

Structural Model of Awareness Level about EMV Chip Cards

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Abstract: The effort, time, human interaction and paper works can be replaced through modernization of technology. Financial sector faces some drawbacks and issues which can be mended by technologies. In order to mollify and facilitate customers in making transaction without any limitation, tracking can be used as an apparatus. It reduces the fraudulent activities and safeguards people. Technology development is essential to monitor the tax payments, even the government can improve in monetary aspects. Technology can reduce customer presence at the time of payments. Enhancement in financial sector is essential to upgrade a national economic condition. The digitalized financial service can uphold the trading activities which require quick transactions of money. This study tries to measure the level of awareness of 140 bank customers about EMV (Euro pay, Master card, Visa) chip cards. Results show that medium of information about the cards and the perception about difficulties in usage of cards significantly influence the level of awareness about the cards.

Introduction

In the evolving world, the role of technology has greater impact on the financial transactions that has been rising day by day. The finance sector growth has been upstretched by technology and its new features. The problems faced in financial transactions have been elucidated by technologies implemented by the players to support customers. Cash transactions have been swapped by online transactions which save time and efforts due to upgrading technology. Transaction happens without visiting to bank or to its branch and also without statements and receipts. Technologies like mobile payment service, online statements, touch and go payments, ATM withdrawals and information technology plays a vibrant role. So, customers can do financial transaction anywhere and on every occasion where visiting banks or branches unnecessarily reduce paper works. EMV (Euro pay, Master card, Visa) chip cards have been implemented in France on 1992 and in India on 2015. The government has made it mandatory to enable all the debit and credit card to upgrade the chip in it, and also ordered the merchants to upgrade the Electronic Data Capture (EDC) machine. The EMV chip cards reduce fraudulent transaction especially in the case of counterfeit frauds. The chip in the card will communicate its details whether it is substantiate or with the EDC machine by which the merchant present the card. Chip based card will be inserted in the EDC machine rather than swiping it. It replaced signature based transaction into pin based transactions at the POS (Point of Sale) and also helps in chargeback for the customer. This study is about the awareness of EMV chip cards among the public besides how far they know about the process and benefits of EMV chip cards.

Review of Literature

Worthington (1994) gives consideration towards influential relationship between the suppliers and retailers of financial services. International examples are used for developing the hypothesis. The study shows how the retailers' desire impinges on the payment system in the supply chain. It argues that power is transferred from the providers of traditional payment system towards the retailers who are the payment system users.

Hobson and Ko (1995) summarized that hotel facilities often provide opportunity for charge-card fraud which is considered to be a serious crime. Since, the tourism industry needs high security regarding the payment of goods and services, the hotels have to take necessary steps to reduce these increasing frauds.

Scholnick et al. (2008) argue the practice of debit and credit cards and ATMs'. In this review, a large number of questions were taken into account. The study concludes that the ATM transactions and the point of sale contacts are substitutes. Also, the sales volume is greatly influenced by the ATM surcharges.

David et al. (2016) highlight the impact of demand regarding cash. The study became complicated for the reason that debit card serves two important uses – cash withdrawal and savings. This disparity arises because of the usage of cash and holding of cash. The study clearly explains that the negative impact towards the cash demand will comparatively reduce the positive impact of cash withdrawal services

Kay et al. (2018) argue that capability in adjusting to deposit fees in the bank point out the following – market power is available for treated banks for the account holders; powerful complementarity is there between debit card transactions and deposit accounts.

Kosse (2013) investigates about the fraud taking place in debit card usage. The skimming fraud is increasing in the debit card usage done during the same day. This has been reduced due to the media effects. The study has been executed in Netherlands.

Worthington (2011) examines the attitudes of adopters who are using as well as holding credit cards. The study makes it evident that the people who are using credit card frequently agree that the usage of credit card makes them more comfortable. The study also expose that there exists a fear component in the minds of the credit card users regarding financial loss and over-spending.

Zinman (2009) found that credit card charge have a critical margin. Credit limit constraints enhance the debit usage. But the debit use reduces the credit card possession. For the credit over time, the debit is turning into a dominant alternative.

Arango et al. (2015) developed a model for consumer payment choice which straightens out the acceptance of card by the merchant from the pricing incentives during the point – of – sale. The rewards given for the credit card usage makes the people to shift from debit card and cash holding towards credit card. The findings explain about the consumer and the merchant behaviour.

Gold (2014) highlights the fraudulent activities relating to credit and debit cards. The traditional techniques followed by the fraudsters were using cameras to record pin numbers. At the recent times, fraudsters bring into play the allied information and the card credentials for doing card thefts.

Bauer et al. (2017) studied about the usage of ISA programs instructed to promote the information security. The analysis takes account of three banks situated in Central and Eastern Europe. The study concludes the relationship between the ISP design and the ISP compliance.

Safa and Solma (2016) suggested that the information security knowledge will reduce the security breaches. Information security knowledge is influenced by both intrinsic as well as extrinsic motivations. This should be supported by the organization for better sharing of knowledge about the information security.

McCormac et al. (2017) commented that the awareness of information security is positively related to emotional stability. Conscientiousness as well as agreeableness has a positive association with it. People who have scored higher on ISA have the tendency to take higher risks.

Parsons et al. (2017) give emphasis to the prevention of cyber threats affecting the organization. The organizations' must take effective measures in order to provide security to the information systems. This can be done by the information security practitioners.

Awareness about EMV Chip Cards and its Determinants

This study is purely based on primary data through questionnaire and the data has been collected from 140 bank customers. The demographic profile of customers includes gender, age and educational qualification.

Table 1: Demographic Profile

Gender	Frequency	Percent
Male	69	49.3
Female	71	50.7
Total	140	100.0
Age	Frequency	Percent
18-24 Years	128	91.4
25-31 Years	10	7.1
39-45 Years	2	1.4
Total	140	100.0
Qualification	Frequency	Percent
School	1	.7.0
Diploma	7	5.0
Graduation	50	35.7
Post-Graduation	82	58.6
Total	140	100.0

Table 1 includes the values of frequency and percentage. It shows an equal ratio between male and female. Majority of them are in age group between 18 to 24 years and holds post graduation. Younger generation with high education qualification is majorly using EMV chip cards. The usage is not only vested with the people who have higher qualification but also the information and awareness level about the EMV chip cards influence a lot. The information about the cards is addressed through bankers, TV advertisements, social media, friends and internet. The study performs analysis of variance to ascertain the difference between medium of information about the EMV chip card and demographic profile of the respondents. The results are shown in table 2.

TABLE 2: Demographic profile Vs Medium of Information

S. No.	Medium of Information	Age		Qualification	
		T	Sig.	F	Sig.
1.	The banker gives detail information about the new technology while providing the smart cards (Bankers)	3.959	0.021	0.215	0.886
2.	I have seen many advertisement about the smart card in TV Ads (TV ads)	0.443	0.643	0.969	0.409
3.	I came to know about the smart cards functions through advertisement in social medias (Social Media)	0.479	0.621	0.681	0.565
4.	I came to know about the security functions of the EMV chip cards through my friends (Friends)	1.025	0.361	0.754	0.522
5.	I got the knowledge about the EMV chip cards through browsing internet (Internet)	0.786	0.458	0.231	0.875

Table 2 shows the values of F and its significance level. In majority of the cases, the significant value of F is greater than 0.05. Results depict that there is no difference between demographic profile of the respondents and medium of information about cards. All the respondents are getting similar sets of information about cards. The perception of difficulties in usage of cards is gauged using online payments, EDC machine, money transfer, mobile payment and ATM machine.

Table 3: Demographic Profile Vs Difficulties in Card Usage

S. No.	Difficulties in Card Usage	Age		Qualification	
		F	Sig.	F	Sig.
1.	Online Payments (Online)	1.039	0.357	2.549	0.058
2.	Payment through EDC Machine (EDC Machine)	0.138	0.871	1.065	0.366
3.	Money Transfer	1.995	0.140	2.141	0.098
4.	Mobile Payments	0.850	0.430	1.428	0.237
5.	Using at ATM Machine for Withdrawal and Deposit (ATM Machine)	0.041	0.960	1.296	0.278

Analysis of variance measure the difference between demographic profile and perception about the difficulties in usage of cards. It is clear that majority of variables has the significant value of greater than 0.05. Irrespective of age and educational qualification, the perception about difficulties in usage of EMV chip cards remains same. The level of awareness about EMV chip cards may also considered as another influencing factor in the usage of cards. The level of awareness includes fraud, access, introduction, safety, duplicate, information and similarity.

Table 4: Demographic Profile Vs Level of Awareness

S. No.	Level of Awareness	Age		Qualification	
		F	Sig.	F	Sig.
1.	EMV chip cards help to reduce the fraud (Fraud)	2.091	0.127	2.370	0.073
2.	EMV chip cards should be inserted in the EDC machine rather than swiping it for payment process (Access)	0.047	0.954	0.022	0.996
3.	EMV is a standard which is introduced by Europay, Visa and Master (Introduction)	2.605	0.078	2.018	0.114
4.	This system has been brought for secure and safety payment by the customers (Safety)	0.287	0.751	2.087	0.105
5.	Chip cards are virtually impossible to duplicate (Duplicate)	1.664	0.193	1.270	0.287
6.	EMV chip cards are equipped with a small metallic computer chip on the front of the card that holds your information (Information)	1.281	0.281	1.727	0.164
7.	There is no difference in functions between the old and the new debit and credit cards (Similarity)	1.729	0.181	0.574	0.633

The results of analysis of variance define that there is no difference between demographic profile of the respondents and their level of awareness of EMV chip cards. This study tries to measure the determinants of level of awareness about EMV chip cards using Structural Equation Modeling (SEM). The results are shown in figure 1.

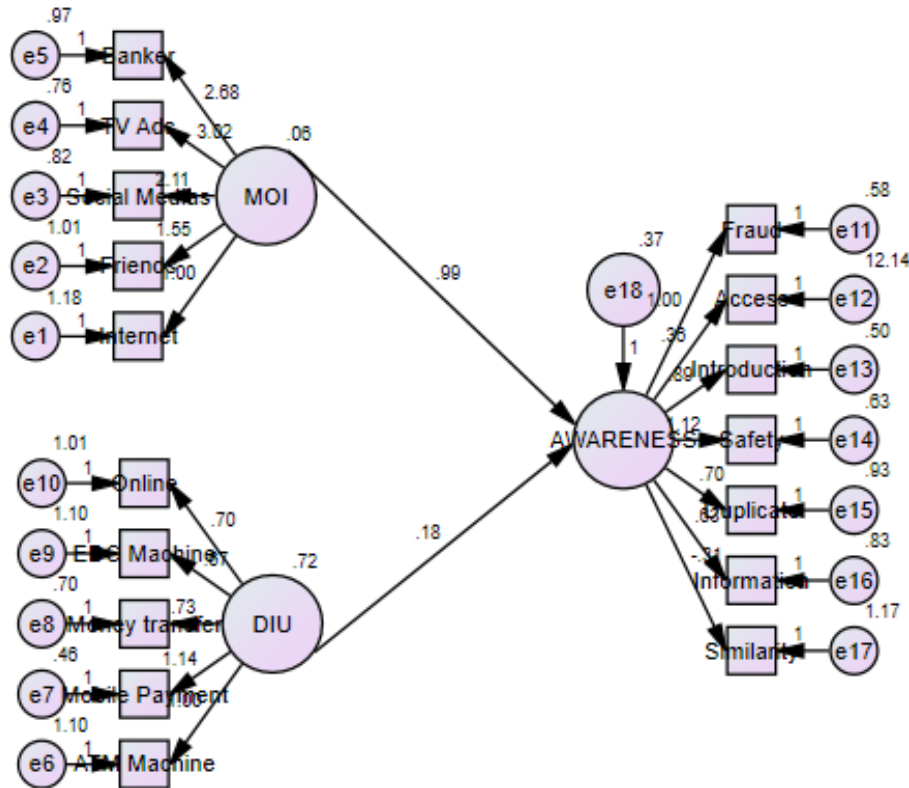


Fig. 1: Determinants of Level of Awareness

The results are indicating that medium of information (MOI) and the perception about difficulties in usage of cards (DIU) estimate level of awareness about EMVchip cards to the extent of 0.99 at 10 percent level of significance and 0.18 at 5 five percent level respectively. Results argue that medium of information and the perception about difficulties in usage of cards significantly influence the awareness about EMVchip cards.

Conclusion

In future, the financial sector is going to evolve hastily. It is expected that the contactless payment and ATM's with contactless cash withdrawal are the future trends. The foremost modernize would be the implementation of bio-metrics which will eradicate the fraudulent activities. One touch payment using smart phones and digital banking would exterminate customer presence to bank. The presence of cash transaction will be limited by means of digitalization. So, in future there will be advancement in technology which will allow customer to bank safely without visiting to banks. Digitalization in financial transactions will uphold the economic condition of each country. Hence, the awareness level about digitalization and modernization should be taught to the citizens.

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