



Presented at the DLSU Research Congress 2014  
De La Salle University, Manila, Philippines  
March 6-8, 2014

## A Logit Analysis on the Determinants of the Decision of SMEs to Engage in Online Banking in the Philippines

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**Abstract:** This paper aims to identify the determinants that affect the decisions of SMEs on whether or not to engage in online banking. It proposes a model aimed at establishing the significance of the determinants identified – cost, time, user-friendliness, usefulness, convenience, security, and responsiveness – and at determining their effects on the SMEs' decision. To achieve such objectives, the paper uses Logit Analysis. This econometric approach is used following a survey involving at least thirty SMEs, both engaged and not engaged in online banking, as its respondents, chosen by quota sampling. The results show that cost obtained using estimated transaction fees, and usefulness have significant effects on SME's decision on online banking. The chosen research and sampling design may pose problems with regard to accuracy, generalizability, and reliability of results. It is, hence, suggested that other methods of research and sampling be explored for further verification by those conducting further studies on the matter. The results of the study mostly cover the banks' need for continuous innovation that the market would accept. As such, conclusions derived will be of assistance in determining how SMEs weigh each factor as against the engagement in online banking and, consequently, provide insight to banks on which factor to prioritize in case of instances requiring tradeoffs. Unlike other studies that expound on individuals' engagement in online banking and SME's engagement in online banking for trade, this paper focuses on SMEs' engagement in online banking in general.

**Keywords:** bank; online banking; SME; cash management; financial innovation

### 1. Introduction

In today's globalized world, every institution is required implicitly to continuously improve. Following this concept brings about the importance of online banking and cash management solutions. The concept of transacting with or through banks in a way other than going to the institution itself was born in the year 1983 and since then, innovators have made it go from 'homelink,' which uses a television set and a telephone, to the use of the internet through computers and, come 2007, with smartphones as well. (Yodlee, 2012). Online banking is a term used interchangeably with electronic banking, home banking, internet banking, etc.

Under online banking, the researchers focus on Cash Management Solutions (CMS). CMS covers different areas of cash management such as payables, receivables, cash flows, and access to necessary information. (BDO Unibank, Inc., 2012) It also includes forecasting, cost balancing, ordering, supervising, auditing, and expense tracing, among others. (NCR Corporation, 2013)

Online banking makes it easier for people to gain convenient, efficient and readily available access to their money. However, this financial innovation does not only benefit individuals but companies as well. It provides them with a more productive way to spend their resources and aims to ensure that such would not be spent unnecessarily. Another aim is to minimize the risk of making errors from mistaken information, identity theft, and fraud through taking everything into account online



and the implementation of high level of security and other technological measures. (Acevedo, n.d.).

CMS can be a great tool not only for large and developed companies but also for the developing ones like SMEs. It is important for such companies to establish different avenues for them to efficiently manage their most liquid asset. With good cash management, they can properly oversee their financial activities and be prepared for unanticipated expenses by managing and allocating for those that regularly take place while not wasting another precious resource - time. CMS, hence, is one of the best and most technologically advanced ways to address such issues.

It is then apt to say that, in this age of continuously developing technology, innovators have brought the world an easier way for people to go about their daily lives and firms to go about their daily operations when it comes to the management of cash. Today, online banking and CMS have been gaining popularity, especially among those who are already internet users. In fact, according to a research done by ComScore, there has been a 39% increase in online banking users in the years 2010 to 2011 as people across Southeast Asia are beginning to engage more in this service. (GMA News, 2011). There is no published study, however, that shows that SMEs are rapidly starting to jump on board in CMS as well or if many still prefer traditional banking and why these phenomena have occurred or not.

Therefore, this paper aims to determine what factors enticed firms that entered the world of online banking and CMS do so and what factors make those which still undergo manual banking reluctant to do the same, with focus on the Small and Medium-sized Enterprises (SMEs) in the Philippines. Specifically, the objectives of this study are:

- To establish the significance of cost, time, user-friendliness, usefulness, convenience, security, and responsiveness as determinants of the decision of SMEs in the Philippines to engage in cash management solutions

- To determine how such determinants affect both the SMEs previously or currently engaged in

online banking for cash management and those which are not

The results of the study will, mostly, be of help to the financial industry, specifically to commercial banks, in the development of more efficient and wholly better facilities and modules of online banking. Using the knowledge that can be deduced from this paper, cash management product managers will be able to determine what the current customers require, what the potential clients expect, and what cash management solutions the market demands.

## 2. METHODOLOGY

To accomplish the objectives, the study makes use of a Binary Logistic Regression Model in the attainment and interpretation of empirical results. This model aims to demonstrate the relationship of the determinants of the decision of SMEs with regard to CMS.

Logit Model:

$$\ln P(Y_i=1)P(Y_i=0) = \alpha - \beta_2 \text{ cost} + \beta_3 \text{ time otc} - \beta_4 \text{ time online} + \beta_5 \text{ user-friendliness} + \beta_6 \text{ usefulness} + \beta_7 \text{ convenience} + \beta_8 \text{ security} + \beta_9 \text{ responsiveness} \quad (\text{Eq. 2})$$

where:

$P(Y_i = 1)$  Refers to the probability of deciding to engage in cash management solutions

$P(Y_i = 0)$  Refers to the probability of deciding not to engage in cash management solutions

Cost = either cost based on fees and cost based on quantifying questions answerable through the Likert Scale, whichever is significant

Data is gathered through the use of a survey designed for the comparability of the answers of respondents that have engaged in CMS before or currently and those that have not. This is because the questions for these groups are similar in sense and meaning but different in structure, targeting assessments based on experience and expectations, respectively.



### 3. RESULTS AND DISCUSSION

Variable	Parameter	Odds Ratio	A-priori	P-value
Constant	-8.95	0.00		0.23
Cost Score	-1.85	0.15	✓	0.07
Timeotc Score	-0.47	0.61		0.37
Timeonline Score	1.72	5.60		0.12
User-Friendliness Score	1.98	7.26	✓	0.06
Usefulness Score	2.68	14.61	✓	0.03*
Convenience Score	-0.28	0.75		0.85
Security Score	-0.85	0.42		0.40
Responsiveness Score	-0.69	0.49		0.65
Cost (based on fees)	0.002391	1.00		0.00*

The results of the regression show that Usefulness and Cost based on fees are the only two significant factors. The significance of usefulness is supported by literature, while cost based on fees is significant because SMEs expect improvement in and competitive advantage brought about by CMS as supported by the concept of resource allocation. The p-value from the chi-squared test, estimated at 0.0002 even prior to the forward selection procedure, also proves the significance of the entire model. The first objective was, hence, achieved since the researchers have established the significance of factors by highlighting Usefulness and Cost based on fees as the determinants that ultimately matter for the respondents at the moment.

Further, it is revealed that Usefulness is the most significant factor among all the variables. This is because SMEs believe that the usefulness of online banking contributes to competitive advantage. Cost, Timeonline and User-friendliness are close to being significant. They also meet the a-priori expectations or the expected effects of such determinants explained by intuition and backed by related literature. On the other hand, Timeotc, Convenience,

Security, and Responsiveness fail to meet the a-priori expectations previously presented and are insignificant. The probable reason for this is that in the eyes of SMEs, banks have failed to take these factors to their advantage or to communicate them to their clients better. After establishing the effects of the significant factors, those that meet the a-priori expectations and those that do not, the second objective is, hence, achieved.

Value	
Concordance Index Value	84.87%
P-value for $\chi^2$ -Likelihood Ratio Test	0.0002
Sensitivity	81.58%
Specificity	86.36%

Predicted	Observed		Total
	Yes	No	
Yes	31	3	34
No	7	19	26
Total	38	22	60
Overall Hit Ratio			83.33%

For the reliability diagnostics, the concordance index value of the final model is 84.87%, which implies a good model. The  $\chi^2$ -Likelihood Ratio Test also shows that the model is a good fit because the p-values for both full and final model are less than 0.05. Furthermore, the high values for sensitivity and specificity confirm how good the model is in predicting whether SMEs are engaged or not in online banking. Lastly, the overall hit ratio is



83.33%. This means that the model has a high predictive power and is consistent. In summary, the model is reliable. Even if there is a problem with the individual significance of the determinants, collectively, the model has good statistical results.

#### 4. CONCLUSIONS

In conclusion, the researchers believe that the objectives of this paper have been accomplished as it was able to establish significance by highlighting factors that matter to the SMEs's decision and identify the effects of the determinants.

While some variables, in the end, are proven to be insignificant, the model has been proven to be a good identifier of an SME's decision to engage or not to engage in cash management solutions. In addition, establishing the significance of variables also encompasses proving differently through empirical evidence while highlighting the determinants that truly matter to the subjects of the study. Empirically, the study proves the significance of usefulness and cost based on fees per CMS. As such, these factors are what the SMEs value the most and, based on the literature, it is evident as to why this is. SMEs allocate their budgets to avail of and/or invest in products that would increase their competitive advantage. This is exhibited by the SMEs' willingness to spend on CMS they deem advantageous to them. It is noteworthy to emphasize how they strategize so that the amount they spend would contribute to the achievement of their many objectives. Perhaps, a small increase in cost does not discourage SMEs from engaging in CMS because such increase also makes them expect more benefits that they could not get elsewhere at such quality level.

Lastly, we recommend that banks leverage on their strengths and improve on their weaknesses by considering the factors we have chosen with greatest focus on usefulness and keeping additional cost at the right level. Of course, the other factors should not be taken for granted. They should be used to the bank's advantage since they can be controlled and improved on. Factors should also be communicated better to make online banking more appealing.

Banks should also make enrollment easier/more convenient to entice interested potential clients. They should also keep doing what works to guide potential clients towards fully utilizing online banking, like providing Online Viewing as a free service. The fact that majority decided to engage/still engage in online banking means that banks can easily tap more clients by making them see online banking in a better light. Lastly, banks must strive to improve SME's perception on security and responsiveness through improving their risk management and response teams. Meanwhile, to subsequent researchers who are considering exploring a similar topic, the researchers recommend for them not to be limited to the factors cited in this study. As long as they are supported by literature, they can expand the model further by considering more variables. Based on applicability, they could also diversify in terms of the location of SMEs or according to the size of the business.

#### 5. ACKNOWLEDGMENTS

The researchers would like to express their gratitude to those that have been monumental in the completion of this research. First, they would like to thank their thesis adviser Dr. Junette Perez, for her continuous support, motivation, and guidance throughout the highs and lows of the entire research process. Second, they would also like to thank Banco De Oro, Eastwest Bank, Security Bank, Metrobank, Union Bank, and the survey respondents who have been kind enough to provide information without which this research wouldn't have been possible. Third, they would like to thank Atty. Rene Betita and Ms. Beth Narag for their helpfulness and patience as well.

Most importantly, they would like to thank the Almighty God for allowing them to share in His wisdom, bestowing upon them strength and perseverance, and blessing them throughout the process of writing this paper and meeting its countless demands.

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