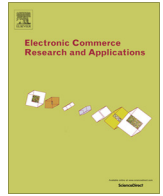




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## Internet banking diffusion: A country-level analysis

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### ABSTRACT

In the last decade, Internet banking technology has made remarkable progress. However, there is a huge disparity across different nations all over the world in the diffusion of Internet banking services. This leads to the research question of this study: why different countries exhibit different levels of Internet banking adoption? Previous studies provide limited insight as they were mostly conducted at the individual user level with single-country samples. At the country level, this study proposes an Internet banking diffusion model that examines the impact of economical, technological and cultural factors on Internet banking diffusion. The hypothesized relationships in the research model were statistically tested with the secondary data collected from a sample of 33 European countries. The results indicate that the effects of socio-economic and technology-related factors on Internet banking diffusion are fully mediated by Internet access. Furthermore, the findings suggest that national culture is an important moderator as it make differences in Internet banking diffusion as well as Internet access across different country groups. The country-level analysis contributes to the advancement of Internet banking theory and practice, and provides some useful insights to researchers, practitioners and policy makers on how to enhance Internet banking diffusion.

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### 1. Introduction

Researchers have studied Internet banking diffusion for over two decades for its importance to both banks and customers. Banks that offer Internet banking services have an edge over those that only offer traditional offline banking services. Similar to e-commerce, Internet banking is an innovation that provides the following competitive advantages to banks: reducing transaction cost, providing better services to customers, meeting consumer demand, and creating efficient transactions (Kalakota and Winston 1996).

Banks provide online services mainly for the purpose of cost reduction resulted from the cheaper expenses than offline services. On average, online banking saves 40 percent operational costs in comparison with offline banking (Tan and Teo 2000, Nath et al. 2001). Banks that reach a high Internet banking diffusion with their customers are even capable of closing some of their physical branches (IB 2009). Furthermore, banks may increase revenue by attracting new customers who prefer Internet banking for its convenience. Internet banking attracts and retains customers by allowing them to conduct financial transactions and access account information anytime and anywhere with computers, tablets and smartphones.

For customers, Internet banking provides them a more flexible option that saves them time and effort and enables personal financial management 24 hours a day and 7 days a week in addition to brick-and-mortar services (Tan and Teo 2000). Internet banking users do not have to make a trip to physical branches, and be constrained by their opening hours (Polasik and Wisniewski 2009). Internet banking users are just clicks away from their latest financial information, which is especially important for corporate customers who need up-to-the-minute information for accurate decision-making in financial management (Tan and Teo 2000).

Even though Internet banking is an innovation that benefits banks and customers, its diffusion still remains very low in many countries around the world in comparison with developed countries. It follows that such a significant variation of Internet banking diffusion in the globe is worth investigating by asking the following research question: *Why different countries have different levels of Internet banking adoption?* The examination of the country-level diffusion of Internet banking services may help researchers, practitioners and policy-makers identify main obstacles and recommend workable solutions.

This study addresses the research question by investigating the country-specific factors that make differences in Internet banking diffusion. It develops an Internet banking diffusion model that takes common economical, technological and cultural factors into account. Such a general model is applicable to most countries

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and regions in the world. The model is tested with secondary data collected from a sample of countries, and the empirical findings may contribute to the advancement of Internet banking theory and practice at the country level. Such a country-level analysis is able to provide insights on the disparity of Internet banking development over the world. This study is organized as follows. First, it reviews the literature on Internet banking diffusion and relevant theories. The subsequent section describes the research model of the hypothesized relationships between country-level factors and Internet banking diffusion. Then, it discusses the methodology including data collection and statistical techniques for model testing. Finally, results are presented, followed by implications and conclusion.

## 2. Literature review

Based on the search on Google Scholar using key words “Internet banking”, “online banking” and “electronic banking (also e-banking)”, 41 relevant studies were collected and reviewed. As shown in [Table 1](#), almost all the existing studies focus individual-level analysis on people’s adoption of Internet banking with the sample collected from each country. The variables used

differ in the numbers as well as their natures, making the comparison and aggregation of findings across countries very difficult.

The main method of data collection employs survey questionnaires to identify customers’ perceptions of Internet banking related to their adoption decisions. Some of these studies identified the determinants of Internet banking diffusion at the consumer/individual level such as perceived usefulness, perceived ease of use, perceived relative advantages, compatibility, observability, trialability, income, education, age, gender, and marital status. Some of them related customers’ obstruction from Internet banking diffusion to security, privacy, self-efficacy, computer experience, Internet experience, complexity, lack of awareness, lack of knowledge, trust, risk, legal support, governmental support, perceived credibility, availability, fees and charges.

The review suggests that Internet banking determinants and obstructions vary across countries and samples of surveyed customers. Though some of the findings are similar, they did not give a clear and general explanation for customer adoption of Internet banking in different countries. The danger is to generalize the findings beyond the original geographical scope as the “where” condition places limitations on researchers’ propositions as contextual factors such as the targeted location of a study (one country) set the boundaries of generalizability ([Whetten 1989](#)).

**Table 1**  
Internet banking studies.

Studies	Countries	Findings
<a href="#">Sathye (1999)</a> , <a href="#">Adapa and Cooksey (2013)</a>	Australia	Security and lack of awareness
<a href="#">Tan and Teo (2000)</a> , <a href="#">Liao and Wong (2008)</a>	Singapore	Perceptions of relative advantage, compatibility, trialability, and risk toward using the Internet
<a href="#">Hoppe et al. (2001)</a>	South Africa	Perceptions of relative advantage, compatibility, trialability, risk, and complexity
<a href="#">Wang et al. (2003)</a> , <a href="#">Lee (2009)</a> , <a href="#">Lee et al. (2011)</a>	Taiwan	Computer self-efficacy, perceived ease of use, perceived usefulness, and perceived credibility/Security & privacy risk, financial risk, perceived benefit, attitude and perceived usefulness
<a href="#">Rotchanakitumnuai and Speece (2003)</a> , <a href="#">Jaruwachirathanakul and Fink (2005)</a>	Thailand	Trust, and Legal Support/Perceived usefulness, features of the website, education, income, internet experience, and gender
<a href="#">Pikkarainen et al. (2004)</a>	Finland	Perceived usefulness, perceived ease of use, perceived enjoyment, information on online banking, and security and privacy
<a href="#">Kolodinsky et al. (2004)</a>	USA	Relative advantage, complexity/simplicity, compatibility, observability, risk tolerance, and product involvement, income, assets, education, gender and marital status, and age
<a href="#">White and Nteli (2004)</a>	UK	Security, convenience, speed and timeliness of the service
<a href="#">Eriksson et al. (2005)</a>	Estonia	Perceived ease of use, perceived usefulness, and trust
<a href="#">Cheng et al. (2006)</a> , <a href="#">Yiu et al. (2007)</a>	Hong Kong	Perceived usefulness, perceived ease of use, personal innovativeness, and perceived risk
<a href="#">Khalfan et al. (2006)</a>	Oman	
<a href="#">Ndubisi and Sinti (2006)</a> , <a href="#">Poon (2007)</a>	Malaysia	Compatibility, complexity, and trialability/convenience of usage, accessibility, features availability, bank image, security, privacy, design, content, speed, and fees and charges
<a href="#">Gan et al. (2006)</a>	New Zealand	Service quality, perceived risk factors, user input factors, employment, and education
<a href="#">Mashhadi et al. (2007)</a> , <a href="#">Sadeghi and Farokhian (2010)</a>	Iran	Perceived usefulness, perceived ease of use, trust, self-efficacy, external influence, facilitating condition/convenience, accessibility, accuracy, security, usefulness, bank image
<a href="#">Hernandez and Mazzon (2007)</a>	Brazil	Advantage of control, lifestyle, image, subjective norm, self-efficacy, security and privacy, results demonstrability, and trialability
<a href="#">AbuShanab et al. (2007)</a>	Jordan	Social influence, self-efficacy, and perceived trust
<a href="#">Jahangir and Begum (2008)</a>	Bangladesh	Perceived usefulness, ease of use, security and privacy
<a href="#">Celik (2008)</a>	Turkey	Perceived risk, perceived playfulness, Perceived usefulness, and perceived ease of use
<a href="#">Reid and Levy (2008)</a>	Jamaica	Trust, computer self-efficacy, perceived usefulness and perceived ease-of-use
<a href="#">Qureshi et al. (2008)</a>	Pakistan	Perceived usefulness, security and privacy
<a href="#">Polasik and Wisniewski (2009)</a>	Poland	Perceived level of security of internet transactions, experience with the medium of internet and certain demographic variables
<a href="#">Al-Somali et al. (2009)</a>	Saudi Arabia	Internet connection, awareness of online banking, social influence, computer self-efficacy, Education, trust, and resistance to change
<a href="#">Azouzi (2009)</a> , <a href="#">Nasri and Charfeddine (2012)</a>	Tunisia	Awareness of e-banking products and services, ease of use, willingness to adopt e-banking, convenience, internet access
<a href="#">Adesina and Ayo (2010)</a>	Nigeria	Perceived Credibility, Computer Self-Efficacy, Perceived Usefulness, and Perceived Ease of Use
<a href="#">Chong et al. (2010)</a>	Vietnam	Perceived usefulness, Trust, and Government Support
<a href="#">Rullis and Sloka (2010)</a>	Latvia	Lack of Knowledge
<a href="#">Alam et al. (2010)</a>	Sudan	Infrastructure, Education, Income, and Lack of Knowledge
<a href="#">Zhao et al. (2010)</a>	China	Trust and Perceived Risk
<a href="#">Gikandi and Bloor (2010)</a>	Kenya	Internet security, trust, speed of service delivery, information privacy, customers’ awareness, continuity of the service, computer use, Internet use, difficulty of using online banking, pricing of Internet service, Internet infrastructure, difficulty and cost of maintaining the site, and lack of legal regulations
<a href="#">Proença and Rodrigues (2011)</a>	Portugal	Age, Education, and Price sensitivity
<a href="#">Mansumittrchai and AL-Malkawi (2011)</a>	Mexico	Difficulty, trust, compatibility and human contact
<a href="#">Dimitriadis et al. (2011)</a>	Greece	Trust

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