The privacy–personalization paradox in mHealth services acceptance of different age groups

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A B S T R A C T

Mobile health (mHealth) services have gained increasing attention in recent years; however, few studies have focused on the manner in which consumers’ attributes affect acceptance behavior, for instance, personal privacy concerns and personalization concerns; with even fewer studies on the effects on different age groups. To fill this research gap, our research has developed an attribute–perception–intention model, using the privacy–personalization paradox factors as independent variables that affect mHealth acceptance intention, with trust as a mediator. The age differences of participants were then examined. A survey of 650 subjects in China was conducted to test the proposed research model and hypotheses. The results show the following key findings: (1) perceived personalization and privacy concerns are positively and negatively associated with behavior intention; (2) trust mediates the relationships between perceived personalization, privacy concerns and behavior intention; and (3) age differences are examined in the model, which in this respect differ from previous technology acceptance research. Theoretical and practical implications are also discussed.

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1. Introduction

People in emerging economies worldwide are enjoying gradual improvements in the quality of life and paying more attention to healthcare (Varshney 2014). With the rapid development of the mobile communication industry, there is great interest in the provision of health-related services via mobile telephones or other mobile devices. Such a service is known as ‘mHealth’. Accordingly, the use of mobile technology in healthcare, i.e., mHealth services, has gained rapidly increasing research attention in recent years (Zhang et al. 2014).

Whilst the potential benefits of mHealth services are obviously evident, including more efficient health care, availability for remote medical monitoring and consultation, as well as reduced medical costs, literature on mHealth diffusion is rather limited. Moreover, previously constructed models have focused mainly on perceived usefulness; perceived ease of use viewed from the standpoint of the technology acceptance model (TAM); or threat appraisal and coping viewed from a health behavior perspective. However, the constructs of consumer attributes have been generally ignored (Chellappa and Sin 2005, Sun et al. 2013).

Among the limited studies on this issue, Chellappa and Sin (2005) have partially narrowed the research gap, in examining how consumer attributes, such as privacy concerns and scope for personalization, affect the likelihood of the adoption of personalized services. This study thus discusses the acceptance of mHealth services from the perspective of consumer attributes. Furthermore, we extend the findings of Chellappa and Sin (2005) by investigating the impact of privacy concerns and personalization on adoption intention, mediated by trust. Indeed, trust has been regarded as a form of mediation in many fields, such as social networks (Levin and Cross 2004), service marketing (Auh 2005) and organizational citizenship behavior (Ertürk 2007). However, the mediating role of trust in the relationship between the privacy–personalization paradox and behavior intention has rarely been explored. This paper thus develops an attributes (privacy and personalization) – perceptions (trust) – acceptance intention model to study consumers acceptance behavior in their use of mHealth services. Furthermore, personality changes across a person’s lifespan have received widespread attention, becoming an important focal point in social science research and theory. The IS literature has used age as a key moderating variable in technology acceptance...
and the health comprehensive context are seen to have been rarely
perspectives. Nonetheless, to date, age differences in technology
health factors, its complexity warrants multiple approaches and
As the age differences in mHealth may relate to technology and
mHealth diffusion.

2. Mobile health (mHealth) services

As a subset of eHealth (electronic healthcare), mHealth has
many advantages over general eHealth, including increased flexi-
bility, timeliness and mobility (Akter et al. 2011, Akter and Ray
2010). In fact, mHealth can be defined as the utilization of emerg-
ing wireless information and communication technologies to
transmit healthcare services, which are applicable for service recei-
vers to acquire health services through mobile devices such as
mobile phones, smart phones and PADs (Akter et al. 2011,
Istepanian et al. 2006). Characteristically, mHealth can provide
three kinds of health services (Phillips et al. 2010): (1) promotion
services which are aimed at diagnosis, treatment and management
of diseases and delivering treatment or disease management pro-
grams to patients; (2) prevention services which are designed for
monitoring and intervention of diseases and improving treatment
compliance; and (3) procedural services which are aimed at
improving health care processes, e.g. appointment attendance, test
results and advice notifications. As mobile information and com-
munication technologies are rapidly growing in low income coun-
tries, mHealth services are increasingly efficient in dealing with
current health problems and have huge potential in these countries

Largely due to the emerging nature of mHealth as a healthcare
technology, insufficient research attention has, to date, been
devoted to its diffusion. An exception is the study of Cocosila and
Archer (2010) which investigated the obstacles (risk factors)
of potential users’ adoption of mobile information communication
technology (ICT) for health promotion from a motivational per-
spective. By integrating TAM and TPB and examining both their
technological and organizational aspects, Wu et al. (2011) studied
how healthcare professionals adopt mobile healthcare services. To
provide a unified understanding of the acceptance of mHealth ser-
VICES, Sun et al. (2013) introduced health factors from the protec-
tion motivation theory to study the consumer acceptance of mHealth
services. Guo et al. (2013) explored the enablers and inhibi-
tors of mHealth adoption behavior among the elderly. Akter et al.
(2011) studied the establishment of trust in mHealth services and
observed its positive impact on consumer trust and the continu-
ance use intention. Based on an expectation confirmation model,
Akter et al. (2013)’s in another paper used perceived service quality
and perceived trust as key post-adoption beliefs to explore the con-
tinued usage of mHealth services for low income populations.

After reviewing the literature on mHealth services, we perceive
that most previous research on the acceptance of mHealth services
are from a general technology or service perspective and thus do
not provide fresh perspectives on mHealth characteristics. In order
to add insights to mHealth literature, two significant research gaps
need to be filled. First, mHealth can provide more personalized
health services than general health services and technologies based
on users’ personal health information, which may lead to privacy
concerns. However, the privacy–personalization paradox has failed
to receive adequate attention in mHealth context; and is not con-
cerned with how to balance the paradox. Second, the demographic
differences in technology acceptance and health behavior are usu-
ally researched as separate areas of focus. As the mHealth service is
a combination of technology and health factors, the demographic
differences in mHealth related behavior are more complex. How-
ever, the demographic differences in mHealth are also under-
explored (Zhang et al. 2014).

To narrow these research gaps, this research aims at providing
an understanding of mHealth acceptance behavior from a pri-
vacy–personalization paradox perspective, focusing on how to bal-
ance the paradox with consumer trust and the age differences in
the decision process.

2.2. Trust

Trust has been explored in many disciplines because it can
reduce uncertainty and induce reliance on, another person or
entity, as well as enhance desirable behavior (Gefen et al. 2003),
especially in Internet contexts (Salo and Karjaluoto 2007). As a
popular topic of research, trust has thus been well established
(Gefen and Heart 2006). According to Akter et al. (2011), trust in
the field of IS can be defined as intentions, beliefs, attitudes or
behaviors. Within this broad concept of trust, the two streams of
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