3% respectively, with more than 8 million 3G/4G mobile subscribers (IDA, 2014). Singapore has the highest smartphone ownership in the world (Reed, 2013) which is a positive force for MVU. People are likely to adopt new technologies if they perceive that the external environment is generally supportive of their use.

Government endorsement and policy support are crucial to facilitate the development of MV business (Lin & Liu, 2011; Lin, 2012). The Singapore government fosters the development of mobile media and communication through a dual regulatory system: the Infocomm Development Authority of Singapore (IDA) supervises the establishment of sophisticated mobile networks while the Media Development Authority (MDA) regulates media content and licensing and encourages advancements in mobile media (Lin & Liu, 2011). A technology-neutral, light-touched regulatory framework is recommended to foster the nascent mobile TV development (Lin, 2010). In a similar vein, mobile operators play a vital role in facilitating MVU. After mobile broadcasting TV trials in 2008, Singapore's mobile operators have become active in providing various MV services. According to Teo and Pok (2003), when mobile operators increase the awareness of MVU in technological and content aspects, it indirectly leads to increasing adoption among potential users. Consumers are more likely to consider using MV if operators can offer diverse and compelling content/services with reasonable pricing (Kaasinen et al., 2009).

Thus, we propose that the societal level factors of perceived government and operator facilitation are likely to influence social norms at the collective level:

*H4: Perceived government facilitation is positively associated with (a) collective injunctive and (b) descriptive norm for MVU.*

*H5: Perceived operator facilitation is positively associated with (a) collective injunctive and (b) descriptive norm for MVU.*

<Figure 1 about here>

**Methodology**

The data for this study came from a nationally representative sample of 503 Singapore residents aged 18 years and older. Trained interviewers conducted the computer-assisted telephone interviews (CATI). Random-digit dialing procedures were used to contact households and a within-household sample was obtained using the youngest male/oldest female (YMOF) technique[2]. Before asking questions, this study defined MVU as watching any live, on-demand, or streaming audiovisual content via portable devices (e.g., mobile phones and tablets) regardless of technological standards and delivery modes. Interviews lasted an average of 13.66 minutes and were conducted in English (82.3%) and Mandarin (17.7%), the two most commonly spoken languages in Singapore. The response rate was 38.6% (calculated using AAPOR RR3).

Compared with the latest population data released by the Singapore Department of Statistics,[3] the data was comparable to the population in terms of gender distribution (51.7% females) and income (median income = "between $4,000 to $5,000"). However, the sample slightly underrepresented Malays (75.3% "Chinese," 10.6% "Malay," 10.2% "Indian," and 3.8% "Others"); respondents tended to be older ($M$ = 38.71, $SD$ = 13.86) and slightly more educated (post-secondary qualification).

**Measures**

[2] A within-household sample was obtained by asking to speak with the "youngest male, 18 years or older, who is now at home." If no eligible male was present, then the interviewers would ask to speak to the "oldest female, 18 years or older, who is now at home." This youngest male/oldest female technique, while considered a non-probability selection technique, has been found to yield a more demographically representative sample without increasing the refusal rate (Gaziano, 2005).

[3] Singapore's demographics are as follows: Gender – 50.6% female; ethnic group – 74.2% Chinese, 13.4% Malay, 9.2% Indian, 3.2% Others; median education – lower secondary qualification; median income – $4,950.

*Impression management* (*M* = 4.01, *SD* = 1.42, α = .87) was measured by four 7-point items (1 = strongly disagree, 7 = strongly agree): (a) "I talk proudly about my experiences of mobile video use," (b) "I make people aware of my using of mobile videos," (c) "I let others know that I am valuable to the organization," and (d) "I make people aware of my accomplishments." The items were adapted from Bolino and Turnley (1999) and were averaged to create a composite index, with higher scores indicating greater desire to make a good impression on others. Since the majority of the respondents are working adults and schools are educational organizations, this measurement is suitable for the study.

*Perceived government facilitation* (*M* = 4.21, *SD* = 1.43, *r* = .67) was measured by two items from Teo and Pok (2003): (a) "The government endorses mobile video use in Singapore," and (b) "The Singapore government promotes the use of mobile videos." The items were anchored on a 7-point scale (1 = strongly disagree, 7 = strongly agree).

*Perceived operator facilitation* (*M* = 4.83, *SD* = 1.55, *r* = .85) was measured by two items on a 7-point scale (Teo & Pok, 2003): (a) "The mobile operators (i.e., Singtel, StarHub, and M1) actively promote mobile video use," and (b) "The mobile operators (i.e., Singtel, StarHub, and M1) are active in promoting mobile video use."

*Attitude toward mobile videos* (*M* = 4.21, *SD* = 1.45, α = .90) was measured by seven items adapted from the study of Park, Jung, and Lee (2011). Respondents were asked the following questions about their attitudes toward MVU: (1) "enjoyable," (2) "pleasant," (3) "favorable," (4) "wise," (5) "useful," (6) "important," and (7) "beneficial" by using 7-point Likert scales (1 = strongly disagree, 7 = strongly agree).

*Subjective norm* (*M* = 3.09, *SD* = 1.46, α = .88) was a composite measure with three items adapted from the study of Park and Smith (2007) on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Each social norm was measured using three 7-point items (1 = strongly disagree, 7 = strongly agree) adapted from the same study: *Individual descriptive*

*norm* (*M* = 4.03, *SD* = 1.57, α = .90); *Individual injunctive norm* (*M* = 4.00, *SD* = 1.48, α = .86); *Collective descriptive norm* (*M* = 4.71, *SD* = 1.31, α = .82); *Collective injunctive norm* (*M* = 4.34, *SD* = 1.37, α = .90).

*Exploratory factor analysis*. In order to test whether subjective norm, descriptive norm, and injunctive norm both in the individual and collective levels are distinctive constructs, we conducted an exploratory factor analysis (EFA). Table 1 shows the results, with an orthogonal Varimax rotation, empirically confirming the distinctiveness of the five constructs of social norms.

<Table 1 about here>

*Perceived behavioral control* (*M* = 4.92, *SD* = 1.34, α = .75) was measured on two dimensions, *self-efficacy* and *controllability*, with 7-point items adapted from Park, Jung, and Lee (2011) (1 = strongly disagree, 7 = strongly agree). Two items that measure *self-efficacy* include (a) "I am confident about using my mobile phone to watch videos," and (b) "I know how to watch videos on my mobile phone." Controllability was measured by another two items: (a) "I have control over watching videos on my mobile phone," and (b) "It is mostly up to me whether or not I watch videos on my mobile phone."

*Behavioral intention* (*M* = 4.06, *SD* = 1.59, α = .75) was measured using three items anchored on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree): (a) "I will watch mobile videos in the future," (b) "I will frequently watch mobile videos in the future," and (c) "I will strongly recommend others to watch mobile videos."

Finally, a series of demographic measures, including age, income, educational level, and gender were controlled in the analysis.

## Results

A path analysis with a series of multiple regression analyses was first conducted to test the hypotheses. Hierarchical multiple regression analyses were also used to examine the explicability of additional variables in the extended model. Finally, a mediation analysis was used to investigate the mediating effects of attitude, subjective norm, and social norms as a post-hoc analysis.

**Demographics of Mobile Video Users**

Among the 503 respondents, 122 (20.2%) watched videos on mobile phones with an average of 1.65 hours of MVU weekly (*SD* = 1.84) and spent $10.10 per month (*SD* = 22.85). In terms of preferred content, watching videos via mobile Internet was the most popular with 62.3% of users showing interest, followed by downloaded videos (48%) and user-generated content (15%). Among non-users, the majority (57.4%) showed no interest in watching MV while 12.6% of them said they would start to use them within six months. Taken together, the results indicated that the diffusion of MV in Singapore was still in the early adopter stage during the data collection period in 2010.

In order to understand the effects of basic demographic factors on the likelihood of adopting MV, a post-hoc maximum likelihood estimation of a logit model was conducted. The Wald statistic, the equivalent of the *t* test in linear regression, was used to determine the statistical significance of the logit coefficients (Knoke, Bohrnstedt, & Mee, 2002). The odds for MVU increased with older (Exp [β] = 1.07, $p < .01$) and female (Exp [β] = 2.26, $p < .01$) respondents. Specifically, a one-year increase in respondents' age increased the odds of MVU by 7%. Interestingly, the odds for women using MV were 2.26 times higher than the odds for men. No significant differences were found with respect to income and education.

**Path Analysis**

Table 2 shows the correlation matrix of all the measured variables. The correlation coefficients among these variables are less than .6, indicating that they have discriminant validity.

<Table 2 about here>

Consistent with Hypothesis 1, the results of a path analysis showed that all three major elements of TPB were significant predictors for people's intention for MVU (attitude: $\beta$ = .36, $p$ <.01; subjective norm: $\beta$ = .17, $p$ <.01; and perceived control: $\beta$ = .18, $p$ <.01) after controlling for demographic information such as age, gender, income, and educational level (see Figure 2). Therefore, H1 was supported.

Hypothesis 2 was partially supported. Only individual injunctive norm (H2a) was significantly associated with intention for MVU ($\beta$ = .18, $p$ <.01). The rest of the social norms were not significant predictors of intention in the path model despite their significant association in zero-order correlations (see Table 2). Nevertheless, the results of a hierarchical multiple regression analysis showed that adding four different types of social norms could account for 4% more variation in intention ($R^2$ change = .04, $p$ < .001).

Consistent with H3, impression management was significantly associated with attitude ($\beta$ = .18, $p$ <.01), subjective norm ($\beta$ = .13, $p$ <.05), and individual injunctive ($\beta$ = .12, $p$ <.05) and descriptive norm ($\beta$ = .15, $p$ <.01). Thus, H3 was supported. Perceived government and operator facilitation were significant predictors of collective injunctive ($\beta$ = .20, $p$ <.01 and $\beta$ = .14, $p$ <.05, respectively) and descriptive norm ($\beta$ = .14, $p$ <.05 and $\beta$ = .18, $p$ <.05, respectively) as hypothesized. H4 and H5 were also supported.

Taken together, approximately 62% of the variance of intention for MVU in the sample could be accounted for by the linear combination of the variables in the integrated model ($R^2$ = .62).

<Figure 2 about here>

**Hierarchical Multiple Regression Analyses**

Hierarchical multiple regression analyses were conducted to further examine the additional predictability of newly integrated factors for intention to use MV. In Table 3, *intention* is the dependent variable in the set of the analyses. First, intention and demographic variables such as age, gender (dummy coded), educational level, and income level were entered, followed by the three main components of TPB (i.e., attitude, subjective norm, and perceived behavioral control); next, impression management, perceived government facilitation, and perceived operator facilitation; and finally the four different types of social norms.

<Table 3 about here>

Consistent with TPB, the results showed that attitude, subjective norm, and perceived behavioral control were significant predictors of *intention* when added to the equation in the second step. The multiple correlation with the three TPB components was highly significant ($R^2$ = .58; see Table 3). The addition of impression management, perceived government, and operator facilitation in the third step of the hierarchical regressions analysis led to a small and non-significant increase in explained variance for intention for MVU ($R^2$ change = .005). Finally, adding four different types of social norms resulted in a 4% increase in predictability for intention ($R^2$ change = .04, $p < .001$).

**Post-hoc Mediation Analysis**

The single-step multiple mediator model by Preacher and Hayes (2004) was used to examine whether the effect of impression management on intention for MVU was mediated by attitude, subjective norm, and individual injunctive norm (cf., the other three social norms were not included due to their non-significant association). Using the SPSS macro for conducting the single-step multiple mediation analysis (Preacher & Hayes, 2004), the results indicated that the bootstrapped specific indirect effects through attitude, subjective norm, and

individual injunctive norm were all significant for intention to use MV. Specifically, the results showed that the bootstrapped specific indirect effect for intention through attitude was estimated to lie between 0.07 and 0.18, subjective norm between 0.01 and 0.06, and individual injunctive norm between 0.02 and 0.08, all with 95% confidence interval. Thus the results of mediation analysis showed that the three variables mediated the effects of impression management on intention for MVU.

## Discussions and conclusion

This study examined multi-level factors that influenced people's intention to use MV based on the TPB model. It identified impression management as a psychological factor and government and operator facilitation as societal factors that affected attitude, subjective norm, individual injunctive norm, individual descriptive norm, collective injunctive norm, and collective descriptive norm, which in turn had a significant impact on people's intention for MVU.

### Explicability of TPB

A meta-analysis by Sutton (1998) reveals that TPB usually predicts between 40% and 50% of the variance in people's intention to pursue a particular behavior. This extended TPB model explained 62% of variance in intention for MVU, indicating its high predicting power. In line with prior research, attitude, subjective norm, and perceived behavioural control are all significantly associated with intention for MVU. The results of testing H1 confirmed the predictability of TPB in the context of MVU. Specifically, attitude shows the strongest degree of association ($\beta = .36$, $p < .01$) among the three components of TPB. This finding supports prior studies that found a significant association between attitude and behavioral intention (Armitage & Conner, 2001; O'Keefe, 2002). In addition, the data revealed that 20.48% respondents watched MV weekly, which indicates Singapore's MV market is at the early adopter stage. The relatively small size of regular users signifies the importance of

fostering potential users' positive attitude toward MVU. It also explains why social norms are not as critical as attitude in predicting since there have not been enough adopters (i.e., critical mass) to create peer influence or perceived popularity of MVU on potential users.

**Social Norms Approach**

The results of testing H2 showed that in addition to subjective norm, individual injunctive norm was significantly associated with intention. This finding, together with the results of the factor analysis, implies that subjective norm is conceptually different from the other four types of social norms, which is in line with prior research (e.g., Park & Smith, 2007; Park, Jung, & Lee, 2011). Hence, integrating the four social norms to TPB could enhance the TPB model's predictive power for intention to use MV.

It is worth noting that individual injunctive norm was the only significant factor among the four different social norms. Injunctive norms refer to the perceived approval of doing behaviors and represent perceived moral rules of the peer group (Borsari & Carey, 2003). In an early adopting market, how individuals believe in their significant others' approval of MVU can be vital to affect their adoption. However, collective injunctive norm was not significantly associated with intention, possibly because people may not pay so much attention to the perceived approval of the general public as watching MV is personal entertainment. Because MVU is different from the areas of desired behaviors (e.g., quitting smoking or organ donation) where TPB has been typically applied, our results demonstrate that individual injunctive norm and subjective norms can be applied to understand intention for personal activities, regardless of how desirable the behavior is.

Descriptive norms are related to the observed quantity and frequency of certain behaviors demonstrated by others (Borsari & Carey, 2003). Since MVU was at its infancy during data collection and not many people saw others watch videos on mobile phones, it is not so surprising that both individual and collective descriptive norms were not significantly

associated with intention for MVU. However, after MVU becomes prevalent and popular, individual and collective descriptive norms are likely to be significantly related to the intention to MVU because people can observe the usage easily. Another plausible explanation is that watching MV may be considered an individual activity as mobile devices are personal. For example, it is impolite to show keen interest in what others are doing with mobile phones in public spaces. As the predictive power of different social norms varies from behavior to behavior, this implies different roles of the norms in particular contexts and invites further research.

**Individual and Societal Level Factors**

Introducing impression management as a new variable in TPB is novel as little research has investigated the relations between impression management and mobile communication. The results of testing H3 and 4 demonstrated that impression management had a significant impact on attitude, subjective norm, and individual injunctive norm, which in turn influenced intention for MVU. Although integrating impression management to the TPB components did not increase the predictability of the model significantly, the post-hoc mediation analysis revealed that impression management had an indirect effect on intention via attitude, subjective norm, and individual injunctive norm. The integrated model could explain 62% of variation in intention ($R^2$ = .62). This finding implies that people who have a strong desire to make good impressions are likely to develop a positive attitude toward MVU and perhaps adopt the new media earlier for the purpose of enhancing self image. By integrating impression management to the TPB elements, the new model enhances the understanding of individuals' behavioural intention for mobile media use.

Additionally, we found significant relationships among perceived government and operator facilitation and two collective norms. In other words, the more people perceive government and operator facilitation in MV services, the more likely they believe the societal

level of consensus about the popularity and their obligation to use them. Although we identified government and operator facilitation as influencing collective injunctive and descriptive norms, these collective norms did not significantly influence intention for MVU probably due to its infant adoption. However, the societal level factors and collective norms may play a more significant role as the MV market gets mature with more users (cf., The Tipping Point, Gladwell, 2002). In this regard, it will be interesting to examine the dynamics of relative impacts of different social norms and multi-level factors, with respect to the market maturity stages in future research.

Interestingly, gender and age are found to be significant demographic predictors for the adoption of MV: females are more likely to watch MV than males, and older people tend to use MV more often. These findings contradict the patterns in prior studies: either little gender difference in mobile phone use (Economides & Grousopoulou, 2008; Lee & Lee, 2010) or reverse results where young males led MV usage (Quealy, 2010) and used more mobile phones for technical and game-related behaviors (Watten et al., 2010). However, another study which found that enjoyment was a strong determinant of females' mobile usage (Nysveen, Pedersen, & Thorbjørnsen, 2005) provided a plausible explanation for this rather surprising result. If Singaporean females believed watching MV brought pleasure and socialization values, they might show more interest in adoption. Even if diffusion studies often found younger users more avid in using mobile technologies (Walsh et al., 2011), the gap between the older and younger generations in using mobile devices is narrowing (Smith, 2011). Using MV is relatively affordable for older people. Initially, MV services in Singapore provided conventional TV content that appealed to older people, while the youth prefer original content such as user-generated videos and social media. These all explain why older mobile phone users are more likely to adopt MV. Moreover, the relation of gender and MVU can be examined in other countries to make comparisons in future research.

Prior studies showed cultural factors played a crucial part in mobile phone usage. When comparing mobile phone practices among university students in Sweden, USA, and Japan, Baron and Af Segerstad (2010) found a number of culturally associated differences such as attitudes towards quiet public space, personal use of public space, and tolerance of self-expression. Watching MV in front of co-present friends and acquaintances is considered impolite in Japan, while Europeans sometimes use viewing MV as a way to secure personal time and space in public sphere (O'Hara, Mitchell, & Vorbau, 2007). Cultures may influence social motivations and values of MVU. People in collectivistic cultures are known to have chronic awareness of the watchful eyes of others (Yamagishi, Hashimoto, & Schug, 2008). In this regard, the impact of impression management on intention for MVU may be stronger in collectivistic cultures as people are likely to be more sensitive to others' acknowledgement of technology-related behaviors. A collectivistic culture in South Korea was identified as a driver for prevalent use of MV as people intended to maintain positive images among their social groups by adopting popular technologies (Lee, Ryu, & Kim, 2010). In this sense, future research can further examine how cultural factors are related to impression management and social norms in the context of mobile media use.

With respect to limitations, the majority in the sample was non-users as MV diffusion was at the early adopter stage. We could not compare the two groups (adopters and non-adopters) as a result of the relatively small size of users even if prior experiences of MVU might affect the degree to which factors are significantly associated in the integrated model. The study can be duplicated at different market stages and in different cultures, which provides good opportunities not only for the user/non-user comparison, but also for intercultural comparison research. Moreover, future research should further adjust the measurement of impression management to the MV context.

In a nutshell, this study develops an extended TPB model by integrating socio-psychological factors and various social norms which provides good predicting power to understand the use of emerging mobile media. People who desire to make a good impression on others are more likely to have a positive attitude toward MV and develop social norms such that they not only support MVU but also believe that they ought to use MV, probably in order to keep up with their good impression. Taken together, the integration of the constructs of TPB, social norms, and impression management can serve as a fruitful theoretical process for examining people's intention to use personal entertainment activities in addition to socially desirable behaviors. Impression management is identified as a crucial factor related to social norms and mobile media use. This study also differentiates subjective norm from other social norms, and finds the association of individual injunctive norm with MVU at the early adopter stage. We suggest future research identify and integrate various context-specific factors to enhance the explicability of the integrated TPB model in different contexts.

## References

Ajjan, H., and Hartshorne, R. (2008). Investigating faculty decisions to adopt Web 2.0 technologies: Theory and empirical tests. *Internet and Higher Education*, 11, 71–80.

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

Ajzen, I. (2006). *Constructing a TPB questionnaire: Conceptual and methodological considerations*. Retrieved from http://www.unibielefeld.de/ikg/zick/ajzen%20construction%20a%20tpb%20questionnaire.pdf

Armitage, C. J., and Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology*, 40, 471–499.

Baker, R. K. , and White, K. M. (2010). Predicting adolescents' use of social networking sites from an extended theory of planned behaviour perspective. *Computers in Human Behavior*, 26(6), 1591-1597.

Baron, N. S., and Af Segerstad, Y. (2010). Cross-cultural patterns in mobile-phone use: public space and reachability in Sweden, the USA and Japan, *New Media & Society*, 12(1), 13-34.

Berkowitz, A. D. (2004). *The social norms approach: Theory, research and annotated bibliography*. Retrieved from http://www.alanberkowitz.com/articles/social_norms.pdf

Bettenhausen, K. L., and Murnighan, J. K. (1985). The emergence of norms in competitive decisionmaking groups. *Administrative Science Quarterly*, 30, 350–372.

Bolino, M. C., and Turnley, W. H. (1999). Measuring impression management in organizations: A scale development based on the Jones and Pittman taxonomy. *Organizational Research Methods*, 2(2), 187-206.

Borsari, B. M. S., and Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies of Alcohol and Drugs*, 64, 331–341.

Britton, L. E., Martz, D. M., Bazzini, D. G., Curtin, L. A., and Martz, D. M. (2006). Fat talk and self-presentation of body image: Is there a social norm for women to self-degrade? *Body Image*, 3(3), 247-254.

Buchinger, S., Kriglstein, S., Brandt, S., and Hlavacs, H. (2011). A survey on user studies and technical aspects of mobile multimedia applications. *Entertainment Computing*, 2(3), 175-190.

Campbell, D. T. (1960). Recommendations for APA test standards regarding construct, trait, or discriminant validity. *The American Psychologist*, 15, 546–553.

Cialdini, R. B., Kallgren, C. A., and Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and revaluation of the role of norms in human behaviour. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (vol. 24), (pp. 201–233). San Diego, CA: Academic Press.

Cialdini, R. B., Reno, R. R., and Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58, 1015–1026.

Chen, W., Huang, H. & Chou, S. T. (2013). Understanding what determines consumers' expanded use of mobile videophones. *Behaviour & Information Technology*, 31 (10), 953-967.

Conner, M., and Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology*, 28, 1429–1464.

Conner, M., Sanberg, T., McMillan, B., and Higgins, A. (2006). Role of anticipated regret, intentions and intention stability in adolescent smoking initiation. *British Journal of Health Psychology*, 11(1), 85-101.

Economides, A. A., and Grousopoulou, A. (2008). Use of mobile phones by male and female Greek students. *International Journal of Mobile Communications*, 6, 729–749.

Ericsson Consumerlab. (2012, August). TV and video: an analysis of evolving consumer habits. Retrieved from http://www.ericsson.com/res/docs/2012/consumerlab/tv_video_consumerlab_report.pdf

Fishbein, M., and Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Gladwell, M. (2002). *The tipping point: how little things can make a bid difference*. New York: Little, Brown and Company.

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

Hopp, T. M. (2013). Subjective norms as a driver of mass communication students' intentions to adopt new media production technologies, *Journalism & Mass Communication Educator*, 68 (4), 348-364.

Infocomm Development Authority of Singapore (IDA). (2014). *Statistics on Telecom Services for 2014 (Jan-Jun)*. Retrieved from http://www.ida.gov.sg/Infocomm-Landscape/Facts-and-Figures/Telecommunications/Statistics-on-Telecom-Services/Statistics-on-Telecom-Services-for-2014-Jan-Jun

Jones, E. E., and Pittman, T. S. (1982). Toward a general theory of strategic self-presentation. In J. Suls (Ed.), *Psychological perspectives on the self* (pp. 231–262). Hillsdale, NJ: Lawrence Erlbaum Associates.

Jung, Y., Song, H., and Vorderer, P. (2012). Why do people post and read personal messages in public? The motivation of using personal blogs and its effects on users' loneliness, belonging, and well-being. *Computers in Human Behavior*, 28(5), 1626-1633.

Kaasinen, E., Kulju, M., Kivinen, T., and Oksman, V. (2009). User acceptance of mobile TV services, Proceedings of the 11th International Conference on Human-Computer Interaction with Mobile Devices and Services. 15-18 September, 2009, New York, USA. Article No. 31. Retrieved from http://dl.acm.org/citation.cfm?id=1613898&dl=ACM&coll=DL&CFID=440213044&CFTOKEN=29108280

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

Lapinski, M. K., and Rimal, R. N. (2005). An explication of social norms. *Communication Theory*, 15, 127–147.

Lee, W. J., and Choi, H. C. (2009). Understanding meeting planners' internet use behavior: An extension to the theory of planned behavior. *International Journal of Hospitality & Tourism Administration*, 10(2), 109-128.

Lee, H., and Lee, S. (2010). Internet vs mobile services: Comparisons of gender and ethnicity. *Journal of Research in Interactive Marketing*, 4, 346–375. Retrieved from http://www.ingentaconnect.com/content/mcb/jrim/2010/00000004/00000004/art00004

Lee, H., Ryu, J., and Kim, D. (2010). Profiling mobile TV adopters in college student populations of Korea. *Technological Forecasting and Social Change*, 77, 514–523.

Lee, R., Murphy, J., and Swilley, E. (2009). The moderating influence of hedonic consumption in an extended theory of planned behaviour. *Service Industries Journal*, 29, 539–555.

Lin, T. T. C. (2010). The Gordian knot of Singapore's mobile TV policy. *Journal of International Commercial Law and Technology 5*, 11–21.

Lin, T. T. C. (2012). Market competitiveness of mobile TV industry in China. *Telecommunications Policy*, 36, 943–954.

Lin, T. T. C., and Chiu, C. (Forthcoming). Investigating adopter categories and determinants affecting the adoption of mobile television in China. *China Media Research*.

Lin, T. T. C., and Liu, Y. L. (2011). The development of mobile broadcasting TV: A socio-technical comparison of Singapore and Taiwan. *Asian Journal of Communication 21*, 4–24.

Lomas, N. (2014, April 1). *Larger phone screens drive mobile video consumption*. Retrieved from http://techcrunch.com/2014/04/01/phablets-love-mobile-video/

Knoke, D., Bohrnstedt, G. W., and Mee, A. P. (2002). *Statistics for social data analysis*. Itasca, NY: F. E. Peacock.

Mackenzie, M., and O'Loughlin, M. A. (2000). *WAP market strategies*. London, UK: Ovum Ltd.

Markus, M. L. (1990). Toward a critical mass theory of interactive media. In J. Fulk and C. Steinfield (Eds.), *Organizations and communication technology* (pp. 194–218). Newbury Park, CA: Sage.

Miyauchi, K., Sugahara, T., and Oda, H. (2009). Relax or study? A qualitative user study on the usage of live mobile TV and mobile video. *ACM Computers in Entertainment*, 7 (3), Article No. 43. Retrieved from http://dl.acm.org/citation.cfm?id=1594955.

Nielsen Wire. (2012). *A Nielsen report: global online consumers and multi-screen media: today and tomorrow.* Retrieved from http://retelur.files.wordpress.com/2007/10/nielsenmultiscreenmediareportmay2012-120520123622-phpapp01.pdf

Nysveen, H., Pedersen, P., and Thorbjørnsen, H. (2005). Explaining intention to use mobile chat services: moderating effects of gender. *Journal of Consumer Marketing*, 22, 247–256.

O'Hara, K., Mitchell, A. S., and Vorbau, A. (2007, May). Consuming video on mobile devices. *Proceedings of the SIGCHI conference 2007 on human factors in computing systems*. 28 April-3 May, 2007, San Hose, USA. (PP. 857-866). Retrieved from http://dl.acm.org/citation.cfm?id=1240754

O'Keefe, D. J. (2002). *Persuasion: Theory and research* (2nd ed.). Thousand Oaks, CA: Sage.

Pagani, M. (2004). Determinants of adoption of third generation mobile multimedia services. *Journal of Interactive Marketing 18,* 45–59.

Park, N., Jung, Y., and Lee, K. M. (2011). Intention to upload video content on the Internet: The role of social norms and ego-involvement. *Computers in Human Behavior*, 27 (5), 1996-2004.

Park, H. S., and Smith, S. W. (2007). Distinctiveness and influence of subjective norms, personal descriptive and injunctive norms, and societal descriptive and injunctive norms on behavioral intent: A case of two behaviors critical to organ donation. *Human Communication Research*, 33, 194–218.

Parker, D., Manstead, A. S. R., and Stradling, S. G. (1995). Extending the theory of planned behaviour: The role of personal norm. *British Journal of Social Psychology*, 34, 127–137.

Perkins, H. W., and Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *International Journal of the Addictions*, 21, 961–976.

Preacher, K. J., and Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods*, 36, 717–731.

Quealy, S. (2010, April 8). *Orange insight on gender and mobile usage*. Retrieved from http://www.gomonews.com/orange-insight-on-gender-and-mobile-usage

Reed, C. J. (2013, January 11). *Singapore leads the world on smartphone penetration-bad news for Apple*. Retrieved from http://wallblog.co.uk/2013/01/11/singapore-leads-the-world-on-smartphone-penetration-bad-news-for-apple/

Rosenberg J., and Egbert, N. (2011). Online impression management: Personal traits and concerns for secondary goals as predictors of self-presentation tactics on Facebook, *Journal of Computer-Mediated Communication*, 17(1), 1-18.

Smith, J. (2011, February 3). *Age gap narrowing in use of mobile devices*. Retrieved from

http://techdailydose.nationaljournal.com/2011/02/age-gap-narrowing-in-use-of-mo.php

Sutton, S. (1998). Predicting and explaining intentions and behavior: How well are we doing? *Journal of Applied Social Psychology*, 28, 1317–1338.

Taylor, S., and Todd, P. A. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, 12, 137–155.

Teo, S. H., and Pok. S. H. (2003). Adoption of WAP-enabled mobile phones among Internet users. *Omega*, 31, 483–498.

Terry, D. J., Hogg, M. A., and White, K. M. (1999). The theory of planned behavior: Self-identity, social identity, and group norms. *British Journal of Social Psychology*, 38, 225–244.

Tong, S. T., Van Der Heide, B., Langwell, L., & Walther, J. B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication*, 13, *531–549.*

Von Pape, T., and Karnowski, V. (2012). Which place for mobile television in everyday life? In Martin, C. & Von Pape, T. (Eds.), *Images in mobile communication: new concepts, new uses, and new perspectives* (edition, pp.101-120), Verena Metzger, Germany: VS Research.

Walsh, S. P., White, K. M., Cox, S., and Young, R. M. (2011). Keeping in constant touch: The predictors of young Australians' mobile phone involvement. *Computers in Human Behavior 27*, 333–342.

Walther, J. B., and Burgoon, J. K. (1992). Relational communication in computer mediated interaction. *Human Communication Research*, 19, 50–88.

Watten, R. G., Kleiven, J., Fostervold, K. I., Fauske, H., and Volden, F. (2010). Gender profiles of internet and mobile phone use among Norwegian adolescents. *International Journal of Media, Technology and Lifelong Learning,* 4(3). Retrieved from http://seminar.net/index.php/volume-4-issue-3-2008-previousissuesmeny-125/111-gender-profiles-of-internet-and-mobile-phone-use-among-norwegian-adolescents

Yamagishi, T., Hashimoto, H., and Schug, J. (2008). Preferences versus strategies as explanations for culture-specific behavior. *Psychological Science,* 19, 579–584.

Table 1
*Exploratory Factor Analysis for Social Norms*

| Items | Factor loadings | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Factor 1: Subjective norm | | | | | |
| Most people important to me think that I should watch mobile videos. | .877 | | | | |
| Most people whose opinions I value consider that I should watch mobile videos. | .873 | | | | |
| It is expected of me that I watch mobile videos. | .776 | | | | |
| Factor 2: Individual injunctive norm | | .678 | | | |
| Most people important to me would endorse my usage of mobile videos. | | .824 | | | |
| Most people whose opinion I value would approve of my mobile video use | | .711 | | | |
| Most people important to me would support that I watch mobile videos. | | | | | |
| Factor 3: Individual descriptive norm | | | | | |
| Most people who are important to me have watched mobile videos or will do so in the near future. | | | .838 | | |
| Most people whose opinion I value have watched mobile videos or will do so in the near future. | | | .829 | | |
| Most people who are important to me will watch mobile videos. | | | .710 | | |
| Factor 4: Collective injunctive norm | | | | | |
| A majority of people in Singapore would endorse my usage of mobile videos. | | | | .752 | |
| A majority of people in Singapore would approve of my mobile video use. | | | | .838 | |
| A majority of people in Singapore would support that I watch mobile videos. | | | | .847 | |
| Factor 5: Collective descriptive norm | | | | | |
| A majority of people in Singapore have watched mobile videos or will do so in the near future. | | | | | .787 |
| A majority of people in Singapore have used their mobile phones to watch videos. | | | | | .824 |
| A majority of people in Singapore will watch mobile videos. | | | | | .779 |

Table 2

*Zero-Order Correlations of the Measured Variables* (*N* = 503)

| | IM | GF | OF | I | A | SN | IDN | IIN | CDN | CIN | PBC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Impression Management (IM) | - | | - | | | | | | | | |
| Government Facilitation (GF) | .14** | - | | | | | | | | | |
| Operator Facilitation (OF) | .04 | .48** | - | | | | | | | | |
| Use Intention (I) | .29** | .29** | .24** | - | | | | | | | |
| Attitude (A) | .25** | .31** | .23** | .68** | - | | | | | | |
| Subjective Norm (SN) | .16** | .37** | .26** | .54** | .49** | - | | | | | |
| Individual Descriptive Norm (IDN) | .19** | .27** | .29** | .54** | .48** | .54** | - | | | | |
| Individual Injunctive Norm (IIN) | .19** | .37** | .29** | .56** | .52** | .53** | .64** | - | | | |
| Collective Descriptive Norm (CDN) | .17** | .27** | .27** | .41** | .38** | .29** | .51** | .41** | - | | |
| Collective Injunctive Norm (CIN) | .22** | .28** | .27** | .48** | .47** | .38** | .46** | .63** | .56** | - | |
| Perceived Behavioral Control (PBC) | .22** | .23** | .28** | .50** | .47** | .24** | .34** | .36** | .37** | .37** | - |

*Note.* ** $p<.01$ (two-tailed).

Table 3

*Hierarchical Regressions of Intention for Mobile Video Use on Various Predictor Variables*

| | Step 2 | | Step 3 | | Step 4 | |
|---|---|---|---|---|---|---|
| Variable | *β* | *SE B* | *β* | *SE B* | *β* | *SE B* |
| Attitude | .42** | .05 | | | | |
| Subjective Norm | .30** | .04 | | | | |
| Perceived Behavioral Control | .18** | .05 | | | | |
| Impression Management | | | .07* | .04 | | |
| Government Facilitation | | | .00 | .05 | | |
| Operator Facilitation | | | .01 | .04 | | |
| Individual Injunctive Norm | | | | | .18** | .06 |
| Individual Descriptive Norm | | | | | .07 | .05 |
| Collective Injunctive Norm | | | | | .03 | .06 |
| Collective Descriptive Norm | | | | | .02 | .05 |
| $R^2$ | .58 | | .58 | | .62 | |
| $F$ for change in $R^2$ | 151.86** | | 1.39 | | 7.9** | |

*Note*: *β* = standardized regression coefficient, SE B = standard error of regression coefficient, *R* = multiple correlation. *$p < .05$, **$p < .01$ (two-tailed). Demographic variables such as age (*β* = -.33**), gender (*β* = -.09), income (*β* = -.05) and educational level (*β* = -.01) were entered in the first step in order to be controlled.

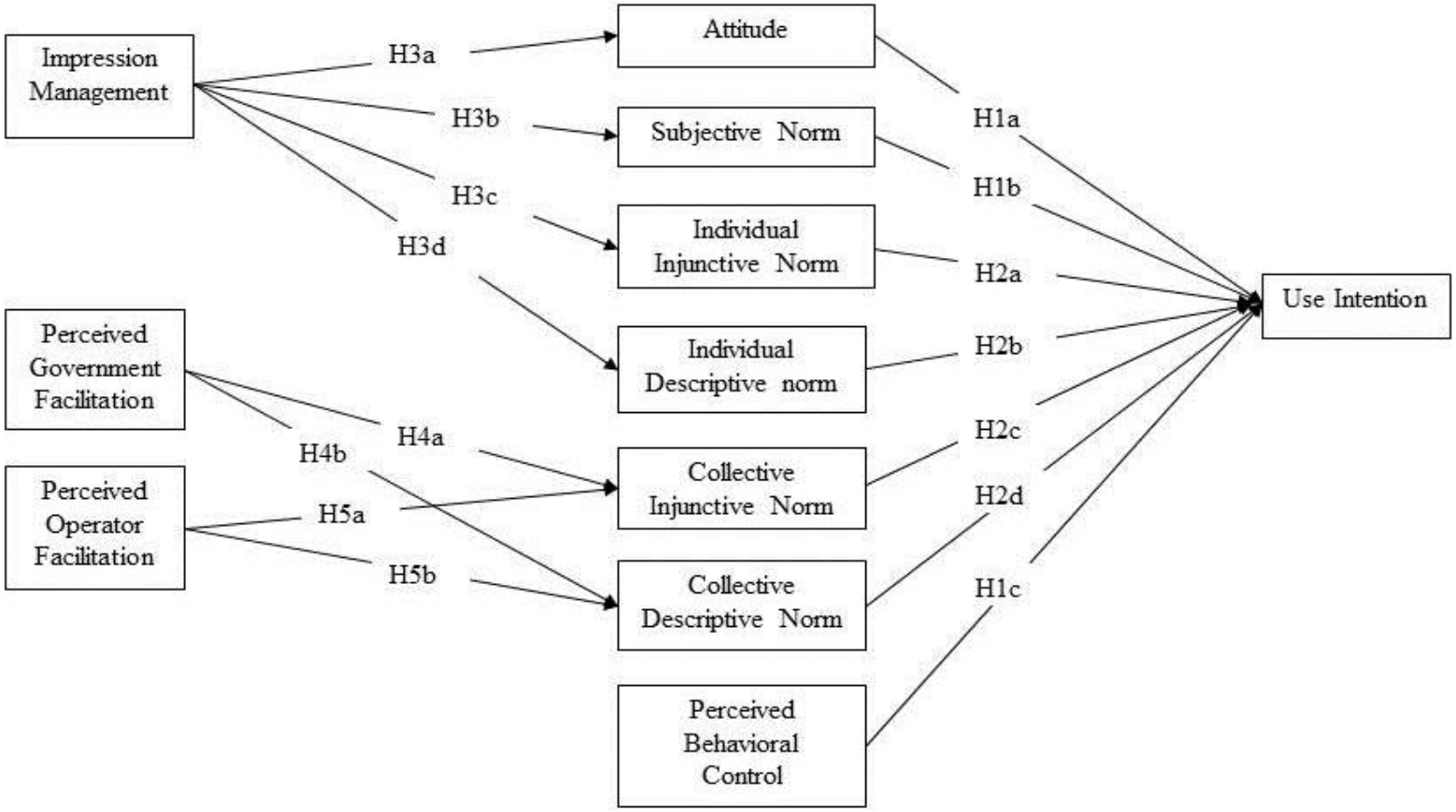


*Figure 1*. Integrated Theoretical Model of Mobile Video Use

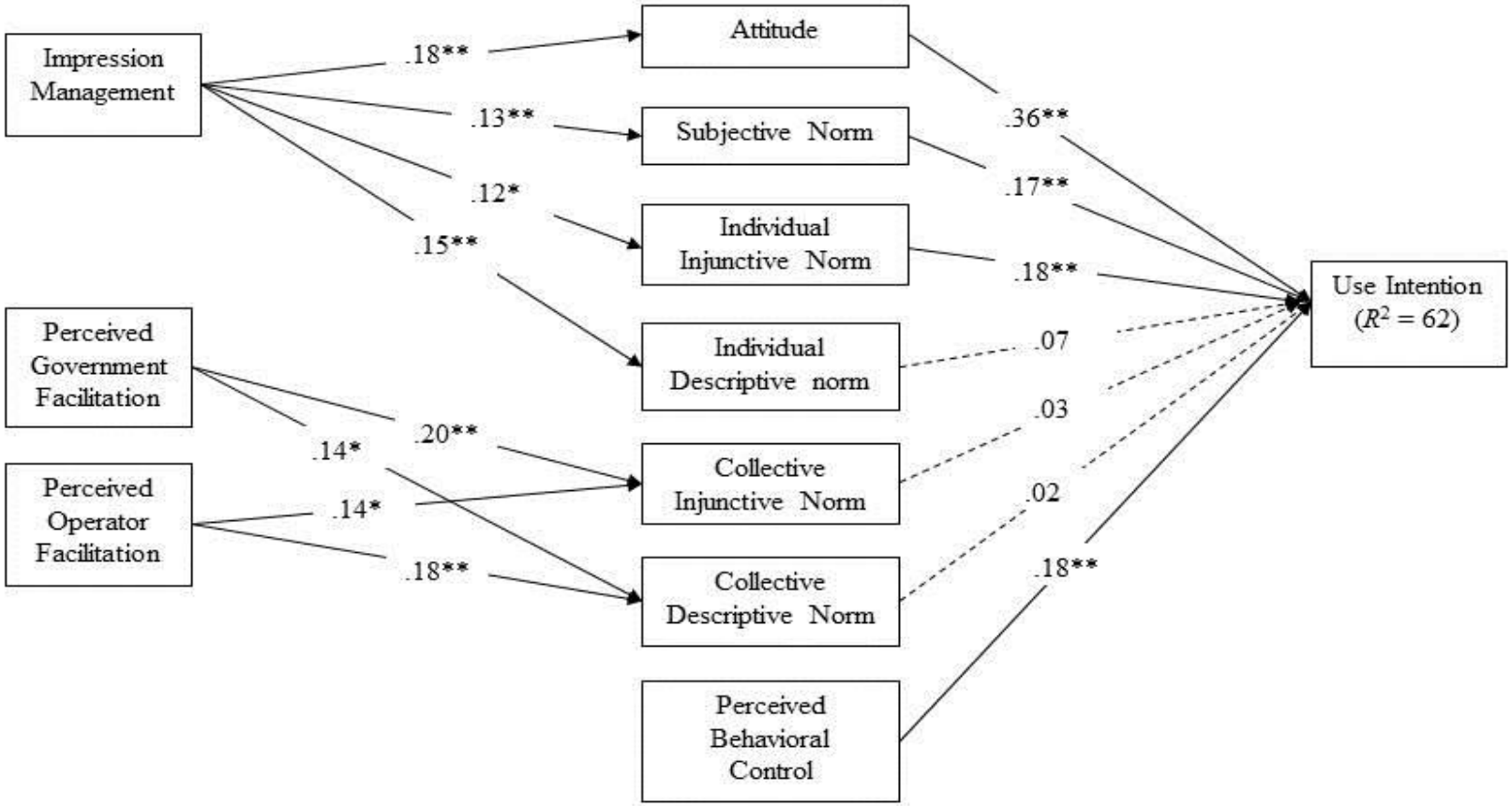


*Figure 2*. A path analysis of the proposed model

Note. * < .05, ** < .01 (two-tailed). Numbers are standardized regression coefficients. *R* = multiple correlation. Age, gender, education, and income level are statistically controlled.