Digital Wallet Adoption: A Literature Review

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ABSTRACT

Electronic commerce(e-commerce) have continuous impact on global business scenario, but mobile applications and technologies have also begun to focus more on mobile banking, digital wallet, m-commerce and the wireless web. Against the various backdrops, digital wallet (e-wallet) has emerged as a new channel of distribution, without much research being devoted to its adoption. Therefore, the present studies analyses most of the previous studies done on mobile banking and digital wallet adoption. It also emphasizes on the customers attitude towards adoption of e- wallet. The findings of the study indicates that digital banking literature relies majorly on various theories i.e. technology adoption model, innovation diffusion theory, Rasch measurement model, revealing the adjustment(with lifestyle and device), perceived usage, perceived risk and usefulness, intention to adopt the technology and attitude towards adoption in developing and developed countries. This study makes several suggestions for further research in this area of digital banking. This study reflects the overall contribution of researchers in the field of internet, mobile and digital banking-in developing and developed country. The main theoretical contribution of this research is to various models. Banks should rely on increasing the usage of digital banking. Simultaneously, banks should put in efforts to decrease the risk associated with the use of digital banking.

Keywords: Digital wallet, mobile banking, technology acceptance model, innovation diffusion theory, risk, attitude.

INTRODUCTION:

The introduction of technology in banking sector began in 1950s but it actually became a part of banking a part of banking industry in 1970's (Goswami Mani, 2018). Digital banking includes internet banking mobile banking, SMS banking and digital wallets which are operating in the country. These terms help in balance check, payments, transactions and all other financial activities to be done with the help of internet and mobile devices. The tremendous increase in mobile service providers and the technology up gradation from 2G to 3G and from 3G to 4G has provided various opportunities to banking sector.

Electronic commerce(e-commerce) have continuous impact on global business scenario but mobile applications and technologies have also began to focus more on mobile banking, digital wallet, m-commerce and the wireless web. Nowadays, due to demonetization digital wallet are prevalent in the country. People of India are too becoming techno savvy as this digitization saves time, cost and efforts of going to bank for small transactions which are operational just on click of smart phones. The dramatic increase in the number of mobile banking in India has become yardstick to promote digital banking as a part of bank services.

Various studies have analyzed digital banking and its associated factors contributing towards adoption of digitization. The methods used in several studies are both quantative as well as qualitative. Fe number of studies are contributing towards a review of literature on mobile and internet banking adoption. Such a review represents an important milestone in the development of a research field. This study seeks to extend the understanding of mobile technologies by taking a detailed review of digital banking adoption.

After taking into consideration the complexity of mobile technology and various services offered , the study seeks

to contribute to m-banking literature b exploring and analyzing the current state off knowledge on m-banking and its adoption across various strata of populations living in both developed and developing countries. This study deals with the gaps for further, research in the field of digital banking and summarizes the major findings in this area.

This paper aims to understand the definition of digital banking and its constituents,, followed by research methodology, analysis of various articles, conclusion and limitation an finally the scope for further research.

DIGITAL BANKING:

The term digital banking denotes a virtual process that includes online banking and banking beyond brick and mortar. At the end of 1990's the European company launched Paybox as financially supported by Deutsche bank. Paybox as tested by various European countries. Kenya was amongst the first to introduce text based mobile banking services i.e.m-pesa.

Later on with the up gradation of technology in banking services came up digital wallets. The recent development in mobile technology and telecom operators showing interest in banking services paved the path for digital wallets. From the year of its origin to recent year the number of m-wallet users has increased tremendously.

Table 1: M- Wallet Users Globally

Global population	7.6 billion as on May 2018	100%
Mobile phone subscription	5.00 billion	65.79%
M-banking accounts/ users	2.1 billion	27.63%

Source:- (International Telecommunication Union,2018)

Researchers have used various terms to refer to digital wallet including mobile payment,, digital payment etc. Regardless of all the terminology used by various scholars, the basic purpose to define digital banking is that it is a new era of banking wherein a customer can access his/ her bank account through mobile devices to conduct various transactions like making payments, checking of balance, money transferring,etc.

However, the vigorous markets for digital banking and mobile devices suggest a new definition for a new era of digital banking that captures completely the advances developed in the field of banking. A product or services offered by banking and non-banking institutions for the conduct of financial and non-financial transactions by the usage of smart phones and tablets.
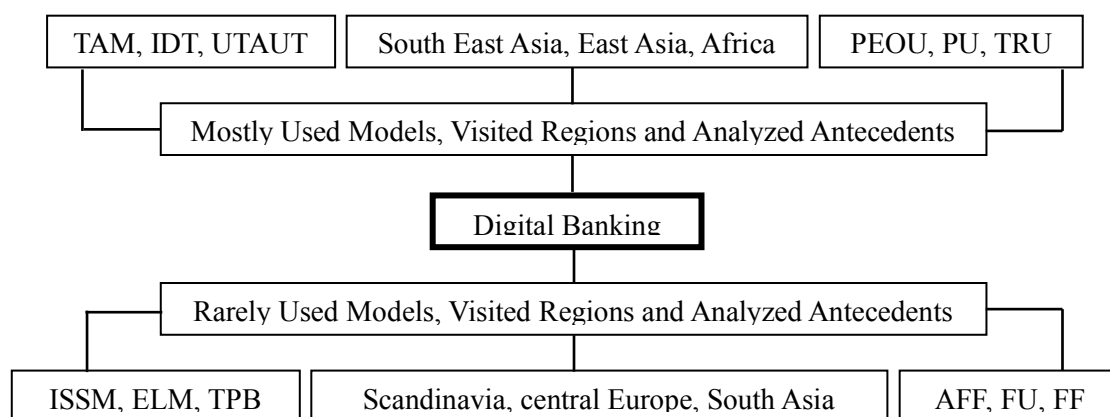
(Yang Y., 2015) have argued that various risk quantifies the perception of consumers towards the adoption of m-payment services. The perceived risk is an obstacle.

From the m-banking service perspective, the ecosystem depicted in Figure 1

Comprises several applications, channels, and methods for conducting m-banking, as well major services offered through m-banking channels.

Focussed Area of Literature on Digital Wallet Adoption:

Figure 1: Focussed Area of Literature on Digital Wallet Adoption

Source: Mobile banking adoption:- A Literature Review

Banking and non-banking institutions involved in providing digital transaction services in both developed and developing country offer various services towards digital wallet services:-
1. Digital wallet application to be downloaded on smart phones and tablets via the usage of internet.
2. Short messaging services (sms) that provide notification of account information.
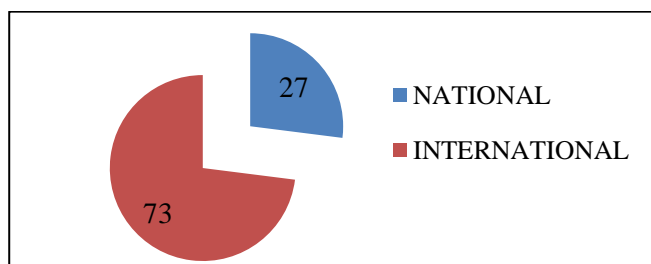3. Digital wallet apps required high speed internet connectivity for proper usage.

RESEARCH METHODOLOGY:

The review of literature focused around 35 information systems based on marketing, business, administration and scientific journals. To identify articles on digital wallet, the research involved databases (e.g. Emerald, science direct, Wiley, research gate) and various key terms such as digital wallet adoption, mobile banking adoption, intention towards adoption of digital wallet services, demonetization, e-wallet, usage and behavior of digital wallet, benefits and risk of digital banking. The identified articles represented a broad range of scientific, mostly peer reviewed journals. In addition Google scholar was the main source of data collection. Articles which were not available at various online databases were easily traceable at Google search engine. To ensure the current status of research in the field of digitization the period of review spanned from 2005-2018. The search resulted in 27 national articles of Indian origin and 73 International articles. Maximum articles reviewed are the part of scientific journals followed by management and banking journals.

Table 1: Research articles on the basis of origin

National	International
27	73

Figure 2

The classification of articles focused on the theory, model or framework they used; the constructs analyzed; the geographic location; and the research opportunities they proposed.
Apart from this all the factors studied in various articles and their constituents are being discussed in the below table followed by journal of publication.

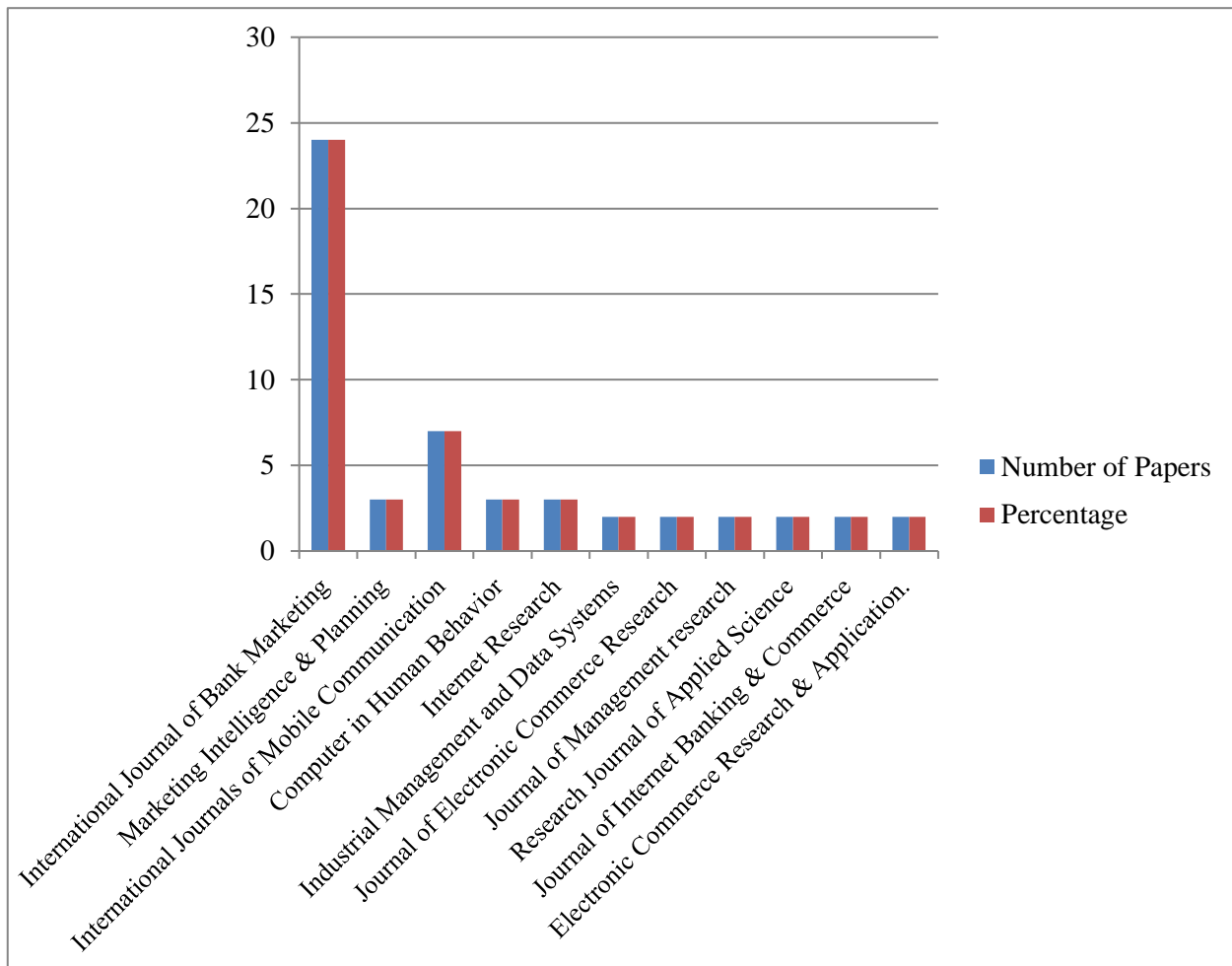**Table 2: Explanation of factors used and Its Respective Constituents**

Factors used	Constituents
Perceived Risk	Social risk, performance risk, financial risk, time risk, privacy risk, security risk and psychological risk
Perceived usefulness	The degree to which a consumer feel that the usage of technology saves time.
Perceived benefits	The amount of benefits which a customer's sees in using digital wallet services. It affects behavioral intention to use digital wallet.
Perceived ease of use	The degree to which a consumer believes that a particular technology usage will be free of effort. Constituents to perceived ease of use are attitude to use and actual use.
Social influence	It includes peer influence, society and demographic factor.

Table 3: Distribution of Reviewed Articles in Various Journals

Name of Journal	Number of Papers	Percentage
International Journal of Bank Marketing	24	24
Marketing Intelligence & Planning	3	3
International Journals of Mobile Communication	7	7

Name of Journal	Number of Papers	Percentage
Computer in Human Behavior	3	3
Internet Research	3	3
Industrial Management and Data Systems	2	2
Journal of Electronic Commerce Research	2	2
Journal of Management research	2	2
Research Journal of Applied Science	2	2
Journal of Internet Banking & Commerce	2	2
Electronic Commerce Research & Application.	2	2

Figure 3

Models of Digital Banking:

The adoption of digital banking is defined in various ways some studies focus on the relation between adoption of technology and the factors influencing the adoption. On the other hand some studies take process and in depth approach as a criteria of their studies.

Technology acceptance model (TAM) is a very popular as a framework for examining intentions to adopt m-banking, developed by Fred Davis (1989). Of the 100 studies, most of the studies are based on TAM theoretical framework. Though this theory is most popular to derive intentions to use digital banking it suffers from a setback of not including demographic, economic and external factors in explaining users' attitude and behavioral intentions towards digital service adoptions (Ventakesh and Davis, 2000). Moreover, of all studies which have used TAM as their model for study has also supplemented TAM with an additional constructs such as perceived risk, perceived security (Hsu et al,2011), relative advantages and personal innovativeness (Chintungo and Munono,2013).

Innovation Diffusion Theory, developed by Rogers (1995), is next widely used theory after TAM. As per the theory of IDT, the adoption of new technology depends upon five characteristics: - complexity, compatibility, trail ability, relative advantage and observability.

Although IDT is self sufficient model in explaining behavioral process and movement from awareness about the technology to adoption of technology but it lacks to explain how the attitude is formed and ultimately leads to acceptance or rejection , nor ho innovation attributes fit the process(Bhattacherjee,2000).

The third most commonly used theory is UTAUT, developed by Ventakesh et al. (2003). This theory majorly focuses on understanding users' initial trust and relative advantage (Zhou,2012 b) . It is the extension of TAM model, which is based on four factors: - performance expectancy, social influence, effort expectancy and facilitating conditions. UTAUT model suffers from a limitation that it does not include cultural factors.

The rarely used model is ELM (Elaboration Likelihood Model) developed by Richard E. Petty and John Cacioppo 1980. Information system theories such as TAM, IDT and UTAUT focused on motivation affecting user's behavior such as perceived usefulness and relative advantages. They seldom considered the influence processes underlying these factors. ELM argued that individual users change their attitudes via both central and peripheral route.
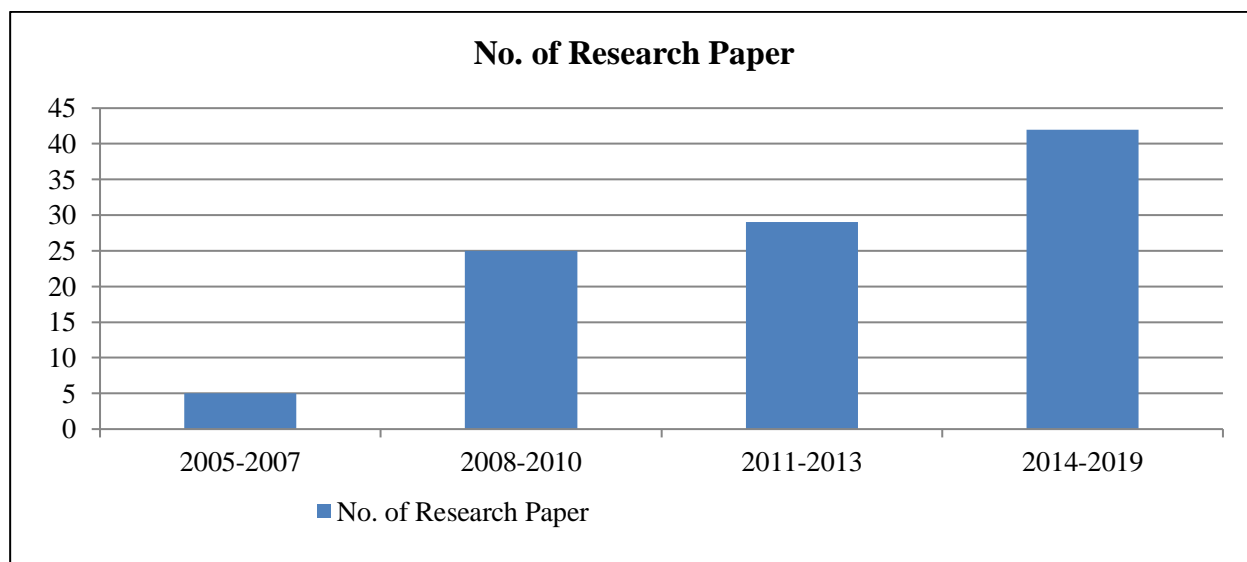
RESULTS:

The study included in this review investigated and identified several influences on consumer adoption behavior toward digital banking. In general, the provided interesting insights into the diffusion pattern of digital banking. For most studies, the major objectives is to know the reason of motivation and reason that significantly influence the potential adopters attitude and intentions to use digital banking services as well as the behavioral intention to adopt these banking and non-banking facilities. Of the 100 studies included in the review, 41% are published between 2014-2018. Next maximum articles are published between 2011-2013. They contributed around 29%. A very few researches on m-banking is being done in 2005-2007 appearing to only 5%.

Further, the International of Bank Marketing published the maximum articles (twenty four or 24%) followed by International journals of Mobile communication (seven articles or 7%), Marketing intelligence and Planning (three articles or 3%), Computers in Human behavior (three articles or 3%), Internet research (three articles or 3%) and other publication contributed to 48 articles or 48%.

Table 4: Research articles by year of publication

Year	No. of Research Paper
2005-2007	5
2008-2010	25
2011-2013	29
2014-2019	42

Figure 4

The studies relied on different methods of data collection. Most of the studies used quantative method of data collection of 101 articles; 95(95%) used quantative method, 3(3%) are based on secondary data research and only 3(3%) used qualitative research techniques.

 Among the most frequently investigated regions were India, South East Asia (Singapore and Malaysia), East Asia(Taiwan, China and Korea), Islamic counties(Iran, Iraq) and Africa (Zimbabwe, South Africa); a few studies applied to Europe(Finland, Turkey, Germany).

Some studies revolved around one specific adoption theory or on extension of it, such as technology acceptance model (TAM) e.g.(Celik H, 2008); (Bouman H, 2012); (Safeena et al 2012); innovation diffusion theory(IDT) e.g.(Kim et al 2009); (Lin, 2011); and the unified theory of acceptance and use of technology (UTAUT) e.g. (Shin D.H. 2009); (Samudra S. 2012); Rasch model (Yang A.S.2009) and other combined model include TAM, TRA and UTAUT model (Jose Liebana Cabanillas,2014); TAM and IDT (Lewis Nicole Koenig,2010).

The results of these studies suggest that the adoption of m-wallet services has increased in recent years for payment services (Kotecha P.S.2018). Several studies recommend that correct information should be provided to the merchants regarding mobile payment services. Service providers and manufactures of hardware should organize promotional activities to enlighten the users of mobile payment services (Liebana- Cabanillas,F. and Lara- Rubio, J. 2017). Another studies says that satisfaction of customer is directly related to benefits offered by mobile banking (Sampaio C.H. et al, 2017). In addition, a few studies focus on a comparison between people of different age groups wherein they try to say that elderly people adopt technology lately as compared to youngsters (Harris Michael et al, 2016).

Various studies are based on cross cultural comparison (Mortimer,et al 2015) ; gender baisness (Riquelme and Rios, 2010) and application into ordinary banking activities (Yang, 2009).

Multiple studies also attempt to identify antecedents of adoption . A particularly prominent antecedents is consumer trust in mobile banking, its associated application and the banking and non-banking institutions according to several authorities eg (Jain, 2013), (Lin 2011), (Zhou, 2011). Some relation also developed between trust and satisfaction of customer towards M- Wallet adoption (Lin, H.S. 2011), (Teo A.C. et.al (2012). Furthermore, studies conducted in developing countries came up with a social & cultural factor which also influence M- banking adoption prominently (Alafeef et al, 2011); (Bouwman, H. et al 2012).

Of all the dependent variables (attitude, trust & intention) major focus of all the studies is on behavioral intention towards adoption of digital wallet services (Sumerta, 2018); (Madan, 2016); (Tan, 2016); (Yadav, 2015;)

Various authors have found several independent variables like technology usage which positively influence the adopters but has negative impact on non- adopters. Apart from these variable social & cultural factors, demographic features do play a significant role in adoption and non-adoption of technology.

CONCLUSIONS & DISCUSSIONS:

The study provides a systematic review of literature on digital banking adoption published from Jan 2005-2018. The 100 relevant studies appear in 53 journals and represent a reasonably deep view in the field of digital banking acceptance research.

From the year 2009, the flow of empirical & conceptual research has increased tremendously in the field of M-Banking services. However, most of the researches in this literature review depend upon TAM and its modification to explain the usage of M-Banking technology. Furthermore, the next highest used model is IDT (Innovation diffusion technology). Different models, theories and frameworks are used to study different attributes, constructs and various factors that promote the adoption of digital banking and risk associated with its usage.

However several numbers of studies highlight that consumption of wireless banking services will increase in near future with hi-tech internet and much improves version of mobile phones. Of all the researches conducted worldwide on internet banking, mobile banking, m-wallets or e-wallets the target population is youth i.e. university or college students. Very fewer number of studies are conducted on 30 + age groups. The results of studies done on youth population can be generalized as they adopt technology faster; social variable is the most prominent factor in adoption of technology.

The literature on mobile banking or digital banking is lacking the study on varied age groups or profession. The relationship between e-payment, e-banking and m-banking is still not clear . if a researcher plan to study these concepts can add value to the existing literature.

Fewer numbers of studies are conducted on transnational basis. Further researches can be conducted on comparative analysis of E wallet services adoption among the stakeholders in rural & urban areas, as this not being addressed by any researcher yet.

Way forward:

As it is apparent from the literature, digital banking has been the topic of great attention for researchers in the recent past. This study finds issues which may require further research consideration within digital banking. The aim of digital services is to identify the non-users of these banking services and to know the exact reason behind their non-usage. Designing a better application for smart phones which can support digital banking is the need of hour.

Digital banking starts with smart phones. Highly upgraded software of mobile phone and tab are of great support towards the usage of e-banking. Best services by telecom partner and banking industry contributes towards increment digital banking. The studies reviewed so far are generally based on youth all over the world, since they are technology savvy and adapted latest versions frequently. Now the need arises to study the upper age group of society who actually believes in traditional banking and are late a dopter of technology.

The future study should consider the rural population as their target audience for research. Rarely any study is being done on the effect of digital banking in rural areas. Further study is also needed to discuss about the awareness of legal and regulatory bodies governing banking services and product which a customer is using.

We recommend researchers to explore the following areas where nearly no research has been found. The relationship between e-banking, e-payment and m-banking.

- The population of varied age of groups and profession.
- A comparative study on rural and urban population.
- A study based on various banking and non-banking wallets.

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