



Full length article

An investigation of factors that affect internet banking usage based on structural equation modeling



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ARTICLE INFO

Article history:

Received 4 September 2015

Received in revised form

22 June 2016

Accepted 28 September 2016

Keywords:

Structural equation modeling (SEM)

Internet banking

Exploratory factor analysis

ABSTRACT

Nowadays, banks get an opportunity of serving to their customers without the restriction of location and time, thanks to internet. But some customers still do not use it, because of different reasons. In order to understand this problem a structural equation model of Internet banking use in Dokuz Eylul University's academicians was developed. A survey instrument was used to gather data to estimate the proposed research model. The results show that "Benefits of Internet Banking", "Communication" and "Convenience" significantly influence customers' Internet banking use. Overall, the model helps to increase our understanding of how these factors interact to influence Internet banking use, which can help in the design of Internet banking.

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1. Introduction

Nowadays, the advancement of internet has provided an opportunity for banking institution in introducing new financial innovations. One of the emerging financial innovations introduced by banking institution is internet banking (Jun & Cai, 2001). There are various benefits of using Internet banking for both banks and their customers. Banks can benefit from much lower operating costs by offering internet banking services. Customers will also benefit from the convenience, speed and round-the-clock availability of internet banking services (Xue, Hitt, & Chen, 2011).

However, despite the fact that internet banking provides many advantages there are still a many of customers who does not use such services (Cheng, Liu, Qian, & Song, 2008); i.e., that internet banking acceptance is faced with problems. Robinson (2000), for instance, found that half of the people who tried online banking services will not become active users. Therefore, understanding the reasons for this problems would be useful for bank managers in formulating strategies aimed at increasing internet banking use.

The success of internet banking is determined not only by banks or government support, but also by customers' acceptance of it. The adoption and use of internet banking have been the subject of many

research, and in recent years several theories that offer new insights have emerged at both the individual and organizational levels, focused on a country or a set of countries. In literature review section we mentioned about some of these research.

Former research related to predictors of use of internet banking, researchers have focused on analyzing causal relationships and providing empirical models. Although the studies mentioned in the literature review section provide crucial contribution to the internet banking adoption, it seems that resistance to innovations and those individuals who resist change are overlooked or have received inadequate attention. This is indeed a real consumption choice. Understanding the reasons for this behavior could be vital in the adoption of internet banking usage. This gap is fulfilled with developing a different SEM model which aims to investigate factors of internet banking service usage among academicians at Dokuz Eylul University. Each of the several models that have been proposed in the literature has the same variable, use or intention to use, but with various antecedents to understand acceptance of internet banking usage. In this model we consider five subscales; "Importance of Internet Banking Needs", "Compatibility", "Convenience", "Communication" and "Customer Adaptation to Internet Banking". These have been known as main factors from previous research that influence internet banking adoption. In addition, interactions between factors that might impact Internet banking use are discussed. This model may help banks to comprehend the determinant factors that influence users and to create the right policies and actions to

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Table 1
Rotated component matrix for factor analysis.

| Questions | Component | | | | |
|-------------|-----------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 5 |
| Question 1 | 0.353 | 0.412 | 0.148 | 0.047 | -0.132 |
| Question 2 | 0.027 | 0.254 | 0.671 | -0.139 | 0.110 |
| Question 3 | 0.072 | 0.324 | 0.358 | -0.091 | 0.663 |
| Question 4 | 0.187 | 0.613 | 0.205 | 0.013 | 0.283 |
| Question 5 | 0.098 | 0.700 | 0.052 | 0.135 | 0.322 |
| Question 6 | 0.153 | 0.777 | 0.045 | 0.157 | -0.193 |
| Question 7 | -0.208 | 0.232 | 0.676 | 0.324 | -0.286 |
| Question 8 | 0.015 | 0.373 | 0.456 | -0.092 | 0.219 |
| Question 9 | 0.149 | 0.047 | 0.193 | 0.194 | 0.071 |
| Question 10 | 0.583 | 0.067 | 0.202 | 0.404 | 0.216 |
| Question 11 | 0.393 | -0.047 | 0.296 | 0.324 | 0.173 |
| Question 12 | 0.141 | 0.122 | -0.061 | 0.669 | 0.168 |

attract customers to use this service.

The structure of the paper is as follows. In the next sections literature reviews, in turn materials and methods are presented. The second part of materials and methods section presents the research design, SEM model, and results. Finally, conclusion is presented.

2. Literature review

In literature various studies related to adopt Internet banking have been conducted. For instance, [Chan and Lu \(2004\)](#) investigated adoption/use behavior within the context of Hong Kong Internet Banking services. [Hanudin \(2007\)](#) has been conducted on internet banking research focused on young adults. [Hanafizadeh and Khedmatgozar \(2012\)](#) have an attempt to answer to the question that whether bank customers' awareness of the services and advantages of internet banking is effective in reducing the negative effect of customers' perceived risk on their intention of internet banking adoption. [Yoon and Steege \(2013\)](#) have developed a quantitative model of factors (security, usability, personality, and social influence) associated with Internet banking use. [Martins, Oliveira, and Popović \(2014\)](#) merges an existing and empirically validated theoretical model with a perceived risk factor, which is also an important construct that will be tested on the adoption of Internet banking for the first time. [Hanafizadeh, Keating, and Khedmatgozar \(2014\)](#) present a systematic review of 165 research articles published on the adoption of Internet banking (IB) between 1999 and 2012. [Kesharwani and Singh Bisht \(2012\)](#) were to extend the technology acceptance model (TAM) in the context of internet banking adoption in India under security and privacy threat. [Hainudin](#) investigate the effect of TAM in internet banking system. [Luarn and Lin \(2005\)](#) found that perceived self-efficacy had a

Table 2
Cronbach's Alpha for internal consistency checking.

| Factors | Questions | Scale mean if item deleted | Scale Variance if item deleted | Corrected item-total correlation | Cronbach's alpha | Cronbach's alpha if item deleted |
|---|-------------|----------------------------|--------------------------------|----------------------------------|------------------|----------------------------------|
| Communication | Question 10 | 80.33 | 89.195 | 0.703 | 0.870 | 0.900 |
| | | 80.33 | 90.575 | 0.698 | | 0.901 |
| | Question 11 | 80.53 | 84.740 | 0.713 | | 0.899 |
| | | 80.90 | 91.197 | 0.480 | | 0.906 |
| | Question 13 | 81.03 | 90.654 | 0.505 | | 0.905 |
| | | 80.93 | 88.064 | 0.699 | | 0.900 |
| | Question 14 | 80.13 | 92.257 | 0.499 | | 0.905 |
| | Question 15 | | | | | |
| | Question 16 | | | | | |
| | Question 18 | | | | | |
| Importance of Internet Banking Needs | Question 1 | 80.30 | 93.183 | 0.596 | 0.819 | 0.904 |
| | | 80.47 | 89.154 | 0.724 | | 0.900 |
| | Question 4 | 80.67 | 87.678 | 0.689 | | 0.900 |
| | | 80.70 | 90.700 | 0.610 | | 0.903 |
| | Question 5 | | | | | |
| | Question 6 | | | | | |
| Benefits of Internet Banking | Question 2 | 80.20 | 89.131 | 0.671 | 0.698 | 0.901 |
| | | 80.30 | 93.872 | 0.349 | | 0.909 |
| | Question 7 | 80.43 | 93.289 | 0.541 | | 0.905 |
| | | 80.10 | 92.852 | 0.499 | | 905 |
| | Question 8 | | | | | |
| | Question 17 | | | | | |
| Convenience | Question 3 | 80.47 | 89.844 | 0.723 | 0.559 | 0.900 |
| | | 82.33 | 92.161 | 0.329 | | 0.912 |
| | Question 20 | | | | | |
| Customer Adaptation to Internet Banking | Question 9 | 80.10 | 91.266 | 0.577 | 0.563 | 0.903 |
| | | 80.33 | 93.609 | 0.257 | | 0.914 |
| | Question 12 | 80.60 | 92.041 | 0.452 | | 0.906 |
| | Question 19 | | | | | |

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