

# Digitization of Mortgage Banking among Selected Universal Banks in the Philippines: Towards a Model of Acceptance of Digital Mortgage Service

— *Review of* —  
**Integrative  
Business &  
Economics**  
— *Research* —

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## ABSTRACT

Digitization of bank services has become a popular focus of many banks around the world that is why banks in Asia transition to digital mortgage service as a means of reducing costs, improving services, and increasing effectiveness and efficiency. This study made use of quantitative research design that investigated the determinants of the behavioral intentions to accept the bank's digital mortgage service from the perspective of 250 mortgage clients who are current or prospective users of digital mortgage service. Initial findings showed that the determinants of behavioral intention to accept digital mortgage device among mortgage clients were facilitating conditions, performance expectancy and effort expectancy. Based on the standardized beta coefficients, facilitating conditions (0.405), performance expectancy (0.383) and effort expectancy (0.134) had significant influence on bank mortgage clients' behavioral intentions to accept digital mortgage service. It was also found that the age, gender, computer knowledge and internet knowledge of the mortgage clients moderate the impact of the three determinants: performance expectancy, effort expectancy and social influence on clients' digital mortgage service acceptance. Moreover, findings revealed that performance expectancy is directly related with internet time, frequency of product purchase using mobile device and use of mobile banking.

**Keywords:** Mortgage Loan, Bank Mortgage Digitization, Digital Mortgage Service, Behavioral Intention

## 1. INTRODUCTION

Today, people live in a technology enabled generation where digital is on everyone's agenda. Chen, Durairaj, Vinayak and Lam (2014) reported that around 40 percent of Asian mass affluent customers favor online or mobile banking and among those under 40 years of age, about half prefer digital banking. It was estimated that digital-banking consumers in Asia add up to 670 million and is predicted to expand at 1.7 billion by 2020.

In Asia, the financial and banking sector has experienced radical changes and upgrades in the last few years and is in a constant condition of advancement. Digitization has brought the banking industry new plans of action; advancement of ideas

and areas of changes; and internet banking to monetary exchanges. These new uses in the financial sector require the bank leaders to know about the rapidly changing workplace and the general condition of progress within the mortgage loans division. Today, digitization is changing the banking business.

The signal of increasing use of technology is changing consumer behavior is everywhere in Asia, and more specifically in the Philippines. One of the recent changes that is shaping the banking industry is that the consumer decision process has become increasingly multichannel (Chen et al., 2014).

There are numerous advantages of mortgage digitization. According to Cognizant Consulting (2018), mortgage digitization would allow lenders to further automate compliance processes and eliminate manual interference. Second, competing on only products and services is no longer sufficient; customers will pay more for a better experience and for mortgage industry, digitization is crucial to that experience. In addition, younger generations often prefer digital technology as a self-service tool to meet their needs. Third, digitization can improve asset quality since a fully digitized mortgage process permits an expanded automation of underwriting, processing, closing, and quality assurance capabilities.

While mortgage digitization is happening in many Asian countries, Philippine mortgage industry still seems to be in the wait-and-see mode. It is unclear why Philippine banks are not yet digitizing their current mortgage processes following the footsteps or other bank leaders in Asia despite its numerous advantages. The Philippine mortgage banking industry will need to invest in digital offerings and technologies to improve the loan origination process and the customer experience. In order to plan for such bank mortgage digitization, the acceptance of this technology must be first explored.

Currently, there is a knowledge gap in the literature on a comprehensive study on the acceptance of digital mortgage technology since related research studies are almost non-existent. Therefore this study aims to develop a model based on Unified Theory of Acceptance Use of Technology (UTAUT) to provide empirical evidence to support mortgage clients' acceptance of mortgage digitization.

## **2. RESEARCH PROBLEM**

This study explored the determinants of the acceptance of mortgage digitization in selected universal banks in the Philippines from the perspectives of mortgage clients. It is crucial to explore such factors, because findings of this study can be valuable to banking industry and bank leaders to plan and effectively deliver mortgage services using digital technologies.

## **3. REVIEW OF RELATED LITERATURE**

### **2.1.1 Banking**

Banking study has considerable interest at the macroeconomic and microeconomic

levels. From the macroeconomic point of view banking – one of the financial intermediation types – plays special role in the movement and distribution of country financial resources in market conditions. Hence, banking inefficiency leads to borrowers' financial resources shortage when population's financial resources excess and, consequently, low rates of economic growth and the common weal deterioration, for services consumers it means overpriced banking services and their unavailability.

Loan approval organizations depend on their clients and therefore should understand their current and future needs, they should meet their requirements and should be concerned with exceeding their expectations. This means understanding the fact that profitability or avoiding losses comes from customer satisfaction, which implies organizing all the processes and directing the entire staff towards the client (Dragolea, Achim, & Fleser, 2011). From the microeconomic point of view banking means business and making profit ability for bank shareholders.

### 2.1.2 Online Banking

Online applications imply that a borrower can be affirmed for an advance without talking to a loan officer or visiting a physical area. The online stage can straightforwardly get to the borrower's budgetary record explanations and expense forms to electronically gather data about resources and salary. Other supporting archives can be transferred electronically, as opposed to by being sent piecemeal via mail, fax or email. Mortgage players have traditionally had difficulty harnessing accurate data for insightful management.

The mortgage value chain is fragmented, making it extremely difficult to string together a holistic picture of costs, profits and risks associated with a particular customer or loan. Fortunately, technology is now able to meet the business need for more accurate data, and rapidly accelerating speed-to-market on large-scale data management projects. A host of tools and data management strategies have evolved. Similarly, positioned industries are deploying them with alacrity to capture an enterprise view of information (Nyffeler & Kurt, 2014). Technological capabilities are available to transform the client experience, but they have not yet been developed into off-the-shelf, end-to-end solutions. It is an ideal time for mortgage institutions to create a distinctive way of interacting with their customers, differentiate themselves from their competitors, while also making their internal operations more efficient and adaptable to changing regulation.

With the appropriate use of technology, a satisfying experience for consumers doesn't have to be incompatible with reduced costs, accelerated processing, and improved compliance. The winners in the current environment will be the ones that leverage technology to work both sides of the equation, both with the consumer-facing and with internal operations—to differentiate from competitors (Wyman, 2017).

### 2.1.3 Mortgage Loan

A mortgage loan ranks among one of the oldest bank products. There are two aspects to this type of loan that cannot be separated from one another, one legal and one financial. From the legal point of view, a mortgage is defined as a pledge over real

estate property; from the economic point of view, it is a type of loan where the repayment of which is secured through the establishment of a pledge on a specific real estate property in favor of a creditor mortgagee.

Banks all over the world over have been continuously deregulated; fiscal arrangements have experienced changes from an attention on the cash supply to an emphasis on loan costs; money related frameworks have been subjected to a scope of developments and the monetary condition of numerous countries has changed after the development of emerging countries, for example, China and India (Lim, Tsiaplias, & Chua, 2013).

Given the way things are, the role of an organization in the sector has changed over time. Presently, the industry calls for constant and effective innovative strategies, business models and products to survive the competition and maintain an edge over others. There should be emphasis in coming up with best-in-class products and services in order to assist our banks and corporate clients in rolling out new products out and market those capabilities to consumers (Gupta, 2014).

#### 2.1.4 Digitalization

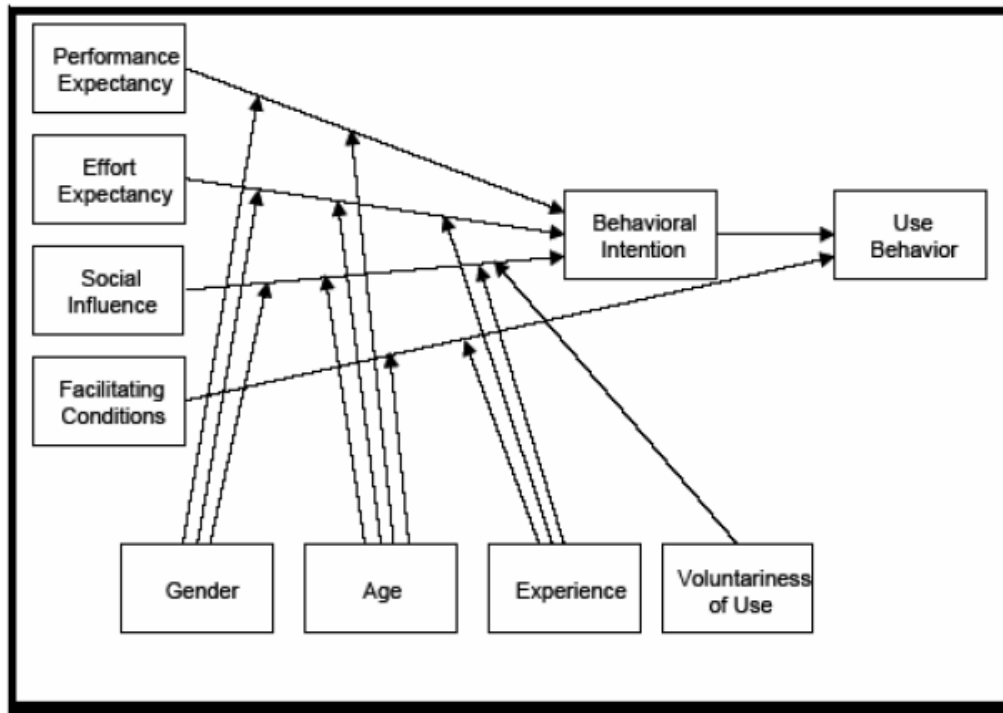
Digitalization is an opportunity for companies and organizations to improve their business activities. Due to the technological advances and digitalization, the interaction between companies and official authorities to consumers and citizens has also been improved and created new ways of reaching one another. The Internet and mobile banking have become the single biggest channel at the moment of reaching customers and for customers to handle their bank errands (Deutsche Bank, 2016). Currently, we belong to a highly dynamic business arena with third parties coming up with several innovative strategies, that address the Challenges of Digitalization leading to an extremely competitive industry.

Given the way things are, the role of an organization in the sector has changed over time. Presently, the industry calls for constant and effective innovative strategies, business models and products to survive the competition and maintain an edge over others. There should be emphasis on coming up with best-in-class products and services in order to assist our bank and corporate clients roll out and market those capabilities to consumers (Rahul & Gupta, 2014). The future of banking is digital. It is not just about digitizing loan applications to speed up the approval process. Transitioning from legacy systems at individual bank branches to one digital system spanning the entire organization has proven especially difficult Fister Gale (2015).

The mortgage lending industry is still largely powered by technology that was first introduced before the 2000 dot-com bubble. Even though 90% of prospective homebuyers search online as they look for a place to call their own, less than 10% of lenders offer a complete digital mortgage experience from application to closing (Chan & Hoyles, 2016). Online business modes offered by organizations should be integrally strengthened by cooperation with benefit agent outside the Web domain, and administrations directed at the physical branches of firms will at present affect online clients. A home loan bank must have thoroughly considered design innovation. It ought

to be custom fitted to the bank's particular plan of action, in light of the fact that there is no innovation arrangement that is a general fit for all organizations. Speculators that are thinking about cooperation in the home loan managing an account industry will discover two boundlessly extraordinary states of mind toward innovation.

#### 4. THE THEORETICAL FRAMEWORK



**Figure 1**

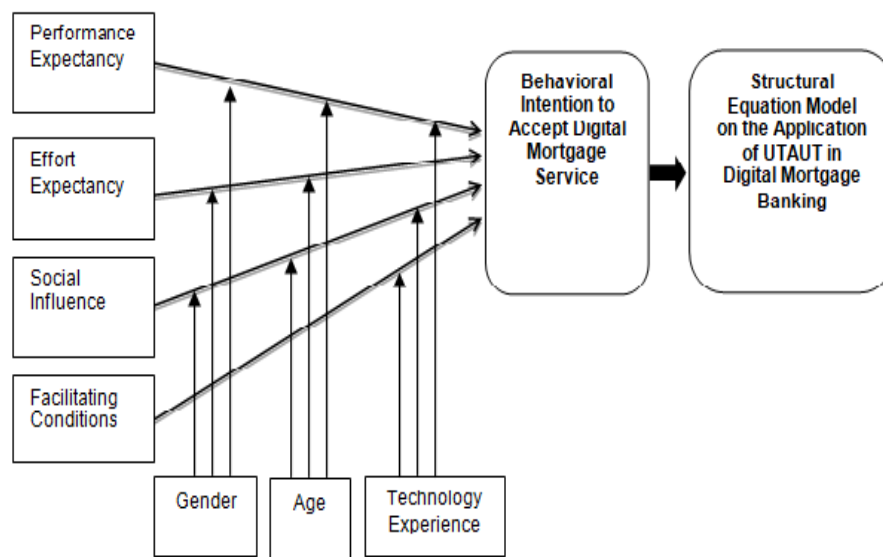
The Theoretical Framework

Unified Theory of Acceptance and Use of Technology (UTAUT Model) by Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003)

This study used the Unified Theory of Acceptance and Use of Technology (UTAUT), a prominent technology acceptance and use model, as a theoretical basis to conduct empirical research testing the factors that influence mortgage clients' acceptance of digital mortgage banking. The primary goal of this research study is to test UTAUT in the framework of the mortgage industry focusing on digital mortgage banking.

The UTAUT model theorizes that four variables (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of the behavioral intention of technology use. Behavioral intention and facilitating conditions are direct determinants of use behavior. The model also incorporates four moderating factors (gender, age, experience, and voluntariness of use), each of which may have influence on the four primary constructs.

## 5. THE CONCEPTUAL FRAMEWORK



**Figure 2**  
The Conceptual Framework

The research model shows the hypothesized relationships between the independent and dependent variables. The independent variables are the four main constructs of UTAUT model such as: performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), while the dependent variable is the behavioral intention (BI) to accept the bank's digital mortgage service. The independent variables have arrows that point to the dependent variable.

From the conceptual framework, the following hypotheses were tested:

Ha1: Performance expectancy will positively affect behavioral intention of the respondents to accept digital mortgage service.

Ha2: Effort expectancy will positively affect behavioral intention of the respondents to accept digital mortgage service.

Ha3: Social influence will positively affect behavioral intention of the respondents to accept digital mortgage service.

Ha4: Facilitating conditions will positively affect behavioral intention of the respondents to accept digital mortgage service.

Ha5: Gender, age and technology experience will affect behavioral intention of the respondents to accept digital mortgage service.

## 6. METHODOLOGY

This research used quantitative research design to achieve the aims of the study. This study used the UTAUT model as the theoretical basis which was evaluated using a sequence of quantitative data and analysis in order to produce a final model that best

explains the predominant phenomena of the data that were collected. A survey questionnaire, which was subjected for validity and reliability tests, was used to gather the data from 250 mortgage clients who are current or prospective users of digital mortgage service.

## 7. FINDINGS

The respondents' behavioral intention to accept the bank's digital mortgage service are shown in Table 1 and Table 2. Half of the respondents agreed while 38.8 percent agreed on the statements that measured their acceptance to bank's digital mortgage service technology in processing and approval of home loans. Only few of the respondents had an overall response of disagree (9.6%) and strongly disagree (1.6%) on the indicators of behavioral intention to accept the bank's digital mortgage service.

**Table 1**

Perceptions of the respondents on the four factors of behavioral intention to accept digital mortgage service

Factor of Behavioral Intention	Frequency (n=250)	Percent
<b>Performance expectancy</b>		
strongly disagree	4	1.6
disagree	20	8.0
agree	125	50.0
strongly agree	101	40.4
<b>Effort expectancy</b>		
strongly disagree	2	.8
disagree	25	10.0
agree	122	48.8
strongly agree	101	40.4
<b>Social influence</b>		
strongly disagree	14	5.6
disagree	30	12.0
agree	117	46.8
strongly agree	89	35.6
<b>Facilitation conditions</b>		
strongly disagree	1	.4
disagree	28	11.2
agree	133	53.2
strongly agree	88	35.2

**Table 2**

Behavioral intention of the respondents to bank's digital mortgage service acceptance

Behavioral Intention	Frequency (n=250)	Percent
strongly disagree	4	1.6
disagree	24	9.6
agree	125	50.0
strongly agree	97	38.8

The results presented in Table 3 revealed that the overall model accounts for 75.2% of the variance in behavioral intention to accept digital mortgage service. The full model is significant ( $F= 186.173$ ,  $p= .001$ ) and all the variables contribute significantly to the multiple regression (at  $p = 0.05$ ) except the variable social influence (SI) which does not relate significantly to the dependent variable ( $p = .575$ ) when controlling for the other three predictors.

**Table 3**

Determinants of behavioral intention to accept digital mortgage service

	Unstandardized Coefficients	Standardized Coefficients	Sig. (p)	
	B	Beta		VIF
(Constant)	.011		.926	
performance expectancy	.400	.393	.001	3.061
effort expectancy	.150	.145	.010	3.089
social influence	.021	.025	.575	2.030
facilitating conditions	.425	.400	.001	2.289

Dependent Variable: behavioral intention

 $R^2 = .752$ ;  $F= 186.173$ ,  $p=.001$ 

The results of regression analysis showed that performance expectancy (PE), effort expectancy (EF) and facilitating conditions (FC) were significant predictors of behavioral intention (BI) at 5% level of significance. The positive values of the b-coefficients of these three independent variables ( $PEB = 0.400$ ,  $EFB = 0.150$ , and  $FCB = 0.425$ ) indicated that as the perception of the respondents increases, the independent variable likewise increases. In other words, the more positive the perceptions of the respondents on PE, EF, and FC, the higher their behavioral intention to accept the banks' digital mortgage service.

Moreover, since the variance inflation factor (VIF) for all variables are much less than the critical value of 5, it indicates that no violation on multicollinearity or redundancy of the factors of behavioral intention were committed in the multiple regression.



The model summary and ANOVA for behavioral intention to accept digital mortgage service are illustrated in Table 4. The combined relationship of the influence of the four determinants of behavioral intention showed an 86.7% relationship. The adjusted R-square is 74.8% signifying that the determinants moderately explained the variation in behavioral intention and about 25.2% was left unexplained due to other determinants not included in the model. The ANOVA, as explained by the F-value of 186.17, represents that more than 10% has been explained by the determinants of behavioral intention at a significant level of 0.001. Thus, the regression model was accepted and an appropriate estimate of behavioral intention.

The results led to the acceptance of the following hypotheses: 1) PE positively affects behavioral intention of the respondents to accept digital mortgage service; EE positively affects behavioral intention of the respondents to accept digital mortgage service; and FC positively affects behavioral intention of the respondents to accept digital mortgage service. Meanwhile, the hypothesis that SI positively affects behavioral intention of the respondents to accept digital mortgage service was rejected.

The results concur with the study of Alshehri (2012) who examined the factors affecting acceptance and use of E-government services in the Kingdom of Saudi Arabia by adopting the UTAUT model revealed that trust (TR), effort expectancy (EE), performance expectancy (PE), and website quality (WQ) contribute significantly to citizens' adoption of e-government services and directly affect the behavioral intention to use e-government services in the KSA. The relationship of social influence (SI) on behavioral intention (BI) to use e-government services was insignificant for citizens. Meanwhile other studies partially support the current findings (Al Mansoori, 2017; Amofa, 2014; and McCombs, 2011). For instance, Al Mansoori (2017) who investigated Emirati citizens' adoption of e-Government in Abu Dhabi using the modified Unified Theory of Acceptance and Use of Technology (UTAUT) model in detecting adoption and acceptance of e-Government services.

The model has been extended by including government trust and Internet trust which were considered to be key components of any improvement in public management. The results recorded statistically strong evidence for highly significant positive correlations between behavioral intention to use e-Government services and the independent variables, performance expectancy, effort expectancy, facilitating conditions, trust in the internet, and trust in e-Government. Similar to the current findings, the effect of social influence on behavioral intention is not found to be significant. However, facilitating conditions did not significantly affect the use of e-Government services.

Amofa (2014) examined the significant determinants of web analytics technology (WAT) acceptance by management consultants and measured the relationship among the determinants based on UTAUT model found out that there is a positive correlation among the determinants including effort expectations, performance expectation, social influence, facilitating conditions, and behavioral intentions. It established that performance expectancy, effort expectancy, social influence, and facilitating conditions can predict 62% of the behavior intention of management consultants to accept WAT. In contrast, the current findings revealed that SI was not a significant determinant of the

behavioral intention mortgage clients to accept the bank's digital mortgage service.

McCombs' (2011) study investigated the behavioral intention of teachers to develop curriculum based projects that require students to use technology. The UTAUT constructs with the strongest relationship with behavioral Intention, and hence, having a stronger effect were attitude, performance expectancy, and effort expectancy. However, the construct of facilitating conditions was found to have weak and negative relationship with use which differed to the findings of the present study.

**Table 4**

*Summary of model and ANOVA*

R	R Square	Adjusted R Square			
.867 <sup>a</sup>	.752	.748			
	Sum of Squares	df	Mean Square	F	Sig.
Regression	90.369	4	22.592	186.173	.001
Residual	29.731	245	.121		
Total	120.100	249			

## 8. CONCLUSION

Based on the findings of the study, the following conclusions were drawn:

1. Convenience, ease of use, time efficiency, technical knowledge and technical support play an important role with respect to the behavioral intention of clients to accept digital mortgage service.
2. The behavioral intention of clients to accept digital mortgage service is not influenced by others as shown in the tested hypothetical relationship between social influence and behavioral intention.

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