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DETERMINATION OF FINANCIAL AWARENESS ABOUT ATM FRAUDS BASED ON DEMOGRAPHICAL FACTORS IN AKOLA AND AMRAVATI DISTRICTS OF MAHARASHTRA

Miss. Chaitali B. Zare*
Dr. L.D. Bodile**

ABSTRACT

After the wider use of Automated Teller Machine (ATM), the number of frauds has increased rapidly. In Maharashtra state, financial cyber frauds are highest. There were less crimes regarding ATMs, in Akola district compared to district of Amravati. The main objective of the research paper is to find out the awareness in respect to ATM frauds in Akola and Amravati districts of Maharashtra using demographic factors. For primary data collection, a structured questionnaire was prepared and 500 responses were recorded i.e. 250 each from Akola and Amravati districts of Maharashtra state. Secondary data was collected from the web site for the study of financial cyber frauds in and the data from NCRB website was also considered to check the Cyber Crimes in Akola and Amravati District. For analysis of the data, a statistically independent Chi-Square test was conducted to check association of demographic factors with ATM fraud awareness. This research paper is based on financial awareness of ATM frauds.

Keywords: *ATM, Financial Awareness, Financial Frauds, Demographical Factors.*

JEL Codes: *G0, G21, K4, K14, K42, O3.*

Introduction

An ATM is an acronym for Automated Teller Machine. An ATM is an electronic machine that gives clients of banks the opportunity of getting their records for administering cash and to complete other monetary and non-monetary exchanges without the need to visit the bank. Bank clients utilize this electronic machine for various sorts of record exchanges. The client has a kind of plastic card that is famously known as a debit card. The user's information is written on the card. The card has a distinguishing proof code. The cardholder needs to embed the card inside the Robotized Teller Machine which records and transcripts the inputs. In 1960, John Shepherd - Barron imagined the robotized teller machine. Users can change their ATM PIN, deposit money, withdraw money, transfer money, and access account-related information through the automated teller machine. Cash deposit money or automatic banking machines are other names for an ATM. Without the assistance of any bank delegates, the record exchanges can be finished with the assistance of this machine. There are two kinds of computerized teller machines which are accessible. The first is the simplest, allowing only cash withdrawals and account balance information. The second type is a complex that offers credit card facilities and account balances in addition to money deposits.

The idea of the ATM came into existence from Japan, and Sweden then to the US. The PC load machine for the PC advance was created by Japan in 1966. In 1967, the money administering machine was created in London. Barclays Bank was the first to use this computer loader. As in India, the

* Ph.D. Research Scholar, Sant Gadge Baba Amravati University, Amravati, Maharashtra, India.
** Ph.D. Guide, Mahatma Fule Mahavidhyalaya, Bhatkuli, Amravati, Maharashtra, India.

improvement of ATMs was extremely sluggish. Numerous issues related to bank branch systems were resolved by the automated teller machine. The ATM has evolved over time. There are various sorts of mechanized teller machines namely, Rented Line machine, Dial-up machines, White Mark machine, Earthy colored Name ATM, On location ATM, Offsite ATM, Cash dispenser, Green name machines, Orange name, Yellow name and Pink label ATM machines.

Objective of Research Paper

- To find out the awareness regarding ATM frauds in Akola and Amravati districts of Maharashtra using demographical factors.

Research Methodology

For primary data collection, a structured questionnaire was prepared and 500 responses were recorded i.e. 250 each from Akola and Amravati district. The question of "Do you know about ATM Frauds?" was asked and responses were recorded. Secondary data was collected from the web site https://pib.gov.in/ for the study of financial cyber frauds in India in respect of number of complaints with amount. The data from https://www.ncrb.gov.in/was also considered to check the Cyber Crimes in Akola and Amravati District of Maharashtra.

To analysis the data percentage method was used along with statistical independent Chi-Square test was administrated to check association of demographical factors with ATM fraud awareness.

Review of Literature

Shweta Sankhwar & Dhirendra Pandey (2016) stated, "ATM Electronic transaction is playing a very persistent and pervasive role. Basically the conventional method of authentication and authorization is based on possession of credit/ debit card details and a security number i.e. PIN which is not reliable. In the research paper, a greater demand for fast and accurate user identification, authentication and authorization is considered. Therefore, a secure layer of Electronic Transaction mechanism is proposed to develop cardholder identification, authentication, authorization and security clearances. The research paper recommended security controls, including ATM/EDC Digital Swapping Keypad and ATM/ EDC Censored Keypad Shield Cover.

Hence, there will be a delicate level of trust and confidence on electronic transaction ATM" [1] [1]

Aijaz Ahmed Shaikh & Syed Mir Muhammad Shah (2012) finds, "the ATM transactions in Pakistan have recorded a continuous growth over the period of time, which shows the customer preferences in selecting and using this E-Banking Channels for conducting both financial and non-financial transactions. The ATM Fraud at the same time has opened up new chapters in the IT security portfolio demanding a reasonable attention from the higher management in thwarting ATM fraud at its early stages. In addition, to better detect and prevent e-frauds, multiple tools may be used with proper fraud management practices and systems in place. Effective internal controls provide a reasonable assurance to the management on fraud prevention and timely detection. The guidelines and the instructions issued by the central bank need proper attention. Their compliance will help the banks in minimizing e-banking risks, detecting e-frauds, prevention and safeguarding the e-Banking assets including ATMs." [2]

Shbra Jain (2017) focuses, "ATM fraud attacks on ATM networks are a worldwide phenomenon, yet they are of particular concern in India where generally it is not a "fraud", while it happens due to negligence. But the fact can not also be hidden that, the Indian ATM industry is in growing stage, this provides also an opportunity to the fraudsters. ATM fraud is growing because it produces cash and is fairly low risk relative to other crimes. The necessary equipment for criminal activity is inexpensive, readily available, and expendable. ATM frauds also lend itself to organized crime. The fraud is repeatable. It is profitable, and it is not likely to end. Even so, consumer confidence in ATMs remains high, and industry efforts to combat fraud, increase consumer awareness and promote ATM security seem to be outpacing the growth rate of criminal activity. A three-pronged approach will be helpful to banks in combating ATM frauds: Employees' education /training, Customers' education/training, Policies and procedures; and tests to gauge and adherence to policies. Training should focus on the nature and

[1] Shweta Sankhwar & Dhirendra Pande, A SAFEGUARD AGAINST ATM FRAUD, 2016 IEEE 6th International Conference on Advanced Computing, Pg. 705

[2] Aijaz Ahmed Shaikh & Syed Mir Muhammad Shah, Auto Teller Machine (ATM) Fraud – Case Study of a Commercial Bank in Pakistan, International Journal of Business and Management; Vol. 7, No. 22; 2012 Pg. 107

risks associated with ATM frauds along with the example to illustrate the threat and exposure. It also should cover ways and means to resist the attacks to create the right kind of cautious attitudes. Finally, banks must have an information security policy in place that tells the insiders what they are expected to do and not to do, as well as the reaction to any breaches. New technologies such as video surveillance, remote ATM management and Foreign object detection combined with common sense management practices aimed at deterring crime are providing manufacturers with an edge in the fight against fraud and keeping the self-services industry at least one step a head of the criminals."[1]

Tanushree Basuroy (2024) reported that, "In 2022, the state of Bihar in India had the highest number of ATM fraud offenses reported, with more than 638 cases registered with the authorities. The country recorded around 1.6 thousand cases related to ATM frauds that year. This category of crime came under the purview of Sections 420 of the Indian Penal Code." [2]

The 'National Cyber Crime Reporting Portal' (https://cybercrime.gov.in) [3] has been launched, as a part of the I4C, to enable public to report incidents pertaining to all types of cyber crimes, with special focus on cyber crimes against women and children. Cyber crime incidents reported on this portal, their conversion into FIRs and subsequent action thereon are handled by the State/UT Law Enforcement Agencies concerned as per the provisions of the law. The 'Citizen Financial Cyber Fraud Reporting and Management System', under I4C, has been launched for immediate reporting of financial frauds and to stop siphoning off funds by the fraudsters. Since inception of Citizen Financial Cyber Fraud Reporting and Management System, more than Rs. 1200 Crore have been saved in more than 4.7 lakh complaints. A toll-free Helpline number '1930' has been operationalized to get assistance in lodging online cyber complaints. The State/UT wise details of Citizen Financial Cyber Fraud Reporting Management System during the period 1.1.2023 to 31.12.2023 are at the Annexure. Till date more than 3.2 lakhs SIM cards and 49,000 IMEIs as reported by Police authorities have been blocked by Government of India.

Kaur, Paramjit & et al. (2019) [4] describe the "use of Automated Teller Machine (ATM) cards (credit and debit) has led to a "cash-less society" and has fostered digital payments and purchases. In addition to this, the trust and reliance of the society upon these small pieces of plastic, having numbers engraved upon them, has increased immensely over the last two decades. In the past few years, the number of ATM fraud cases has increased exponentially. With the money of the people shifting towards the digital platform, ATM skimming has become a problem that has eventually led to a global outcry."

De Luca, Alexander & et al. (2010) [5] discusses on ATM fraud, "With the increase of automated teller machine (ATM) frauds, new authentication mechanisms are developed to overcome security problems of personal identification numbers (PIN). Those mechanisms are usually judged on speed, security, and memorability in comparison with traditional PIN entry systems. It remains unclear, however, what appropriate values for PIN-based ATM authentication actually are. Two smaller follow-up studies on real-world ATM use, in order to provide both a better understanding of PIN-based ATM authentication, and on how alternative authentication methods can be compared and evaluated. Results show that there is a big influence of contextual factors on security and performance in PIN-based ATM use. Such factors include distraction, physical hindrance, trust relationships, and memorability."

Waqas, Ahmad & et al. (2019) [6] research reveals that banks customers prefer internet banking services over branch banking due to safety, security, convenience, cost-effectiveness, reliability, error-free system, and speed user-friendly. However, inaccessibility of ATM machine issues highly influences the selection of choice of Internet Banking. These issues include misreporting cash availability, ATM out of order, link down, the bank failed to respond and server down messages.

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[1] Shbra Jain, ATM FRAUDS – DETECTION & PREVENTION, International Journal of Advances in Electronics and Computer Science, Volume-4, Issue-10, Oct.-2017 Pg. 88-89

[2] Tanushree Basuroy, Jun 24, 2024, Number of ATM fraud incidents reported across India in 2022 by leading statehttps://www.statista.com/statistics/1097945/india-number-of-atm-frauds-by-leadinstate/#:~:text=ATM%20fraud%20incidents%20reported%20in%20India%202022%20by%20leading%20state&text=In%202022%2C%20the%20state%20of,to%20ATM%20frauds%20that%20year.

[3] Ministry of Home Affairs, Cases of Cyber Frauds, Posted On: 06 FEB 2024 5:45PM by PIB Delhi https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2003158

[4] Kaur, Paramjit & et al. (2019). ATM Card Cloning and Ethical Considerations. Science and Engineering Ethics. 25. 10.1007/s11948-018-0049-x.

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Data Analysis

The collected data is tabulated as follows:

Table 1: State/UT wise details of Citizen Financial Cyber Fraud Reporting Management System during the period 1.1.2023 to 31.12.2023

State	No. of Complaints Reported	Amount Reported in Lakhs	% of Complaints Reported	% Amount Reported in Lakhs
Uttar Pradesh	197547	72107.46	17.51	9.63
Maharashtra	125153	99069.22	11.09	13.23
Gujarat	121701	65053.35	10.79	8.69
Rajasthan	77769	35392.09	6.89	4.73
Haryana	76736	41924.75	6.80	5.60
Telangana	71426	75905.62	6.33	10.14
Karnataka	64301	66210.02	5.70	8.84
Tamil Nadu	59549	66123.21	5.28	8.83
Delhi	58748	39157.86	5.21	5.23
Bihar	42029	24327.79	3.73	3.25
Madhya Pradesh	37435	19625.03	3.32	2.62
Andhra Pradesh	33507	37419.77	2.97	5.00
West Bengal	29804	24733.33	2.64	3.30
Kerala	23757	20179.86	2.11	2.69
Punjab	19252	12178.42	1.71	1.63
Chhattisgarh	18147	8777.15	1.61	1.17
Uttarakhand	17958	6879.67	1.59	0.92
Odisha	16869	7967.11	1.50	1.06
Jharkhand	10040	6788.98	0.89	0.91
Assam	7621	3441.8	0.68	0.46
Himachal Pradesh	5268	4115.25	0.47	0.55
Chandigarh	3601	2258.61	0.32	0.30
Puducherry	1953	2020.34	0.17	0.27
Tripura	1913	900.35	0.17	0.12
Goa	1788	2318.25	0.16	0.31
Jammu & Kashmir	1046	786.56	0.09	0.11
Meghalaya	654	424.2	0.06	0.06
Andaman & Nicobar	526	311.97	0.05	0.04
Arunachal Pradesh	470	765.79	0.04	0.10
Dadra & Nagar Haveli and Daman & Diu	412	326.21	0.04	0.04
Manipur	339	333.03	0.03	0.04
Sikkim	292	197.92	0.03	0.03
Mizoram	239	484.12	0.02	0.06
Nagaland	224	148.94	0.02	0.02
Ladakh	162	190.29	0.01	0.03
Lakshadweep	29	19.58	0.00	0.00
Total	**1128265**	**748863.9**	**100.00**	**100.00**

Source[1] : Reconsolidated data from Ministry of Home Affairs, Cases of Cyber Frauds

The table 1 shows that maximum 1,97,547 number of complaints regarding financial frauds have been reported in Uttar Pradesh, this is 17.51% of the total number of frauds but in term of amount in Lakhs it is Rs. 99,069.22 in Maharashtra. It concludes that Maharashtra state is in top position for financial cyber fraud.

[1] Ministry of Home Affairs, Cases of Cyber Frauds, https://pib.gov.in/ Press Release frame Page.aspx?PRID=2003158, Posted On: 06 FEB 2024 5:45PM by PIB Delhi

Table 2: Cyber Crimes in Akola and Amravati District of Maharashtra

Type of Offences	Akola	Amravati	Maharashtra
Credit Card/Debit Card	1	12	275
ATMs	0	4	144
Online Banking Fraud	0	13	909
OTP Frauds	0	6	195
Others Other Offences (r/w IT Act)	5	32	679
Fraud (Sec.420 r/w Sec.465,468-471 IPC)	6	67	2202
Total Cyber Crimes	**29**	**147**	**8249**

Source [1]: Reconsolidated data from https://www.ncrb.gov.in/

Table 2 shows that total cyber crimes of 8249 were registered in Maharashtra state out of these 29 and 147 cyber crimes were recorded in Akola and Amravati district respectively during the year 2022. There were no crimes of ATMs, Online Banking and OTP frauds in Akola district. It concludes that the cyber crimes are low in Akola compared with district of Amravati.

Table 3: Rural and Urban Area wise ATM Frauds Awareness in Akola and Amravati District

Area	Akola	Amravati
Rural	59	72
Urban	191	178
Total	**250**	**250**

Table 3 shows the chi-square statistic is 1.748. The p-value is 0.186. The result is not significant at $p > .05$ and the Chi-Square Test yielded nonsignificant results ($\chi^2(1) = 1.748$, $p = 0.186$). These results imply that they are statistically nonsignificant, hence there is no association between area of rural & urban and knowledge of ATM fraud i.e. awareness of ATM frauds is same in rural and urban area.

Table 4: Gender wise ATM Fraud Awareness in Akola and Amravati District

Gender	Akola	Amravati
Male	190	145
Female	60	105
Total	**250**	**250**

Table 4 shows the chi-square statistic is 18.3175. The p-value is .000. The result is significant at $p < .05$ and the Chi-Square Test yielded significant results ($\chi^2(1) = 18.3175$, $p = 0.000$). These results imply that they are statistically significant; hence there is an association between gender and knowledge of ATM fraud. It concludes that males are more aware than females.

Table 5: ATM Fraud Awareness between Different Age Groups in Akola and Amravati District

Age Group	Akola	Amravati
Below 19	48	57
20-29 yrs	62	81
30-39 yrs	54	36
40-49 yrs	32	34
50-59 yrs.	25	12
60-69 yrs.	22	19
Above 70 yrs.	7	11
Total	**250**	**250**

Table 5 shows the chi-square statistic is 12.632 with p-value is 0.049. The result is significant at $p < .05$ and the Chi-Square Test yielded significant results ($\chi^2(6) = 12.632$, $p = 0.049$). These results imply that they are statistically significant; hence there is an association between age group and knowledge of ATM fraud. It concludes that the age group of 20 to 29 years is more aware about ATM frauds compared with the age group having age above 70 years.

[1] https://www.ncrb.gov.in/uploads/nationalcrimerecordsbureau/custom/17016864879Districtw-iseCyberCrimes2022.xlsx

Table 6: ATM Awareness Fraud between Group of Social Categories of Akola and Amravati

Social Categories	Akola	Amravati
General	92	86
OBC	78	49
SC	31	85
ST	25	17
Other	24	13
Total	**250**	**250**

Table 6 shows the chi-square statistic is 36.756 with. p-value 0.0000. The result is significant at $p < .05$ and the Chi-Square Test yielded significant results ($\chi^2(4) = 36.756$, $p = 0.000$). These results imply that they are statistically significant; hence there is an association between social categories of Akola and Amravati district and knowledge of ATM fraud. It concludes that the general category is more aware about ATM frauds than other social category.

Table 7: ATM Fraud Awareness amongst Household Types of Akola and Amravati District

Household Type	Akola	Amravati
With Spouse	38	44
Alone	48	81
Nuclear Family	66	31
Joint Family	61	29
With Children under age 18	19	19
With Children over age 18	18	46
Total	**250**	**250**

Table 7 shows the chi-square statistic is 45.138 with p-value 0.000. The result is significant at $p < .05$ and the Chi-Square Test yielded significant results ($\chi^2(5) = 36.756$, $p = 0.000$). These results imply statistical significance; hence there is an association between household type categories of Akola and Amravati district and knowledge of ATM fraud. It concludes that nuclear family category of Akola district and alone category of Amravati district is more aware about ATM frauds.

Table 8: Education Levels wise ATM Fraud Awareness in Akola and Amravati District

Education Levels	Akola	Amravati
Post Graduate	66	84
Graduate	55	58
Higher Secondary School	47	38
Secondary School Certificate	36	25
Primary school	30	28
Illiterate	16	17
Total	**250**	**250**

Table 8 shows the chi-square statistic is 5.275 with p-value 0.0.383. The result is not significant at $p > .05$ and the Chi-Square Test yielded non significant results ($\chi^2(5) = 5.275$, $p = 0.383$). These results imply statistical insignificance; hence there is no association between education levels and knowledge of ATM fraud. It concludes that all categories of educations in Akola and Amravati district has same awareness of ATM frauds.

Table 9: Occupation wise ATM Fraud Awareness in Akola and Amravati District

Occupation	Akola	Amravati
Farming	15	19
Labour	24	33
Business	45	53
Private Job	61	65
Government Servant	31	21
Student	37	27
Housewife	14	15
Retired	23	17
Total	**250**	**250**

Table 9 shows the chi-square statistic is 7.092 with p-value 0.419. The result is significant at p < .05 and the Chi-Square Test yielded significant results ($\chi^2(7) = 7.092$, p = 0..419). These results imply a statistically significant; hence there is an association between occupations and knowledge of ATM fraud. It concludes that the persons who have private job in Akola district and Amravati district are more aware about ATM frauds than housewives.

Table 10: Annual Income wise ATM Fraud Awareness in Akola and Amravati District

Annual Income	Akola	Amravati
Below 2.5 Lakhs	49	32
2.5 to 5 Lakhs	69	61
5 to 7.5 Lakhs	33	27
7.5 to 10 Lakhs	10	19
10 to 12.5 Lakhs	26	31
Above 12.5 Lakhs	34	51
No Income	29	29
Total	**250**	**250**

Table 10 shows the chi-square statistic is 11.292 and the p-value is 0.079. The result is not significant at p > .05 and the Chi-Square Test yielded not significant results ($\chi^2(6) = 11.292$, p = 0.079). These results imply statistical insignificance; hence there is no association between annual income and knowledge of ATM fraud. It concludes that all income groups have same awareness about ATM frauds in the districts of Akola and Amravati.

Conclusion

Maharashtra state is in top position for financial cyber fraud in term of amount of rupees. There were no crimes of ATMs, Online Banking and OTP frauds in Akola district compared with district of Amravati. Awareness of ATM frauds is same in rural and urban area. Males are more aware regarding ATM frauds than females. The age group of 20 to 29 years is more aware about ATM frauds compared with the age group having age above 70 years in Akola and Amravati districts of Maharashtra state. The general social category is more aware about ATM frauds than other social category. Nuclear family category of Akola district and alone category of Amravati district is more aware about ATM frauds. All categories of educations in Akola and Amravati district has same awareness of ATM frauds. The persons who have private job in Akola district and Amravati district are more aware about ATM frauds than housewives. All income groups have same awareness about ATM frauds in the districts of Akola and Amravati.

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