Chapter 6
Predicting the Determinants of Mobile Payment Acceptance:
A Hybrid SEM-Neural Network Approach

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ABSTRACT

This chapter aims to determine the main factors of mobile payment adoption and the intention to recommend this technology. An innovative research model has been proposed with the advancement of the body of knowledge on this subject that combines the strengths of two well-known theories: the extended unified theory of acceptance and use of technology (UTAUT2) with the innovation characteristics of the diffusion of innovations (DOI) with perceived security and intention to recommend the technology constructs. The research model was empirically tested using 259 responses from an online survey conducted in Turkey. Two techniques were used: first, structural equation modeling (SEM) was used to determine which variables had significant influence on mobile payment adoption; in a second phase, the neural network model was used to rank the relative influence of significant predictors obtained by SEM. This study found that the most significant variables impacting the intention to use were perceived technology security and innovativeness variables.

INTRODUCTION

Digital payment using a mobile device has been recognized as one of the innovative technological changes in recent years. These devices provide consumers with an improved functionality, which makes the overall payment activity hassle-free

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(Bauer, Reichardt, Barnes & Neumann, 2005; Dwivedi, Shareef, Simintiras, Lal, & Weerakkody, 2016; Hsu & Kulviwat, 2006; Liébana-Cabanillas, Marinkovic, de Luna, & Kalinic, 2018; Masamila et al., 2010 ; Varshney & Vetter, 2002; Veríssimo, 2016). According to the statistics published by Statista.com (2015), the total number of mobile phone users across the world is projected to surpass five billion users by 2019. On the other hand, Smartphone users worldwide are expected to reach almost 2.5 billion in 2019. Mobile technologies are presenting a large number of service innovations to the users. M-payment, as one of the major mobile innovations, became popular among the users across the World (Laukkanen, 2016).

New generation mobile devices (e.g., Smartphone), a strategic and profitable tool for delivering the products, services and information, equipped with distinctive and extraordinary features, have been widely accepted by consumers as an innovative method for digital payments (Slade et al., 2013; Yadav, Sharma, & Tarhini, 2016; Bauer, Reichardt, Barnes & Neumann, 2005; Hsu & Kulviwat, 2006; Varshney & Vetter, 2002).

Various definitions have been given to m-payment. Dewan and Chen (2005, p. 4) defined m-payment as ''making payments using mobile devices including wireless handsets, personal digital assistants (PDA), radio frequency (RF) devices, and NFC based devices''. M-payment also refer to as ''payments for goods, services, and bills with a mobile device such as mobile phone, smart-phone, or PDA by taking advantage of wireless and other communication technologies'' (Dahlberg, Mallat, Ondrus, & Zmijewska, 2008: 165). Besides that, m-payment may be referred to as ''using mobile devices to make transactions such as pay bills and perform banking transactions'' (Gerpott & Kornmeier, 2009: 1). Mobile payment or m-payment (MP) is referred to the transfer of money (in digital form) from one party (e.g., consumer) to another party (e.g., seller or merchant) using a mobile device (Chandra, Srivastava, & Theng, 2010; Pham & Ho, 2015). m-Payment enables users to make payment and fund transfer in comfortable and efficient manner (Mallat, Rossi & Tuunainen, 2004). m-Payment facilitates efficient and secure commercial transaction between service provider and consumers (Ondrus & Pigneur, 2006). m-Payment is initiation, authorization and completion of financial transaction through mobile devices (Mallat, 2007). Mobile payment can be grouped into three major forms – (a) in-person mobile payment or contactless payment. This type of m-payments works on near field communication (NFC) technology in which transaction is done by establishing a connection between mobile device and point of sale (POS) through radio waves, (b) payments through mobile app or website (remote MP), and (c) person-to-person payment using the dedicated mobile (Liébana-Cabanillas et al., 2017a). Business Insider (2015) expects that m-payment volume will reach $808 billion by 2019.

The present book chapter develops a new research model used to predict the most significant factors influencing the decision to use mobile payments. The