Routine Use of Mobile Health Services: Promotion or Prevention

Completed Research

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Abstract

In view of the increasing importance of mobile technologies applied in the healthcare industry to promote healthy behaviors and prevent illnesses, examining the factors that influence individuals’ routine use of those emerging technologies is imperative. This study is designed to explore the relationships among health promotion expectancy, disease prevention expectancy, regulatory focus, and routine use intention of mobile health (mHealth) services based on expectancy and regulatory focus theories. Findings reveal that health promotion expectancy has a stronger effect on individuals’ routine use intention than disease prevention expectancy. In addition, promotion focus exerts a moderating effect on the relationship between health promotion expectancy and routine use intention. The contributions and implications for theory and practice are discussed.

Keywords
Performance expectancy, regulatory focus, promotion focus, prevention focus, mobile health, mHealth, routine use intention.

Introduction

Mobile health (mHealth) has been regarded as an effective approach to manage health as acknowledged by the UN World Health Organization WHO; (Consulting 2014). The burgeoning field of mHealth perfectly penetrates mobile technologies into the healthcare sector, aids in the reduction of healthcare costs, and extensively improves health condition (Kumar et al. 2013; Sadegh et al. 2018). Understanding the behavior of individual’s acceptance of mHealth can pose significant influence of information technology (IT) research, which encouragingly benefits the healthcare industry (Standing and Standing 2008). By contrast, the value of IT services can be realized through routine use rather than first-time use (Bhattacherjee 2001). The daily use of health information technology (HIT) can enhance the effectiveness of healthcare and might perform a predominant role in the pursuit of the “meaningful use” of HIT (Agarwal et al. 2010). In the information system field, extant literature tends to focus heavily on instrumental beliefs as prime drivers of use intentions of IT (Lu et al. 2005), which has limited the extension in the area of mHealth research. Knowledge with respect to other drivers of usage intentions of mHealth must be researched further. Towards this end, we draw upon theory of reasoned action that people would like to use new technologies when they expect positive outcomes by using such technologies (Ajzen and Fishbein 1975; Compeau and Higgins 1995). From the context of healthcare, reasoned action would inspire individuals to select one technology when they anticipate good health performance after using it. Previous broad discussions in psychological and IT studies have regarded “performance expectancy” as a driver to users’ adoption behavior of IT (Seethamraju et al. 2017; Venkatesh et al. 2003;
Yu 2012). Consequently, the current study attempts to probe the influence of performance expectancies on the routine use intention of mHealth services from two perspectives, namely, health promotion and disease prevention. Moreover, psychology research has demonstrated that people constantly have promotion and prevention foci, which are prone to appear in different levels of sensitivity to the same stimuli (Higgins 1998). Accordingly, we integrate promotion and prevention foci into our research model to examine the moderation effects on the relationship between health performance expectancies and routine use intention.

The next section expounds prior studies related to mHealth, performance expectancies, and regulatory focus theory. Then, we develop our research hypotheses and establish research model regarding the effects of health performance expectancies on mHealth routine use intention and the moderating role of regulatory focus, followed by an overview of the proposed methodology and data analysis results. A conclusion of our results and implications for research and practice are also illustrated.

**Theoretical Background**

**Mobile Health**

The WHO initiated and developed the concept of mHealth in 2011. mHealth is depicted as capitalizing advanced mobile technologies to assist medicine and public healthcare (Al Dahdah et al. 2015; Kay et al. 2011b; Organization 2014). mHealth involves the application of portable and wireless communication equipment to deliver health services (Al Dahdah et al. 2015). By virtue of the ubiquitous traits, mHealth devices can potentially render the services provided increasingly available, accessible, and affordable health management instruments worldwide (Akter et al. 2013; Miah et al. 2017). The present study defines mHealth as one type of healthcare service that can provide mobile device users with ubiquitous and pervasive access to medical advice and information (Akter et al. 2010; Sadegh et al. 2018). mHealth changes the spectrum of healthcare services from crisis intervention to health promotion, prevention, and self-management (Akter et al. 2013; Dehzad et al. 2014). Research topics associated with mHealth services have extensive discussions, oriented along the areas of commentary on new technologies (Kay et al. 2011a; Lupton 2012; Lupton 2015); technology adoption (Chib et al. 2015; Dehzad et al. 2014; Hoque 2016); security issues (Martínez-Pérez et al. 2015; Sunyaev et al. 2014); technology interaction between patients and healthcare professionals (Free et al. 2013); and design, development, and testing of mHealth application (Cole-Lewis and Kershaw 2010; Evans et al. 2012). The current study mainly focuses on the mHealth adoption, which has scarcely been discussed in IT literature (Zhang et al. 2014).

**Routine Use Intention**

Users actually utilizing new technologies is the precondition of realizing their promised benefits (Venkatesh et al. 2003). Extensive studies have been conducted to testify the importance of adopting IT in an organizational context or in an individual level (Compeau et al. 1999; Liang et al. 2013; Yu 2012). However, acceptance of technologies only reveals the commitment to information system use; nonetheless, routine use of such technologies can reflect the integration of technology into people’s daily work processes, which implies that the routine use of technology has a strong effect on people’s performance (Saga and Zmud 1993). In an organizational set, routine use can be defined as the standardized and routinized use of information systems by accepters to support their daily work (Li et al. 2013). In HIT context, routine use refers to recipients integrating HIT into their regular life to promote the enhancement of health management. Bhattacherjee (2001) asserted that successful application of new information communication technology depends on continuous use rather than first-time use. In other words, the extent of the effectiveness of a technology can only be measured when stakeholders integrate such technology into their daily lives. Agarwal et al. (2010) posited that routine use of HIT assists in achieving “meaningful use” of the technology, which in turn contributes to performance improvement. Incorporating routine use intention into the mHealth service context, interest is now focused on probing the mechanisms that psychological characteristics affect service recipients’ routine use intention.
**Regulatory Focus Theory**

Based on the hedonic principle, people are specified to have constant intentions to pursue happiness originating from positive outcomes; by contrast, they avoid pain originating from negative outcomes (Higgins 1997). The hedonic principle can be regarded as the radical assumption applied in long-standing motivational studies (Higgins 2006) and has been utilized to explain the avoidance behavior of IT threat (Liang and Xue 2009). Regulatory focus theory has extended the hedonic principle by explaining the motivation behavior that satisfies two fundamentally different survival needs, namely, nurturance and security (Higgins 1997; Higgins 1998). This theory leads to two types of regulatory foci, namely, promotion and prevention foci (Liang et al. 2013). Promotion focus is constantly motivated by the desire for growth and development. Conversely, prevention focus is motivated by the need for safety (Johnson and Yang 2010). In an endeavor to achieve “ideal self,” promotion-focused population requires fulfilling their accomplishments, aspirations, and hopes. They also tend to notice positive outcomes, including gain, success, and reward. By contrast, to become “ought self,” prevention-focused population must assume duties, obligations, and responsibilities. This group of people constantly focuses on the negative outcomes, including punishment, failure, and loss (Higgins 1998). The previous literature has demonstrated that perceptions, emotions, engagement, and behavior can be affected by the regulatory focus to different contexts (Brockner and Higgins 2001). Despite its role as an important approach to explore users’ IT behavior, the application of regulatory focus theory has seldom emerged in information system studies (Liang et al. 2013). Therefore, regulatory focus theory is employed to conduct an empirical investigation on the moderator functions of different regulatory foci affecting mHealth adoption intention.

**Research Model and Hypotheses**

Figure 1 shows our research model. Based on SCT and regulatory focus theory, we hypothesize that health promotion expectancy promotes mHealth routine use intention. Moreover, promotion focus strengthens the relationship between health promotion and mHealth routine use intention. Similarly, disease prevention promotes mHealth routine use intention; prevention focus strengthens the relationship between disease prevention and mHealth routine use intention. In addition, to avert the influences of demographic characteristics on mHealth routine use intention, we included age, gender, and education as control variables.

![Figure 1. Research Model](image)

Based on SCT and theory of reasoned action, physical performance expectancy can be the predictors of health behavior (Bandura 1998). The present study categorizes the adoption of HIT into health behavior. Accordingly, when individuals perceive that anticipated performance will result from the technology use, they may partake in routine use to enhance their health conditions. Given that many researchers have awareness of the positive functionality of mobile technology in the aspects of health promotion and illness
prevention (Lupton 2012), the expectancy of health promotion and disease prevention might empower individuals to participate in routine health-promoting behavior (adoption of mHealth).

Promotion is a motivational expression that interprets people's desire to pursue positive outcomes (Lockwood et al. 2002). Health promotion is defined as “it seeks the development of community and individual measures which can help people to develop lifestyle that maintain and enhance the state of well-being” (Official US Public Health Services Document 1979). We define health promotion expectancy as the expectation that using mHealth services can promote one's health condition. Individuals are prone to discover the consequences caused by performing certain behaviors, and their future behaviors will be guided if repeated behaviors can lead to positive outcomes (Komaki 2003; Skinner 1953). If the imaginary incentives—using mHealth can promote the state of well-being—can guide individuals’ own behavior, then they tend to have the intention to use it on a daily basis. Therefore, we propose the following:

Hypothesis 1 (H1): Health promotion expectancy positively influences mHealth routine use intention.

Prevention is a motivational expression that explains individuals’ avoidance behavior on negative outcomes (Lockwood et al. 2002). Disease prevention focuses on preventive perspective to reduce the risk of developing the underlying disease (Breslow 1999). Meanwhile, disease prevention expectancy is defined as the expectation that one’s disease can be prevented effectively using mHealth services. Individuals refer to the behaviors that can cause negative consequences and are prone to perform their future behavior to avoid them (Komaki 2003; Skinner 1953). In the mHealth adoption context, if people believe that using mHealth services can prevent them from contracting a disease, then they might develop the intention to use the service. Given the above statements, we propose the following:

Hypothesis 2 (H2): Disease prevention expectancy positively influences mHealth routine use intention.

Based on regulatory focus theory, individuals have different strategic propensities to conduct behavior that moves toward their goals. Such regulatory focuses can affect the motivational significance of difference stimuli (Higgins 1997; Higgins 1998). In the context of HIT use, we propose that individuals' regulatory focus can moderate the relationships between the performance expectancy and routine use intention of mHealth services, given that individuals can perceive their desired goals to fit their regulatory focus. This framing can be explained by regulatory fit proposed by Higgins (2000). Regulatory fit occurs when individuals use goal pursuit means that fit their regulatory focus (Higgins 2000). People with promotion foci constantly focus on the positive outcomes, such as success, happiness, and promotion. Promotion-centered incentive will be more influential on a person with promotion focus (Liang et al. 2013). Promotion focus is stimulated by the requirement of growth and development (Johnson and Yang 2010). Individuals with promotion focus are eager to attain achievement and success of their pursued goals (Higgins et al. 2001). Thus, we hypothesize the following:

Hypothesis 3 (H3): Promotion focus positively moderates the relationship between health promotion expectancy and mHealth routine use intention.

Prevention focus frames the attention of loss. Prevention-focused individuals are motivated to avoid pain, loss, and other negative outcomes (Higgins 1998). Moreover, disease susceptibility indicates the negative physical outcome expectancy (Becker 1974). Shah et al. (1998) argued that individuals with prevention focus are inclined to be influenced by prevention-framed incentives. In the healthcare area, disease prevention can be described as prevention situations in which individuals perceive avoiding disease as the desired goal, which fits the prevention focus tendency. Under this framing, we predict that prevention focus will strengthen the relationship between disease prevention expectancy and mHealth routine use intention. Therefore, we propose the following:

Hypothesis 4 (H4): Prevention focus positively moderates the relationship between disease prevention expectancy and mHealth routine use intention.

Methodology

Measurement Development

We developed the measures of the constructs based on the previous studies to promote content validity. Multiple items were adopted to evaluate the theoretical constructs. We reworded each construct to accommodate the context of mHealth adoption. Measures for routine use intention, health promotion
expectancy, disease prevention expectancy, and promotion and prevention foci were adapted from Sundaram et al. (2007), Compeau and Higgins (1995), Gulmans et al. (2011a), and Lockwood et al. (2002), respectively (due to the limited space, measurement items have not included in the current paper). We conducted a pretest before assigning the questionnaires to participants. We received feedback from two IT professors and 20 doctoral students. We made minor changes to some items to enhance coherence. We evaluated all the measurement items using a seven-point Likert scale (1 = “strongly disagree” and 7 = “strongly agree”).

**Data Collection**

We conducted a survey to collect quantitative data in an “intelligent” community delivering mHealth services to residents in Shanghai, China. We invited 180 participants across different age groups in the community to fill out the questionnaires. Each participant was given 20 RMB cash as a reward for their participation. From the 180 distributed questionnaires, 154 questionnaires were acceptable. Before participants filled out the questionnaires, we distributed leaflets to each of them to establish the definition, functions, and benefits of mHealth services. The questionnaire consisted of two main parts. The first part required the respondents to answer questions regarding their demographic information. The second part asked questions related to their perceptions and opinions of mHealth services. All of the measures of constructs were developed from extant literature and evaluated using a seven-point Likert scale.

**Analysis and Results**

Structural equation modeling was utilized to analyze the proposed research model because of its appropriate and comprehensive method in hypotheses testing in terms of verifying the relationship between observed and latent constructs (Hoyle 1995). We selected SmartPLS 2.0 software as our main statistic tool for data analysis. First, we examined the measurement model to test the reliability, validity, and multicollinearity of the variables. Next, we assessed the structural model and tested the proposed hypotheses.

**Common Method Bias**

The possibility of common method bias might occur due to the use of self-reported data (Podsakoff and Organ 1986). To reduce common method bias, we conducted Harman’s one-factor test (Podsakoff et al. 2003) to examine the five latent variables in our theoretical model. Results have shown that five factors are present, and the covariance explained by largest factor accounts for 29.16%. Therefore, common method bias is not a concern in the present study.

**Measurement Model**

Reliability, convergent, and discriminant validity of the measurement model indicate its goodness. The values of composite reliability and Cronbach’s alpha were all higher than the recommended value of 0.707 (Nunnally 1967), indicating good reliability (Table 1). In addition, the values of AVE were all above the threshold value of 0.50 (Fornell and Larcker 1981); thus, the result supports convergent validity. Discriminant validity was assessed by evaluating the item loadings of expected constructs higher than the cross loadings on any other constructs, and the square root of the AVE value of each indicator was greater than any other constructs (Fornell and Larcker 1981). The results show that discriminant validity was also supported.

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>Cronbach’s Alpha</th>
<th>AVE</th>
<th>RUI</th>
<th>DPE</th>
<th>HPE</th>
<th>PMF</th>
<th>PVF</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUI</td>
<td>0.932</td>
<td>0.891</td>
<td>0.821</td>
<td>0.906</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPE</td>
<td>0.897</td>
<td>0.841</td>
<td>0.744</td>
<td>0.252</td>
<td>0.863</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HPE</td>
<td>0.877</td>
<td>0.813</td>
<td>0.641</td>
<td>0.458</td>
<td>0.387</td>
<td>0.801</td>
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</tr>
<tr>
<td>PMF</td>
<td>0.907</td>
<td>0.866</td>
<td>0.710</td>
<td>0.236</td>
<td>0.130</td>
<td>0.161</td>
<td>0.843</td>
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Table 1. Correlations and Discriminant Validity

<table>
<thead>
<tr>
<th></th>
<th>RUI1</th>
<th>DPE1</th>
<th>HPE1</th>
<th>PMF1</th>
<th>PVF1</th>
</tr>
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<tr>
<td>RUI1</td>
<td>0.896</td>
<td>0.227</td>
<td>0.429</td>
<td>0.197</td>
<td>-0.075</td>
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<tr>
<td>RUI2</td>
<td>0.929</td>
<td>0.281</td>
<td>0.436</td>
<td>0.227</td>
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<tr>
<td>RUI3</td>
<td>0.893</td>
<td>0.200</td>
<td>0.376</td>
<td>0.218</td>
<td>-0.023</td>
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<tr>
<td>DPE1</td>
<td>0.093</td>
<td>0.786</td>
<td>0.318</td>
<td>-0.031</td>
<td>0.069</td>
</tr>
<tr>
<td>DPE2</td>
<td>0.246</td>
<td>0.898</td>
<td>0.317</td>
<td>0.150</td>
<td>0.104</td>
</tr>
<tr>
<td>DPE3</td>
<td>0.266</td>
<td>0.900</td>
<td>0.372</td>
<td>0.132</td>
<td>0.146</td>
</tr>
<tr>
<td>HPE1</td>
<td>0.414</td>
<td>0.342</td>
<td>0.865</td>
<td>0.155</td>
<td>0.180</td>
</tr>
<tr>
<td>HPE2</td>
<td>0.291</td>
<td>0.282</td>
<td>0.735</td>
<td>0.015</td>
<td>0.150</td>
</tr>
<tr>
<td>HPE3</td>
<td>0.344</td>
<td>0.277</td>
<td>0.792</td>
<td>0.190</td>
<td>0.217</td>
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<tr>
<td>HPE4</td>
<td>0.400</td>
<td>0.331</td>
<td>0.804</td>
<td>0.136</td>
<td>-0.006</td>
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<tr>
<td>PMF1</td>
<td>0.235</td>
<td>0.178</td>
<td>0.159</td>
<td>0.858</td>
<td>0.265</td>
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<tr>
<td>PMF2</td>
<td>0.196</td>
<td>0.119</td>
<td>0.112</td>
<td>0.871</td>
<td>0.268</td>
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<tr>
<td>PMF3</td>
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<td>0.113</td>
<td>0.026</td>
<td>0.816</td>
<td>0.350</td>
</tr>
<tr>
<td>PMF4</td>
<td>0.206</td>
<td>0.020</td>
<td>0.202</td>
<td>0.824</td>
<td>0.334</td>
</tr>
<tr>
<td>PVF1</td>
<td>0.07</td>
<td>0.178</td>
<td>0.111</td>
<td>0.440</td>
<td>0.719</td>
</tr>
<tr>
<td>PVF2</td>
<td>-0.035</td>
<td>0.148</td>
<td>0.160</td>
<td>0.388</td>
<td>0.990</td>
</tr>
</tbody>
</table>

Table 2. Cross Loadings of Constructs

Structural Model

We used SmartPLS statistic tool to evaluate the significance of path coefficients (β) and moderating effects. All the results are presented in Figure 2 and Table 3. The main results show that the proposed model has a strong explanatory power, yielding a total explained variance of 35.4% (R² = 0.354). Health promotion expectancy (β = 0.386, T = 7.714) acts as one of the most significant predictors in the present study. Together with disease prevention expectancy (β = 0.104, T = 2.083), it positively affects routine use intention; thus, H1 and H2 are supported. For the testing results of the moderating effect, promotion focus (β = 0.194, T = 3.472) has a strong positive moderating effect on the relationship between health promotion expectancy and routine use intention, thereby supporting H3. Hypothesis 4 posited that prevention focus (β = 0.110, T = 0.856) positively moderates the relationship between disease prevention expectancy and mHealth routine use intention. Therefore, Hypothesis 4 is not supported.

Discussion and Implications

Key Findings

Three main findings are determined in the present study. First, the results have empirically verified that performance expectancies, health promotion expectancy, and disease prevention expectancy are key elements contributing to individuals’ attitude change toward routinized use intention of mHealth services. This finding is consistent with the basic tenets of expectancy theory (Fudge and Schlacter 1999), which indicates that individuals’ cognitive assumptions or expectations influence their attitude and behaviors toward pursuing a goal. Our results also show that health promotion expectancy has a significantly stronger effect on routine use intention than disease prevention expectancy, which suggests that the influences of health promotion and disease prevention differ based on the types of behavior they intend to
choose. A plausible explanation of this finding is that individuals tend to choose HIT that can positively promote their health conditions.

The second finding agrees with our hypothesis, that is, promotion focus strengthens the relationship between health promotion expectancy and mHealth routine use intention. Figure 3 shows the moderating effect of promotion focus in H3. Based on regulatory focus theory, individuals with a promotion focus involve sensitivity to approach positive outcomes and they are frequently eager to pursue gains, advancement, and success. (Higgins 1997; Higgins et al. 2001). Health promotion expectancy frames a promotion situation where the desired end states can be obtained, which is compatible with the inclination with promotion focus. Therefore, with the increase of promotion focus, health promotion expectancy tends to be motivating and to cause a strong effect on routine use behavior.

The third finding is incompatible with our hypothesis, that is, prevention focus has no effect on the relationship between disease prevention and routine use intention. The possible explanation regarding this result is that regulatory fit can increase the intensity of the value experience of a goal; thus, repulsiveness of goals will increase in intensity (Cesario et al. 2004; Higgins 2006). Agarwal et al. (2011) indicated that health conditions and well-being can be endangered if individuals use inappropriate healthcare services. Prevention-focused individuals consistently tend to be skeptical, prudent, and self-cautious. Therefore, although prevention-focused individuals might perceive the benefits of mHealth services in terms of disease prevention, they are not easily convinced to accept it.

### Table 3. The Structural Equation Model Results

<table>
<thead>
<tr>
<th></th>
<th>Path</th>
<th>β</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEN-&gt;RUI</td>
<td>0.098</td>
<td>0.437</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>EDU-&gt;RUI</td>
<td>-0.066</td>
<td>1.886</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>AGE-&gt;RUI</td>
<td>0.016</td>
<td>2.484</td>
<td>**</td>
<td></td>
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<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPE-&gt; RUI</td>
<td>0.386</td>
<td>7.714</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>DPE-&gt; RUI</td>
<td>0.104</td>
<td>2.083</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Moderating effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPE*PMF-&gt; RUI</td>
<td>0.194</td>
<td>3.472</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>DPE*PVF-&gt; RUI</td>
<td>0.110</td>
<td>0.856</td>
<td>NS</td>
<td></td>
</tr>
</tbody>
</table>

Note1: when |t value| > 2.610, P < 0.01; when |t value| > 1.977, P < 0.05, when |t value| > 1.656, P < 0.1.
Note2: ***p < 0.01, **p < 0.05; *p < 0.1; NS: not significant.
Implications

The present study provides three contributions to the information system and healthcare research. First, performance expectancy, is adapted to the context of HIT research. We propose that health promotion and disease prevention expectancies can effectively influence individuals’ attitude change toward mHealth services. Extant literature has rarely examined performance expectancies as the dominant factors that trigger individuals’ use intention of IT. Second, this research addresses IT routine use intention rather than IT use intention. Abundant studies have investigated IT use intention; however, few studies have explored routine use intention of IT. The present work explores individuals’ routine use intention of mHealth services, which enhances our understanding of people’s routine use behavior in IT research. Third, this study uses regulatory focus as its overarching theoretical foundation and introduces the conceptions of promotion and prevention foci, which have moderating effects on the relationship between individuals’ performance expectancy and routine use intention. Promotion-focused individuals are motivated by health promotion expectancy to conduct certain health behavior. In addition, the notion of regulatory focus has rarely been explored in IT research, especially in the HIT context. Our findings illustrate the moderating role of promotion focus, which contributes to the development of motivational mechanisms in HIT research.

The current study has three implications to practice. First, mHealth service providers should aware that individuals can form health promotion and disease prevention expectancies, thereby offering unique opportunities for mHealth service design and development. Second, compared with disease prevention, health promotion is more influential on mHealth service acceptance. Therefore, health service providers should deliver personalized services, such that they design and develop their products with the aim to help individuals develop a healthy lifestyle that promotes and enhances the state of well-being. Third, given the different regulatory foci of people, promotional-focused potential service adopters are sensitive to success, improvement, and some other positive outcomes. Healthcare product producers should notice their customers’ eagerness in making progress and aspirations to achieve their goals. Therefore, for promotion-focused customers, their customized healthcare products should also be promotion-oriented.

Conclusion

The present study examines the effects of performance expectancy, health promotion, and disease prevention on individuals’ routine use intention of mHealth services by integrating expectancy and regulatory focus theories. Data were collected from 154 participants, demonstrating that health promotion and disease prevention expectancies have an effective influence on routine use intention. However, health promotion expectancy has a considerably stronger effect than disease prevention expectancy. In addition, health promotion expectancy has a significant effect on routine use intention of mHealth services only for those individuals with a high level of promotion focus. Furthermore, contrary to our research hypothesis, prevention focus exerts no effect on the relationship between disease prevention and routine use intention.
The findings of this study can enrich the relevant theories and expand the research areas in mHealth adoption and diffusion.

This study has several limitations. First, data collection was only conducted in China and may limit the generalizability of our findings. Thus, the applicability of this study in other countries should be examined. Second, despite our random recruitment of participants to reduce selection bias, the limited sample size is a limitation of this study. Third, the definition of mHealth services is discussed unilaterally in this study. We only explored the customization and interaction of mHealth services. Akter et al. (2013) described the attributes of mHealth services to include mobility, ubiquity, accessibility, and immediacy. Our future research aims to develop a suitable model to examine the actual use behavior of mHealth services.

REFERENCES