Personality Traits as Predictor of M-Payment Systems: A SEM-Neural Networks Approach

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ABSTRACT

Mobile phones have led to a great revolution of modern society, helpful for many businesses to reorient their sales methods towards effective commercial formats. The m-payment, for instance, as an emergent technology to these novel commercial setups, is now undertaking the adoption process. Individual users are known to vary in their tendency to accept new technologies. Not surprisingly, some conceptual models describe how and why individuals use m-payments. Until recently, however, the role of personality in overall, and the big ﬁve model of personality, in particular, had remained mostly unexplored. This article aims to ascertain the impact of personality traits on m-payment adoption. Data were collected from 323 m-payment customers and analyzed using a two-step research methodology. SEM was applied to test the hypothesis, and signiﬁcant antecedents of m-payment were identiﬁed. Next signiﬁcant personality factors were input to a neural network model for ranking. The results showed that conscientious and agreeableness is the two main predictors of m-payment adoption.

KEYWORDS
Agreeableness, Artificial Neural Networks, Conscientiousness, Extraversion, M-Commerce, Mobile Payment, Neuroticism, Openness to Experience, Personality Traits, SEM

1. INTRODUCTION

In the information system (IS) ﬁeld, technology acceptance has been one of the widely studied areas. Substantial developments have been documented in this ﬁeld since the early 1980s. Technology acceptance is deﬁned as the adoption or the ﬁrst use of a latest technology or invention (Kuan & Chau, 2001; Ali, Wang, Khan, Pitaﬁ, & Amin, 2019). Studies on technology acceptance targeted to recognize, forecast, and explain variables affecting adoption behavior at the individual as well as organizational levels to accept and use technological innovations (Salahshour Rad, Nilashi, & Mohamed Dahlan, 2017; Schaupp & Bélanger, 2016; Walczak & Borkan, 2016; Bano, Cisheng, Khan, & Khan, 2019). The fast growth of information and communication technologies has had a great inﬂuence on all extents of human life (Pitaﬁ, Kanwal, Ali, Khan, & Waqas Ameen, 2018; Xiongfei, Khan, Zaigham, & Khan, 2019). As the emergence of mobile phone technologies, mobile

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payment (m-payment) systems and their preliminary adoption has received greater attention from IS scholars as technology acceptance is a trendy research area (Dahlberg, Guo, & Ondrus, 2015; Liébana, Sánchez, & Muñoz, 2014; Ting, Yacob, Liew, & Lau, 2016; Walczak & Cerpa, 1999; Khan & Ali, 2018). Accordingly, rich findings of MPS acceptance have been shaped (Chen & Li, 2017).

The extensive use of cell phones and its continuous immediacy to the users make them fit for the m-payment system without the necessity for a physical wallet, allowing mobile phones real viable value over mobile payment (Mallat & Tuunainen, 2008). Mobile payments permitted customers to reduce the need to use cash (Pham & Ho, 2015), performance and transmission of protected information between devices (Oliveira, Thomas, Baptista, & Campos, 2016), and offering convenience and speed. Mobile payment is undergoing a fast development in several markets as most of the commercial firms understand the perspective of it (Merritt, 2011; Oliveira et al., 2016). A survey conducted by the (Statista Corporation, 2015) predicted that the revenue for the global mobile payment is to reach USD1 trillion by 2019, therefore becoming one of the vital innovations for conducting mobile transactions. Recently researchers have begun to examine the role of psychological factors in influencing an individual’s adoptions of innovative technologies (Hartmann & Vanpoucke, 2017; Huang & Ken, 2017; Jia, Cegielski, & Zhang, 2014; Mouaket, 2016; Reza & Khan, 2014; Ali, Wang, & Khan, 2019). Adoptions of innovative technology depend on a person’s attitude and, their personality which; plays a key role in new acceptances especially technology acceptance. Several studies have provided extensive proof for the role of personality traits as predictors of beliefs and behavior, across a range of IS contexts (Gupta & Anson, 2014; Leong, Jaafar, & Sulaiman, 2017; Özbek, Alñaçık, Koc, Akkuş, & Kaş, 2014; Stachl et al., 2017; Walczak & Borkan, 2016).

More recently, there has been an increasing importance in personality as a descriptive tool in the IS literature (Reza & Khan, 2014; Walczak & Borkan, 2016). The Big Five personality traits are the five broad areas of extents of human personality. The theory based on the Big Five factors is also known as the five-factor model or big five model (BFM) (McCrae & Costa, 1987). As mentioned prior, recently, various studies have been made in the IS field on personality for technology adoptions but not particularly in the context of mobile payment adoption. Due to the growing interests in mobile payment research, this study can be considered as a starter which used BFM as a theoretical base for exploring the influence of different personality traits on the behavioral intention to accept m-payment services. Finally, several previous studies on IS adoption stated that there is different between perception of the users of these technologies depending on their demographic characteristics such as age and gender (Forgays, Hyman, & Schreiber, 2014; Garrett, Rodermund, Anderson, Berkowitz, & Robb, 2014; Kim, Mirusmonov, & Lee, 2010; Kumar & Lim, 2008; Lakhal & Khechine, 2017). These researchers suggested that this will be important for designers and MPS providers to target different segments of market. Therefore, we will also check the model difference in old and young customers as well as men and women. In line with that, another objective of the study is to determine the most significant personality trait influencing m-payment adoption and its relative importance. One of the key disadvantages of conventional statistical methods used for the forecast of customer’s behavior is that they commonly study only linear relations among variables. To counter this issue, SEM with neural networks analysis (NNA) will be used to determine the relative importance of significant factor, NNA is capable to model complex non-linear relationships (Leong, Hew, Wei-Han Tan, & Ooi, 2013; Walczak & Sincich, 1999).

2. LITERATURE REVIEW

Currently, McCrae and Costa’s (1987) BFM is considered as a standard for the theory of personality trait. A person may have all the five personalities but may score high on one or more than one personality and lower on the other personalities. BFM poses five dimensions, namely neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience. We have conducted a comprehensive literature review relating to the studies on influences of BFM on m-payments. However,
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