

# Motivation factors influencing intention of mobile sports apps use by applying the unified theory of acceptance and use of technology(UTAUT)

Soonhwan Lee<sup>1</sup>, Seungmo Kim<sup>2\*</sup>, & Suosheng Wang<sup>1</sup>

<sup>1</sup>Indiana University Purdue University Indianapolis (IUPUI)

<sup>2</sup>Hong Kong Baptist University

## Abstract

The current study was to test how the modified Unified Theory of Acceptance and Use of Technology (UTAUT) can apply to continuance intention of mobile sports apps. As a result of survey procedures and after eliminating incomplete questionnaires, a total of 267 responses (N=267) of college students who encompasses the greatest proportion of mobile technology devices users were garnered for main analysis. The results of proposed model testing indicate that social utility (i.e., information of sports), entertainment (i.e., escape from routine), and effort expectancy (i.e., easiness to use) are important factors influencing continuance intention of mobile sports apps. This proposed test of the modified UTAUT may contribute to develop theoretical and conceptual model in sports related technology users' motivation and satisfaction literatures. Further theoretical and managerial implications are also discussed.

Key words: mobile sports apps; social utility motivation; entertainment motivation; effort expectancy; continuance intention of use

## Introduction

Innovated personal technology devices such as smartphones and tablet computers nowadays have a ubiquitous presence in our daily life. As the technology devices have been introduced and penetrated in the market, demand and usage for mobile applications (apps), digital platforms to perform a specific function on personal mobile technology devices, also have been exponentially increased. A recent report by the PortioResearch (2015) indicated the astonishingly fast growing market for mobile apps. For instance, the mobile apps business generated \$12

billion and in total of 46 billion apps were downloaded in 2012 and forecasted that downloads will continue to grow to exceed 200 billion and revenues will reach \$63.5 billion in 2017 (PortioResearch, 2015). The astounding development and growth of mobile apps has been also observed in sport business. Among the types of mobile apps which include game, health, finance, information, or education, mobile sports apps is categorized into entertainment apps.

Among the entertainment apps, sports apps can be defined as the interactive technology device that is designed to entertain and inform the user, and which contain audio, visual, and other contents for sports. Sports apps in smartphones or tablet computers allow users to gain quick and convenient information regarding teams, game information, video and live streaming, social media

function, and other entertainment options. In the United States, especially, many sport consumers use mobile sports apps like NFL Mobile, ESPN Start-Sports Center, CBS Sports, the Score, Yahoo Sports, Team Stream, Thuuz Sports, NBA Game Time, MLB.com At Bat, and NHL GameCenter (Tom's Guide, 2014) for deep engagement experience including entertainment, detailed information, second screenings of games, and further knowledge regarding the team, player and game, and enjoyment (Kang, Ha, & Hambrick, 2015).

Although there are many studies (Jiang, 2009; Lee, Ryu, & Kim, 2010; Park & Lee, 2012) in communication and management to understand usage of smartphone and its apps, there has been little research in sport management on the related topics especially regarding factors use intention of the mobile sports apps in functional, contextual, and motivational perspectives in sport management. Since not all mobile sports apps are successfully introduced and consumed in the digital market, identifying and analyzing the factors influencing intention of mobile sports apps use can provide mobile sports apps developers, sponsors, digital business marketers, and researchers with critical information of the decision process of use intention. Although many mobile communication related studies have investigated various types of mobile communication technologies and their effects, the studies are relatively limited to overall use of mobile games (Koutromanos & Avraamidou, 2014; Park, Baek, Ohm, & Chang, 2014; Park & Kim, 2013; Wei & Lu, 2014) or mobile message system (Forgays, Hyman, & Schreiber, 2014; Han & Lee, 2014; Mason, Ola, Zaharakis, & Zhang, 2014). Few studies, however, have examined the use of mobile sports apps in a theoretical model.

Therefore, the current study was designed 1) to test functional factors in identifying use motivations of mobile sports apps in either smartphone or tablet computer and 2) to examine impacts of motivational factors on continuance intention of mobile sports apps in either smartphone or tablet computer use based on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003).

## Unified Theory of Acceptance and Use of Technology

In the communication literature, there are several theoretical approaches to explain the concepts of use intention of new innovation and technology. As mentioned, the current study adopted and modified the UTAUT in developing the current study. The UTAUT is a comprehensive synthesis regarding Information and Computer Technologies (ICTs) adoption drawn from the compounding theoretical factors of the Diffusion of Innovation Theory (DIT), the Social Cognitive Theory (SCT), the Theory of Planned Behavior (TPB), and the Technology Acceptance Model (TAM). With a dearth of study regarding mobile sports apps and its motivations factors, applying and modifying the UTAUT into mobile sports apps users' motivation may provide theoretical and contextual understanding in the sport communication and management field.

The DIT is a psychological framework that identifies a sequential process influencing the adoption of innovation (i.e., idea, object, or product perceived as new by an individual) (Lyytinen & Damsgaard, 2001; Rogers, 1995). The DIT explains a process consisting of four states (i.e., dissemination, adoption, implementation, and maintenance) (Rogers, 1962; Rohrbach, Graham, & Hansen, 1993). The SCT suggests that a combination of behavioral, cognitive, and environmental factors influences human behavior (Bandura, 1997; Couros, 2010). The SCT formulates of social situation, self-efficacy, outcome expectations values, and self-regulation to predict one's behavior (Winters, Petosa, & Charlton, 2003). Bandura's (1994) defined the concept of self-efficacy that one's courses of action required to attain designated types of performances. The TPB is a conceptual theory to explain human behavior through intentions, attitude toward the behavior, subjective norm, and perceived behavioral control which are preconditions to be met in the process (Ajzen, 1991, 2002; Kang, Lee, & Kwon, 2013). The TAM is to demonstrate how human perceives usefulness and usage intentions of a new technology in terms of social influence and cognitive

instrumental processes (Davis, 1989; Venkatesh & Davis, 2000). Venkatesh (2000) examined two variables (i.e., perceived usefulness and perceived ease of usage) to determine one's behavioral intention to use a technology. In fact, Kang et al. (2015) utilized TAM as a theoretical framework in understanding sport apps usages among college students.

In summary, the DIT posited that adoption or intention of new innovation depends of advantages and complexity (Rogers, 1962; Kang, 2014). On the other hand, the SCT and the TPB stated the human characteristics are dispositional or contextual factors that influence intention to adopt a new innovation (Ajzen, 1985; Bandura, 1997). From these literatures regarding adoption of innovation, the TAM was introduced to explain factors influencing adoption of ICTs and predicted that perceived easiness precedes perceived usefulness of ICTs (Kang, 2014).

The UTAUT, which is a comprehensive theory of prior technology acceptance research, expands and combines the ICTs theories. The theory, specifically, integrates the concepts of attitudes, social influence, and self-efficacy from the SCT and the TPB, easiness from the TAM, and compatibility from the DIT (Kang, 2014; Venkatesh, Thong, & Xu, 2012). The UTAUT, thus, uses four core factors (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) and four moderating variables (i.e., age, gender, experience, and voluntariness of use) to explain behavioral intention or use of behavior of communication technology (Im, Hong, & Kang, 2011; Oshlyansky, Cairns, & Thimbleby, 2007; Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2012). However, facilitating conditions which is mainly regarding of communication motivation factors are not included in this study because main reasons of using mobile sports apps are not communication purposes among sport sports apps users.

Performance expectancy is defined as the degree to how technology users believe that the use of technology provides functional advantages to perform certain activities (Rogers, 1995; Venkatesh et al., 2003). In other words, performance expectancy is the expected overall impact of

technology's functional advantage on job performance and outcome (Davis, 1993; Kang, 2014). In order to adopt the concept of performance expectancy for the current study, sport consumers use mobile sports apps because it enables to achieve their task performance (e.g., accurate and quick information) and find impacts and values of the apps. As performance expectancy predicts intention to use technology, which suggest the following hypothesis for the current study.

- H1: *Performance expectancy will have a positive effect on continuance intention of mobile sports apps use in either smartphone or tablet computer.*

Effort expectancy refers to the degree of ease associated with people's use of technology (Venkatesh et al., 2012). Technology users tend to adopt and use new technology which has an use of simplicity and maximum efficiency (Agarwal & Prasad, 1999; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). In other words, effort expectancy for the current study measures how easy sport consumers can use mobile sports apps. Kang (2104) stated that people more likely tend to use a new technology when effort on understanding of a new technology is not hard. Schaper and Pervan (2007) studied occupational therapists' ICT acceptance and found effort expectancy was an influential factor of technology use. Martins, Oliveira, and Popovic (2014) also provided similar results that effort expectancy is a strong predictor of intention and use of technology for internet banking users. Additionally, previous studies adopting the UTAUT support that the effects of effort expectancy positively correlate and influence use intention of technology directly or indirectly through performance expectancy. The current study, thus, suggests the following hypotheses.

- H2: *Effort expectancy will have a positive effect on performance expectancy in mobile sports apps use in either smartphone or tablet computer.*
- H3: *Effort expectancy will have a positive effect on intention of mobile sports apps use in either smartphone or tablet computer.*

Significant others' experience and opinion in technology adoption is one of the core key factors in the UTAUT. Social influence is the extent to which important others (e.g., family and friends) influence personal intention to use technology (Ajzen, 1985; Venkatesh et al., 2012). A volume of recent research also supports that significant others leverage on adoption of intention to use technology (Nikou & Bouwman, 2014; Teo & Noyes, 2014; Workman, 2014; Zhu & Chang, 2014). Therefore, social influence might be a predictor of intention to use mobile sports apps that suggest the following hypothesis.

- H4: *Social influence will have a positive effect on intention of mobile sports apps use in either smartphone or tablet computer.*

The UTAUT, however, has been empirically validated by many previous studies, it is likely oriented toward functional, social, and extrinsic (e.g., utilitarian motivation) concepts in the adoption process of previous technology theories as Kang (2014) critically pointed. The intrinsic motivations, therefore, such as individual and psychological factors, should be included because people have different motivations of intention to use technology (Kang, 2014; Venkatesh et al., 2012). The motivation factors of entertainment, social utility, and communication are integrated in the UTAUT to accommodate mobile sports apps use context. For example, in the literatures of technology use motivation, many studies supported that entertainment, social utility, and communication are the major motivations to adapt and use of technology (Boyle et al., 2012; Joo & Sang 2013; Leung & Wei, 2000; Lin & Lu, 2011; Shim, You, Lee, & Go, 2015; Vrocharidou & Efthymiou, 2012). However, communication motivation factors are not included in the current study because mobile sports apps are not normally used for communication purposes among sport consumers.

Entertainment motivation refers to the extent to which people can obtain fun and escaping pressure from using a technology and plays an important role to accept and use of technology (Ko, Cho, & Roberts, 2005; Lee & Ma, 2012; Luo, Chea, & Chen, 2011). Social utility motivation

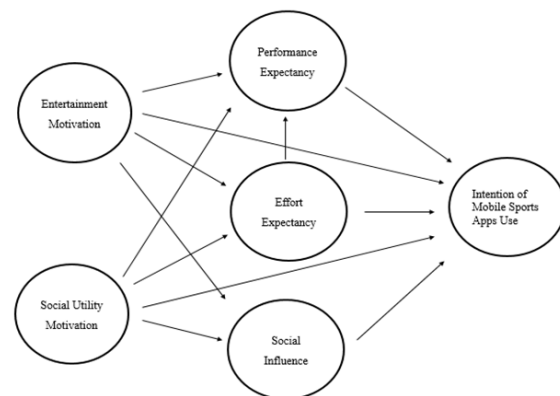
refers to the extent to which people can take functional information and services (e.g., news, weather information, merchandising information) using technology (Alhabash, Chiang, & Huang, 2014; Luo & Remus, 2014; Kang, 2014).

The following hypotheses which are integrated with motivational, functional, and contextual factors to intensify the explanatory power of mobile sports apps use context are suggested:

- H5: *(a) Entertainment and (b) social utility for mobile sports apps in either smartphone or tablet computer will have a positive effect on continuance intention.*
- H6: *(a) Entertainment and (b) social utility for mobile sports apps in either smartphone or tablet computer will have a positive effect on performance expectancy.*
- H7: *(a) Entertainment and (b) social utility for mobile sports apps in either smartphone or tablet computer will have a positive effect on effort expectancy.*
- H8: *(a) Entertainment and (b) social utility for mobile sports apps in either smartphone or tablet computer will have a positive effect on social influence.*

The relationships among variables are displayed in a hypothesized model (see Figure 1).

**Figure 1.** Hypothesized Mobile Sports Apps Use Model



## Method

### Participants

A total of 320 paper questionnaires was distributed to college students with a variety of majors including sport management, tourism, journalism, informatics, business, hospitality, engineering, law enforcement, nursing, finance, and others at a large-sized university located in the Midwest. The subjects for the current study were college students who encompasses the greatest proportion of mobile technology devices users. For example, about 83% college students regularly use a smartphone and nearly four in ten students (38%) own a tablet computer in 2013 (Pearson, 2013). The questionnaire included an informed consent form, demographic backgrounds, and questions related to the modified UTAUT for mobile sports apps.

As a result of survey procedures and after eliminating incomplete questionnaires, a total of 267 responses (N=267) were garnered for main analysis. Participants consisted of 181 male students (n=181, 67.8%) and 86 female students (n=86, 32.2%). Approximately 48.3% of the total participants aged 17-20 (n=129; 48.3%), 21-25 (n=109; 40.8%), 26-29 (n=22; 8.2%), and older than 29 (n=7; 2.6%). Respondents were judged themselves they have very good mobile technology device skills (n=106; 39.7%), good skills (n=131; 49.1%), fair skills (n=26; 9.7%), and poor skills (n=4; 1.5%).

### Instrumentation

A 35-item survey assessed performance expectancy, effort expectancy, social influence, entertainment motivation, social utility motivation, continuance intention, and demographic information (e.g., age, gender, and length of mobile sports apps usage). Each item of all variables was rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Four items of performance expectancy were modified from the UTAUT about the extent to which mobile sports apps help facilitate task performance. Four

effort expectancy items regarding the degree of ease to use mobile sports apps were modified and four items of social influence were also examined. Specific motivations of mobile sports apps including entertainment and social utility also were modified from previous studies (Chang, Lee, & Kim, 2006; Park, 2010). Additionally, another four items of continuance intention which was measured the degree of mobile sports apps users continue to use in future (Agarwal & Prasad, 1999; Davis, 1989; Moore & Benbasat, 1991; Venkatesh et al., 2003; Venkatesh & Davis, 2000). (See Table 2).

**Table 1.** *Demographics of Respondents*

	Frequency	Percentage
Gender		
Female	181	67.8%
Male	86	32.2%
Mobile Usage per Day		
Less than 1 hour	0	0.0%
1 – 2 hours	20	7.5%
2 – 3 hours	51	19.1%
3 – 4 hours	43	16.1%
4 – 5 hours	62	23.2%
5 – 6 hours	32	12.0%
6 – 7 hours	11	4.1%
7 – 8 hours	18	6.7%
More than 8 hours	30	11.2%
Sports Apps Usage		
ESPN Start-Sports Center	133	49.8%
CBS Sports	40	15.0%
NFL Mobile	35	13.1%
Team Stream from Bleacher Report	25	9.4%
Yahoo Sports	17	6.4%
The Score	8	3.0%
NBA Game Time	6	2.2%
Thuuz Sports	2	0.7%
MLB.com At Bat	1	0.4%

### Data Analysis

In order to validate the measurement model of the current study, an omnibus confirmatory factor analyses (CFA) was applied using AMOS 22 with all constructs. In validating the relations of the observed variables and the

underlying constructs, four indexes, the chi-square test, the Bentler Comparative Fit Index (CFI), and the Steiger-Lind Root Mean Square Error of Approximation (RMSEA) were utilized to examine the absolute and comparative fit of the model (Kline, 2010).

Next, descriptive statistics including means and standardized deviations as well as demographic information of the participants were calculated. Then, the inter-item reliabilities of each scale were confirmed by assessing Cronbach's alpha internal consistency coefficients. Finally, the research hypotheses for the model were tested using structural equation modeling (SEM). The model testing followed maximum likelihood procedures. SEM assumes recursive relationships among latent variables and tests these relationships against the data collected in an integrative and simultaneous way. The analytical procedure assumes a causal structure between exogenous and endogenous variables and allows for the estimation of direct, indirect, and total effects (Kline, 1998). The same four indexes that were previously used for the CFA were also utilized to assess the structural model test.

## Results

### Measurement Model Testing and Modification

The overall fit indices of the CFA including all constructs indicated somewhat poor fit with data [ $\chi^2(df) = 627.637$  (194),  $\chi^2/df = 3.235$ ,  $p < .001$ ; CFI = .912; RMSEA = .092]. For performance expectancy, two additional residual correlations between items "I find mobile sports apps useful in my life" and "Using mobile sports apps increases my productivity" and items "Using mobile sports apps increases my chances of achieving things that are important to me" and "Using mobile sports apps helps me accomplish things more quickly" were made based on two high modification index (MI) values. According to Byrne (2010), those items with high correlations (above  $r$

= .70) could cause correlation errors. For effort expectancy, two additional residual correlations between items "Learning how to use mobile sports apps is easy for me" and "My interaction with mobile sports apps is clear and understandable" and items "I find mobile sports apps easy to use" and "It is easy for me to become skillful at using mobile sports apps" were also made due to the high correlations with each other.

The model fits were reevaluated with the revised measurement model. The data [ $\chi^2(df) = 498.801$  (189),  $\chi^2/df = 2.639$ ,  $p < .001$ ; CFI = .937; RMSEA = .079] showed the acceptable fit. Convergent validity and discriminant validity were supported because average variance extracted (AVE) values of each factor exceeded .50 (Hair, Anderson, Tatham, & Black, 2006) and all estimated values of AVE were greater than the squared correlations between the factors (Fornell & Larcker, 1981). Inter-reliabilities of all constructs were also supported by Cronbach's alpha coefficients of each construct exceeding the recommended benchmark of .70 (Nunnally & Bernstein, 1994). Table 2 provides the means, standard deviations, and factor loadings for all variables. The means for five influencing factors for continuance intention of sports apps ranged from a low for social influence ( $M = 3.92$ ) to a high for effort expectancy ( $M = 5.89$ ). Social utility motivation ( $M = 5.53$ ) was the second most important factor for sports apps consumers, followed by entertainment motivation ( $M = 5.14$ ) and performance expectancy ( $M = 4.28$ ). However, social influence was below the scale midpoint ( $M = 4.00$ ). Table 3 reports the correlations among the constructs and the Cronbach's alpha coefficients of them.

### Structural Model Testing

The results of the proposed structural model performance expectancy, effort expectancy, social influence, entertainment motivation, social utility motivation, continuance intention showed the acceptable fit indices [ $\chi^2(df) = 530.215$  (191),  $\chi^2/df = 2.776$ ,  $p < .001$ ; CFI = .931; RMSEA = .082]. The results demonstrated performance expectancy ( $\tau =$

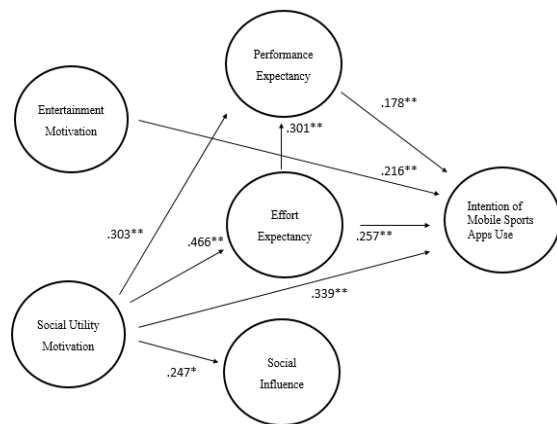
**Table 2.** Means (M), Standard Deviations (SD), and Coefficients ( $\lambda$ ) for Variables (N=267)

Variable	Items	M	SD	$\lambda$	AVE
Performance		<b>4.28</b>	<b>1.34</b>		<b>.597</b>
Expectancy	I find mobile sports apps useful in my life	5.22	1.46	.735	
	Using mobile sports apps increases my chances of achieving things that are important to me	3.98	1.67	.799	
	Using mobile sports apps helps me accomplish things more quickly	4.37	1.70	.837	
	Using mobile sports apps increases my productivity	3.54	1.58	.713	
Effort		<b>5.89</b>	<b>.96</b>		<b>.690</b>
Expectancy	Learning how to use mobile sports apps is easy for me	5.90	1.21	.817	
	My interaction with mobile sports apps is clear and understandable	5.80	1.16	.875	
	I find mobile sports apps easy to use	6.01	.96	.856	
	It is easy for me to become skillful at using mobile sports apps	5.85	1.07	.770	
Social		<b>3.92</b>	<b>1.31</b>		<b>.611</b>
Influence	People who are important to me think that I should use mobile sports apps	3.78	1.59	.855	
	People who influence my behavior think that I should use mobile sports apps	3.79	1.54	.932	
	People who are important to me have been helpful in the use of mobile sports apps	3.78	1.51	.657	
	The people who are important to me have supported the use of mobile sports apps	4.36	1.63	.641	
Continuance		<b>5.85</b>	<b>1.33</b>		<b>.890</b>
Intention	I intend to continue to use mobile sports apps in the next 12 months	5.81	1.44	.917	
	I would continue to use mobile sports apps in the next 12 months	5.90	1.34	.969	
	I plan to continue to use mobile sports apps in the next 12 months	5.84	1.40	.965	
	I expect to continue to use mobile sports apps in the next 12 months	5.84	1.36	.922	
Entertainment		<b>5.14</b>	<b>1.37</b>		<b>.668</b>
Motivation	I use mobile sports apps in order to relieve boredom	5.24	1.63	.829	
	I use mobile sports apps because it is entertaining	5.31	1.44	.841	
	I use mobile sports apps in order to kill time	4.87	1.57	.780	
Social Utility		<b>5.53</b>	<b>1.03</b>		<b>.586</b>
Motivation	I use mobile sports apps in order to get services	4.79	1.24	.568	
	I use mobile sports apps in order to get news	5.86	1.20	.836	
	I use mobile sports apps in order to get information	5.93	1.24	.858	

**Table 3.** Correlations and Cronbach alpha ( $\alpha$ )

	PE	EE	SI	CI	E	SU
Performance Expectancy (PE)	$\alpha=.851$					
Effort Expectancy (EE)	.436**	$\alpha=.893$				
Social Influence (SI)	.498**	.192**	$\alpha=.857$			
Continuance Intention (CI)	.579**	.601**	.360**	$\alpha=.973$		
Entertainment (E)	.329**	.429**	.290**	.598**	$\alpha=.858$	
Social Utility (SU)	.463**	.487**	.268**	.639**	.642**	$\alpha=.791$

\*p &lt; 0.05, \*\*p &lt; 0.01

**Figure 2.** Final Research Model

\* $p < 0.05$ , \*\* $p < 0.01$

.178;  $SE = .035$ ;  $p < .01$ ) and effort expectancy ( $\tau = .257$ ;  $SE = .073$ ;  $p < .01$ ) had positive impacts on intention of mobile sports apps use. In addition, effort expectancy ( $\tau = .301$ ;  $SE = .098$ ;  $p < .01$ ) had positive impact on performance expectancy. Thus, Hypotheses 1, 2 and 3 were supported. However, Hypothesis 4 (social influence  $\rightarrow$  intention of mobile sports apps use) was not supported.

In terms of the relationships between two motivations and other variables, social utility motivation had positive impacts on all outcomes; performance expectancy ( $\tau = .303$ ;  $SE = .141$ ;  $p < .01$ ), effort expectancy ( $\tau = .466$ ;  $SE = .110$ ;  $p < .01$ ), social influence ( $\tau = .247$ ;  $SE = .146$ ;  $p < .05$ ), and continuance intention ( $\tau = .339$ ;  $SE = .109$ ;  $p < .01$ ), while entertainment motivations had had positive impact on continuance intention ( $\tau = .216$ ;  $SE = .075$ ;  $p < .01$ ). Thus, Hypotheses 5a, 5b, 6b, 7b, and 8b were supported, while Hypotheses 6a, 7a, and 8a were not supported.

## Discussion and Implications

With the emergence of mobile apps from the technology development, countless people use many types of mobile apps for the reasons including entertainment, convenience,

information, job purpose, and others. Among the types of mobile apps, sports apps, especially, allow sport consumers to conveniently gain many benefits regarding their favorite teams, players, and games in terms of information, entertainment aspect, deeper knowledge, and other functions. Especially, current college students who are being called Generation Z (e.g., iGen) are considered internet and technology generation (Rosen, 2011). The current college students were surveyed to examine the impacts of three core (i.e., performance expectancy, effort expectancy, and social influence) as well as two main motivation factors (i.e., entertainment motivation and sociality utility motivation) based on the modified UTAUT on mobile sports apps users' continuance intention. The results of the proposed model somewhat supported related previous studies and also somewhat differed from mobile communication technology motivation studies (Kang, 2014; Park, Lee, & Cheong, 2007; Pynoo, Devolder, Tondeur, van Braak, Duyck, & Duyck, 2011). With the dramatic growth of sports apps usages, the findings should provide insights to sport communication and marketing practitioners to cultivate proper marketing strategies. The variance explained for continuance intention by the proposed model was relatively acceptable ( $R^2 = 0.257$ ), compared to previous mobile communication technology motivation studies (e.g., Kang, 2014; Park, 2010; Venkatesh et al., 2003).

The strongest motivational factor for sports apps consumer was effort expectancy, as followed by social utility motivation. These results suggest that the consumers are more likely attracted to use the digital platforms when they can receive desired information or data of their favorite sports and/or events with little effort via the technology. Therefore, developers and marketers of sports apps should put continuous efforts by understanding of changing trends of sports apps function and design as well as users' intention and satisfaction to offer convenience and variety to the consumers by focusing on easy to access, download, and use for their apps.

With respect to the relationship between performance expectancy and continuance intention of mobile sports



apps, the findings of the current study revealed that performance expectancy was a significant predictor of continuance intention, which were congruent with the relevant studies of communication technology use motivation. Given the situation that performance expectancy in the current study means how sport consumers feel using mobile sports apps helps them find information quickly or using mobile sports apps increases their productivity in searching needed information rather than job performance, consumers of sports apps are more likely to continue to use the apps when they perceive the apps help them be more efficient and productive. Sport managers of sports apps should provide accurate data with rapid updates of sports and/or events to the users. For example, consumers may compare with similar sports apps when they look for data, and they choose one of the apps which can provide the most current information to them.

The results revealed that social utility had the positive impacts on three core factors (performance expectancy, effort expectancy, and social influence) as well as continuance intention. In terms of the relationship between effort expectancy and performance expectancy, the findings showed a relatively low predictability which were consistent with related studies (Kang, 2014; Park, Lee, & Cheong, 2007; Pynoo et al., 2003; Venkatesh et al., 2003). The positive predictabilities of social utility on those outcome variables may indicate that mobile sports apps users need specific types of information for their favorite sports and/or events and the needs are linked to performance expectancy (e.g., productivity), effort expectancy (e.g., easy to use), and continuous intention of usage. As effort expectancy on continuance intention indicate a positive predictability, mobile sports apps users examine the level of easiness to use of sports apps. It implies that mobile sports apps users favor of sports apps that are easy to access, download, and use.

As expected, social influence which is not a predictor of continuance intention in this proposed model. In other words, mobile sports apps users are not influenced by significant others like family and friends to continue to use sports apps. In the current study, all participants of the

current study were college students who are considered “Generation Z.” The young generation has used the internet technology at a very early age as a main tool to in investigating/gaining information and communicating with others who show same interests rather than people around them (Borca, Bina, Keller, Gilbert, & Begott, 2015). In fact, social influence was the only variable with below the scale midpoint ( $M = 4.00$ ) in this study. The results of the current study may indicate that young sports apps users may be less likely influenced by other people’s recommendation or opinions, but their own perceptions of productivity and ease to use based on their experiences may have impact on their future intention to use sports apps.

Two main motivation factors, entertainment motivations was a predictor of continuance intention of mobile sports apps use. It demonstrates that mobile sports apps could be an outlet for people to avoid their boredom or escape from routine activity as a kind of leisure activity. Interestingly, although the results revealed social utility motivations positively related to performance expectancy, effort expectancy, social influence, and continuance intention of use, entertainment motivation was not statistically related to performance expectancy, effort expectancy, and social influence in the current study. The result suggests that although young sports apps consumers who look for fun from the apps may not perceive functional benefits from using the apps, they are still willing to continue to use sports apps as long as the apps can provide satisfactory fun and entertainment to the users.

In the current tested model, social utility motivations exceeded entertainment motivations for sports apps users’ continuance intention of usage. It may explain that mobile sports apps are convenient features people can easily get information based on their need which may increase the level of continuance intention of sports apps use. Additionally, the current study’s theoretical modification and application of the UTAUT for mobile sports apps might contribute to further develop theoretical and conceptual model in sports related technology devices users’ motivation and satisfaction literatures. The current study also might provide a better

understanding in terms of the size and applicable markets of mobile sports apps for sport communication and/or marketing practitioners.

## Future Study

Whereas the current study provides a profile of sports apps users, more potential studies are still needed for better understanding of sports apps and their consumers in the literature. First, while the original UTAUT research includes the moderators, the current study has not included other potential moderators (i.e., gender, age, level of technology skills). Thus, future study should include other moderating variables to examine the relationship between sports apps users' motivational factors and behavioral intention. For example, future research should expand to examine the relationship based on different demographic groups. Second, future study should also explore the relationship in different sports business, such as sports organizations' web sites and their level of interactivity using mobile devices or other technologized devices including Smart watch or virtual reality devices.

## References

- Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, **30**(2), 361-391. doi:10.1111/j.1540-5915.1999.tb01614.x
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg, Germany: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, **50**, 179-211.
- Ajzen, I. (2002). Constructing a TpB questionnaire: Conceptual and methodological considerations. Retrieved from <http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf>.
- Alhabash, S., Chiang, Y., & Huang, K. (2014). MAM & U&G in Taiwan: Differences in the uses and gratifications of Facebook as a function of motivational reactivity. *Computers in Human Behavior*, **35**, 423-430. doi:10.1016/j.chb.2014.03.033
- Bandura, A. (1994). *Self-efficacy*. Hoboken, NJ: John Wiley & Sons, Inc.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Borca, G., Bina, M., Keller, P. S., Gilbert, L. R., & Begotti, T. (2015). Internet use and developmental tasks: Adolescents' point of view. *Computers in Human Behavior*, **52**, 49-58. doi:10.1016/j.chb.2015.05.029
- Boyle, E., Connolly, T., Hainey, T., & Boyle, J. (2012). Engagement in digital entertainment games: A systematic review. *Computers in Human Behavior*, **28**(3), 771-780. doi:10.1016/j.chb.2011.11.020
- Byrne, B. M. (2010). *Structural equation modeling with AMOS* (2nd ed.). NY: Routledge.
- Chang, B., Lee, S., & Kim, B. (2006). Exploring factors affecting the adoption and continuance of online games among college students in South Korea: Integrating uses and gratifications and diffusion of innovation approaches. *New Media & Society*, **8**(2), 295-319. doi:10.1177/1461444806059888
- Couros, A. (2010). Developing personal learning networks for open and social learning. *Emerging Technologies in Distance Education*, 109-128.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance. *MIS Quarterly*, **13**(3), 319-340. doi:10.2307/249008
- Davis, F. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*, **38**(3), 475-487. doi:10.1006/imms.1993.1022

- Forgays, D., Hyman, I., & Schreiber, J. (2014). Texting everywhere for everything: gender and age differences in cell phone etiquette and use. *Computers in Human Behavior*, **31**, 314-321. doi:10.1016/j.chb.2013.10.053
- Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, **18**(1), 39-50. doi:10.2307/3151312
- Hair, J., Anderson, R., Tatham, R., & Black, W. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall
- Han, E., & Lee, S. (2014). Motivations for the complementary use of text-based media during linear TV viewing: An exploratory study. *Computers in Human Behavior*, **32**, 235-243. doi:10.1016/j.chb.2013.12.015
- Im, I., Hong, S., & Kang, M. (2011). An international comparison of technology adoption: Testing the UTAUT model. *Information & Management*, **48**(1), 1-8. doi:10.1016/j.im.2010.09.001
- Jiang, P. (2009). Consumer adoption of mobile internet services: An exploratory study. *Journal of Promotion Management*, **15**(3), 418-454. doi:10.1018/10496490903196213
- Joo, J., & Sang, Y. (2013). Exploring Koreans' smartphone usage: An integrated model of the technology acceptance model and uses and gratifications theory. *Computers in Human Behavior*, **29**(6), 2512-2518. doi:10.1016/j.chb.2013.06.002
- Kang, S. (2014). Factors influencing intention of mobile application use. *International Journal of Mobile Communications*, **12**(4), 360-379. doi:10.1504/IJMC.2014.063653
- Kang, S., Ha, J., & Hambrick, M. (2015). A mixed-method approach to exploring the motives of sport-related mobile applications among college students. *Journal of Sport Management*, **29**(3), 272-290. doi: 10.1123/jsm.2013-0065
- Kang, S., Lee, S., & Kwon, O. (2013). Persuasive media effects of sponsorships at the 2010 FIFA World Cup: A test of Theory of Planned Behavior and involvement. *International Journal of Sport Management*, **14**(2), 1-24.
- Kline, R. (2010) *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford.
- Ko, H., Cho, C., & Roberts, M. (2005). Internet uses and gratifications: A structural equation model of interactive advertising. *Journal of Advertising*, **34**(2), 57-70. doi:10.1080/00913367.2005.10639191
- Koutromanos, G., & Avraamidou, L. (2014). The use of mobile games in formal and informal learning environments: a review of the literature. *Educational Media International*, **51**(1), 49-65. doi:10.1080/09523987.2014.889409
- Lee, C., & Ma, L. (2012). News sharing in social media: The effect of gratifications and prior experience. *Computers in Human Behavior*, **28**(2), 331-339. doi:10.1016/j.chb.2011.10.002
- Lee, H., Ryu, J., & Kim, D. (2010). Profiling mobile TV adopters in college student populations of Korea. *Technological Forecasting and Social Change*, **77**, 514-523. doi:10.1016/j.techfore.2009.09.004
- Leung, L., & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone. *Journalism & Mass Communication Quarterly*, **77**(2), 308-320. doi:10.1177/107769900007700206
- Lin, K., & Lu, H. (2011). Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Computers in Human Behavior*, **27**(3), 1152-1161. doi:10.1016/j.chb.2010.12.009
- Luo, M., Chea, S., & Chen, J. (2011). Web-based information service adoption: A comparison of the motivational model and the uses and gratifications theory. *Decision Support Systems*, **51**(1), 21-30. doi:10.1016/j.dss.2010.11.015
- Luo, M., & Remus, W. (2014). Uses and gratifications and acceptance of Web-based information services: An integrated model. *Computers in Human Behavior*, **38**, 281-295. doi:10.1016/j.chb.2014.05.042
- Lyytinen, K., & Damsgaard, J. (2001). What's wrong

- with the diffusion of innovation theory? (pp. 173-190). Springer US.
- Martins, C., Oliveira, T., & Popovic, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, **34**(1), 1-13. doi:10.1016/j.ijinfomgt.2013.06.002
- Mason, M., Ola, B., Zaharakis, N., & Zhang, J. (2014). Text messaging interventions for adolescent and young adult substance use: A meta-analysis. *Prevention Science*, **16**(2), 181-188. doi:10.1007/s11121-014-0498-7
- Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, **2**(3), 192-222.
- Nikou, S., & Bouwman, H. (2014). Ubiquitous use of mobile social network services. *Telematics and Informatics*, **31**(3), 422-433. doi:10.1016/j.tele.2013.11.002
- Nunnally, J., & Bernstein, I. (1994). *Psychometric theory* (3rd ed.). NY: McGraw-Hill.
- Oshlyansky, L., Cairns, P., & Thimbleby, H. (2007, September). Validating the unified theory of acceptance and use of technology (UTAUT) tool cross-culturally. Paper presented at the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it. (pp. 83-86). British Computer Society.
- Park, N. (2010). Adoption and use of computer-based voice over Internet protocol phone service: Toward an integrated model. *Journal of Communication*, **60**(1), 40-72. doi:10.1111/j.1460-2466.2009.01440.x
- Park, E., Baek, S., Ohm, J., & Chang, H. (2014). Determinants of player acceptance of mobile social network games: an application of extended technology acceptance model. *Telematics and Informatics*, **31**(1), 3-15. doi:10.1016/j.tele.2013.07.001
- Park, H., & Kim, S. (2013). A Bayesian network approach to examining key success factors of mobile games. *Journal of Business Research*, **66**(9), 1353-1359. doi:10.1016/j.jbusres.2012.02.036
- Park, H., & Lee, H. (2012). Social implications of smartphone use: Korean college students' smartphone use and psychological well-being. *Cyberpsychology, Behavior, and Social Networking*, **15**(9), 491-497. doi:10.1089/cyber.2011.0580
- Park, N., Lee, K., & Cheong, P. (2007). University instructors' acceptance of electronic courseware: An application of the technology acceptance model. *Journal of Computer Mediated Communication*, **13**(1), 163-186. doi:10.1111/j.1083-6101.2007.00391.x
- Pearson (2013, April 17). Pearson student mobile device survey 2013: National report: College students, Retrieved April 25, 2015, from <http://www.pearsoned.com/wp-content/uploads/Pearson-Student-Mobile-Device-Survey-2013-National-Report-on-College-Students-public-release.pdf>
- PortioResearch (2015, March 15). Mobile applications futures 2013-2017. Retrieved March 28, 2015, from <http://www.portioresearch.com/en/mobile-industry-reports/mobile-industry-research-reports/mobile-applications-futures-2013-2017.aspx>
- Pynoo, B., Devolder, P., Tondeur, J., van Braak, J., Duyck, W., & Duyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: A Cross sectional study. *Computers in Human Behavior*, **27**(1), 568-575. doi:10.1016/j.chb.2010.10.005
- Rogers, E. (1962). *Diffusion of innovation*. New York, NY: The Free Press.
- Rogers, E. (1995). *Diffusion of innovation* (4th ed.). New York, NY: The Free Press.
- Rohrbach, L., Graham, J., & Hansen, W. (1993). Diffusion of a school-based substance abuse prevention program: Predictors of program implementation. *Preventive Medicine*, **22**(2), 237-260. doi:10.1006/pmed.1993.1020
- Rosen, L. (2011). Teaching the iGeneration. *Educational Leadership*, **68**(5), 10-15.
- Schaper, L., & Pervan, G. (2007). ICT and OTs: A model of information and communication technology

- acceptance and utilization by occupational therapists. *International Journal of Medical Informatics*, **76**(1), S212-S221. doi:10.1016/j.ijmedinf.2006.05.028
- Shim, H., You, K., Lee, J., & Go, E. (2015). Why do people access news with mobile devices? Exploring the role of suitability perception and motives on mobile news use. *Telematics and Informatics*, **32**(1), 108-117. doi:10.1016/j.tele.2014.05.002
- Teo, T., & Noyes, J. (2014). Explaining the intention to use technology among pre-service teachers: A multi-group analysis of the Unified Theory of Acceptance and Use of Technology. *Interactive Learning Environments*, **22**(1), 51-66. doi:10.1080/10494820.2011.641674
- Tom's Guide. (2014, October 28). 10 Best sports apps. Retrieved from <http://www.tomsguide.com/us/pictures-story/599-best-sports-apps.html>
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance. *Information Systems Research*, **11**(4), 342-365. doi:10.1287/isre.11.4.342.11872
- Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, **46**(2), 186-204.
- Venkatesh, V., & Morris, M. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, **24**(1), 115-139. doi:10.2307/3250981
- Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, **27**(3), 425-478.
- Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, **36**(1), 157-178.
- Vrocharidou, A., & Efthymiou, I. (2012). Computer mediated communication for social and academic purposes: Profiles of use and university students' gratifications. *Computers & Education*, **58**(1), 609-616. doi:10.1016/j.compedu.2011.09.015
- Wei, P., & Lu, H. (2014). Why do people play mobile social games? An examination of network externalities and of uses and gratifications. *Internet Research*, **24**(3), 313-331. doi:10.1108/IntR-04-2013-0082
- Winters, E., Petosa, R., & Charlton, T. (2003). Using Social Cognitive Theory to explain discretionary, "leisure -time" physical exercise among high school students. *Journal of Adolescent Health*, **32**(6), 436-442. doi:10.1016/S1054-139X(03)00046-6
- Workman, M. (2014). New media and the changing face of information technology use: The importance of task pursuit, social influence, and experience. *Computers in Human Behavior*, **31**, 111-117. doi:10.1016/j.chb.2013.10.008
- Zhu, D., & Chang, Y. (2014). Investigating consumer attitude and intention toward free trials of technology-based services. *Computers in Human Behavior*, **30**, 328-334. doi:10.1016/j.chb.2013.09.008