

## IMPACT OF ARTIFICIAL INTELLIGENCE ON COMMERCIAL BANKS' ATM

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**Abstract.** Artificial Intelligence (AI) is a rapidly growing area that has been getting the greatest attention in the business including the banking sector. AI has huge applications in the area of commerce, education, transportation, banking as well as daily life. AI in the banking industry relies on faster inexpensive, more accurate, and efficient work at the banking sector. By using AI in commercial banks, the banker gets more benefits and audience response positive as well as strong competition in work efficiency. AI provides renovating ideas to promote the banking sector through Automated Teller Machines (ATM). In this research paper, the impact of AI in the commercial bank ATM sector has been discussed with primary data collected from five banks and 30 ATMs from the perspective of clients. It was found that AI on ATMs has a positive impact as it gives excellent client service, high work efficiency, and security.

**Keywords:** artificial intelligence, ATM, commercial banks, efficiency, security

### Introduction

Artificial Intelligence (AI) perceives, synthesizes, and infers information with the help of a machine. Artificial Intelligence is the field of study, which refers to systematically perceiving information through the codes like computer vision, speech recognition, and recommending system. Banking areas are the most increasing areas of the competitive market and changing customers' expectations (Santini, 2018). In the beginning stage, it was used as the mimicry machine which was used for learning and problem-solving. The father of artificial intelligence (AI), John McCarthy said that artificial intelligence is the science and engineering of making smart machines, particularly intelligent computer programs. AI recreates the capacities as humans associate with other human personalities for example learning and critical thinking.

Artificial intelligence includes the continual operation of machines without tiring and using memory and the ability to improve includes communications and information exchange within and across societies. Artificial Intelligence refers to the suffocation and productivity of non-human machines, primarily machines, computers, and software.

The current world is a technology-driven world so, the banking sector has grown as the most important field for conducting regular transactional activities. In the era of the advanced world, AI has been the most significant digital technology to

promote business (Dobreacu, 2018) like Automated Teller Machines, Online banking, imaging check, and voice recognition. Day by day we need accurate work performance with errorless activities. In order to provide strong services to the customer, banks have implemented modern advanced technology including AI. AI applications are important in the banking sector for voice assistance, biometrics, antifraud risk monitoring, complex legal, compile workflows, and underwriting with smart contracts infrastructure. In order to meet the expectations of the audience most commercial banks have expanded their service areas like mobile banking, e-banking, real-time money transfer, and getting cash from Automated Teller Machines (ATM). In the context of Nepal, many commercial banks have started their services through ATM machines so, the concern here is to find out the impact of AI on ATMs in the major cities of Nepal. So, for this, 5 banks with 30 ATMs with 60 clients around the nation have been selected. Most customers want efficient, accurate, and errorless banking services so, AI enables a milestone service in the banking sector.

This study provides insights into the impacts of artificial intelligence on banking services in Nepalese commercial banks. This study is based on descriptive nature so all the required and relevant data have been gathered from primary data as well as journals, magazines, and websites. Sharma (2020) explained that AI application has brought entirely different in the banking sector and their impact on human manpower also. In the context of Nepal

AI has been a recently emerging technology and it has challenges to implement. Vijay (2019) said that artificial intelligence has so many benefits and challenges to implementing the new technology in the banking sector. Tura (2017) highlighted that AI can possibly possess human character for practice. AI is changing the idea of nearly everything which is associated with human life. For e.g.; work, economy, correspondence, protection, security, morals, and social insurance. Each technology has its preferences, however, it had to create favorable circumstances in the market. Tyagi (2016) highlighted that AI advancement is accelerating more robots or self-ruling frameworks that are being conceived and supplementing human work.

The reason for selecting this research on the impact of artificial intelligence in the commercial bank of Nepal is that the banking sector should have reliability and accountability in the matter of job performance so, if AI is implemented, the clients would get immediate service in an efficient and accurate manner. Ekimci et al. (2014) proposed that a customer live value model, supported by a deep learning approach, to highlight key indicators in the banking sector. Xu et al. (2020) highlighted the effects of AI versus human customer service and found that customers are more likely to use AI. This automatic machine is put in to support the worker to avoid unnecessary crowds and clients would get auto service. This research has the objective to find out the impact of artificial intelligence on commercial banks mostly ATM services.

## Literature review

### ***Artificial Intelligence and ATM***

AI gives ATM system developers a whole new prescriptive and a wide range of technologies to enhance ATM systems that have the strong potential capability to tackle challenging problems which may appear in the organization. With the support of AI, large amounts of data can support working efficiently. AI has the potential to lead to great cost of saving, banks can leverage AI banking tools to increase the transaction. AI and automation are two terms which are often used interchangeably probably because they serve similar purposes for helping business, operate smarter efficiently. Both automated machine and AI run through the data system in which automated machine collects data and AI systems interpret it. ATM are widely used as self-service machine by banks to serve their customers. In the modern world, money is required at any time or anywhere

for traveling, shopping and health services so; ATM provides money at any time at any location with the support of AI. AI supports security, work efficiency and client services (Mahajan, et.al. 2019). With this evidence the hypothesis can be formed that:

***Hypothesis 1: Artificial intelligence supports ATM for better client services, work efficiency and security.***

### **Artificial Intelligence and Client Service**

Artificial Intelligence has the significance impacts on our life, those machines avoid all kind of errors and any time services. Advanced community technologies such as AI and ATM are helping banking services by automating manual effort by anticipating risk and more quickly confirm to rapidly evolving regulatory environment. AI supports to the ATM to interpret the information regarding to the cash counting even in seasonality, holidays, public events, locations for withdrawing the money. With the support of AI, ATM has the following functions as loading cash, duty cycle, cash-in, cash out, cyclic and on loading. It means that AI supports the ATM strong services to the clients. Bitner et.al. (2008) stated that AI has the more and effective focus on customer service with strong developed data and expertise. AI plays dynamic role to promote the ATM network, the efficiency of which determined by the technical characteristics of the devices, their location and reliability of their operations Leonov et.al. (2019). With this fact, the hypothesis can be formed that:

***Hypothesis 2: Artificial intelligence has a positive impact on the client services.***

### **Artificial Intelligence and work efficiency**

Machines are never tiring so; artificial intelligence will be provided 24 hours services. The clients, so any kind because it is left behind for getting access to banking services. Boston Consulting Group analyzed that AI can reduce conversion costs by up to 20%, with up to 70% of the cost reduction resulting from higher workforce productivity. ATM card reading and its alternatives like mobile phone bank applications are focused on AI but also on biometric security such as finger vein recognition. Ciresan (2015) highlighted that AI has more efficient data classification than human beings. AI has got the greatest accuracy in work performance Leonov et al. (2019). Artificial Intelligence has the ability of a computer or a computer-able robotic system to process data and produce results in a manner like the third process of humans in learning, decision-

making, and solving problems. Artificial intelligence forms the basis for all computer learning which are extremely efficient for calculation so that it brings errorless result. Artificial Intelligence increases the efficiency, accuracy, and speed of mathematical calculations. Alzaidi (2018). Impact of artificial intelligence on the performance of the banking industry in the Middle East. With this information, the hypothesis can be formed:

***Hypothesis 3: Artificial intelligence has more work efficiency than humans.***

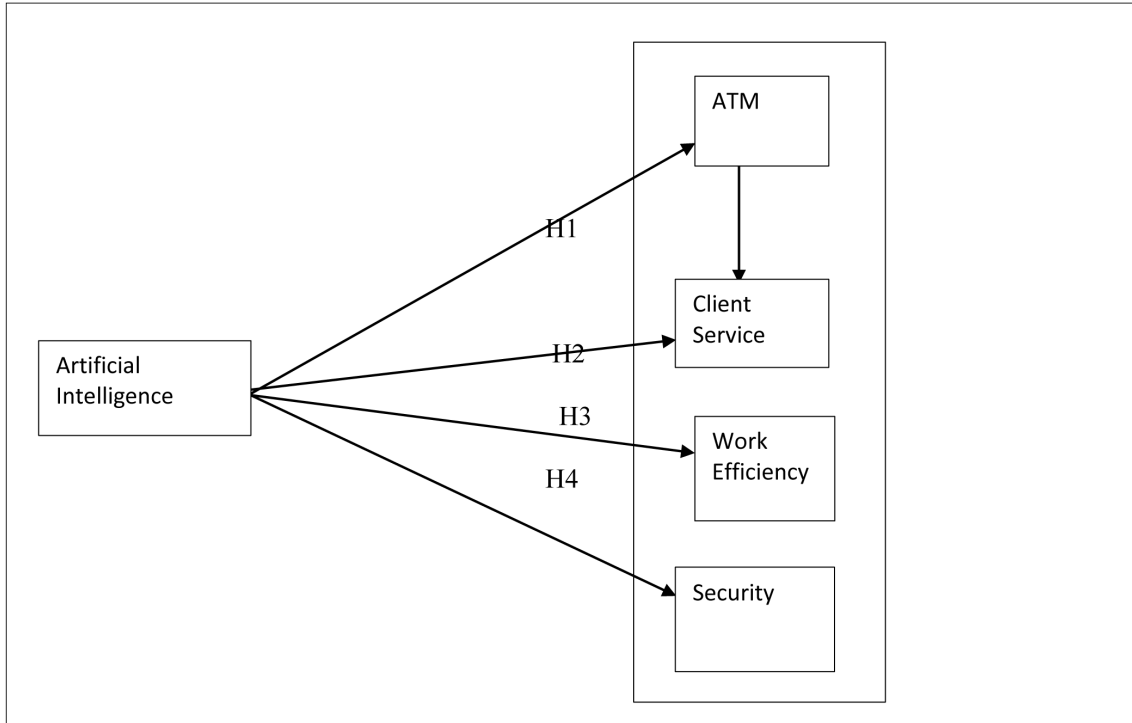
***Artificial intelligence and Security***

Artificial intelligence has inflicted our lives in various ways through automated professions. The machines automatically record the entire information of the clients including taking photos and it gives signally information so that, security concerns can be maintained by the implementation of artificial intelligence. A bank must be bankable for presenting secure and swift transactions, artificial intelligence is designed to detect fraud in transactions on the basis of a pre-defined set of rules. AI can offer high security to the banking sector by making the

transaction quicker and safer Padmana Bhan (2021). As Manore (2020) highlighted that AI can be used for sensing and predicting. ATMs are subjected to various types of attacks and frauds like scheming cards or cash wrapping, installations of software, and even physical attacks so, artificial intelligence detects the entire information to redirect the risk. Anderkam et al. (2014). So, the hypothesis can be formed that:

***Hypothesis 3: Artificial intelligence maintains the perfect security***

In this study model, AI supports the ATM for data interpretation and data detection which means AI has a positive impact on ATM. Furthermore, AI and ATMs are interdependent with the perfect services so, customers get perfect service without any endurances and hazards. AI is based on big data and metadata which has a tremendous amount of information to support the ATM, as the result, it has the much more efficient work with accuracy and error less. Security concern is equally important so, AI supports ATM machine to collect entire information like thought detection and even physical violence.



**Figure 1 – Impact of Artificial intelligence on Commercial Banks ATM study model**

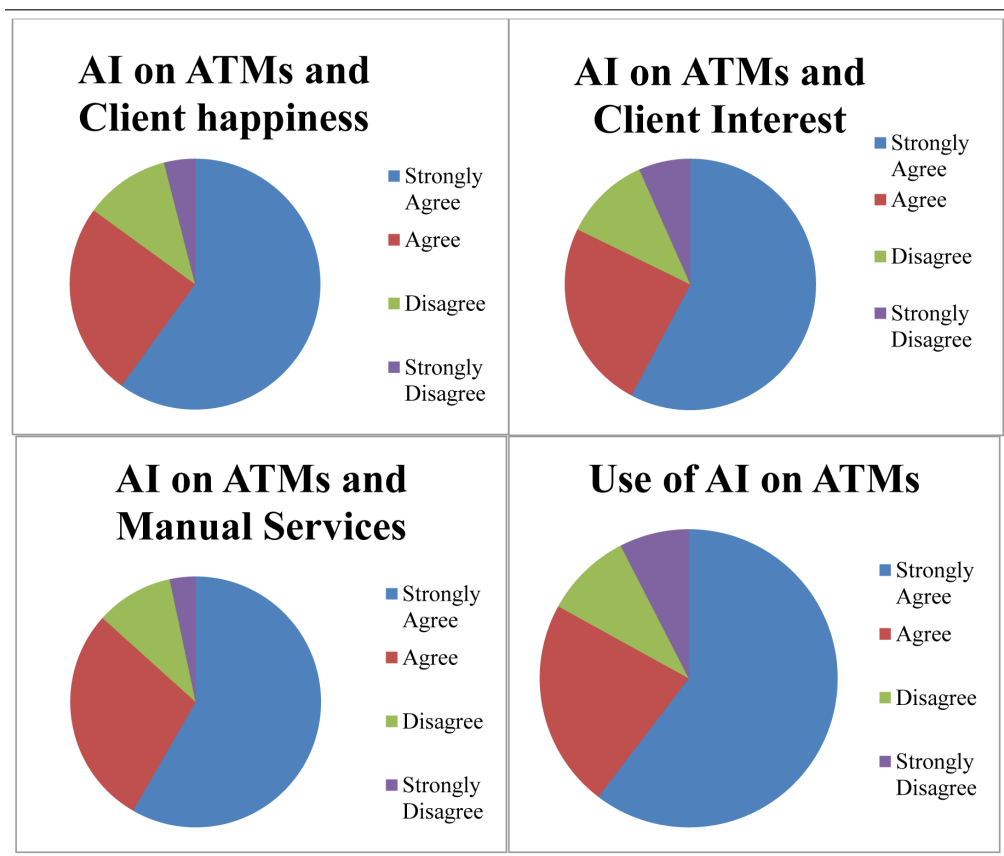
**Methodology**

This descriptive study explains the impact of artificial intelligence in the commercial bank through ATM services. The study is based on secondary data as well as field visits for observation as the primary data. The research papers, journals, web sites were also consulted for gathering the information. With the support, the researcher visited the five banks and 30 ATMs in the different cities of Nepal. With the random sampling Sunrise Bank, Investment Bank, Everest Bank, NIC Asia Bank, and Siddhartha Bank were selected for the study. 5 ATMs of each bank were selected around New Road, Thamel of Kathmandu, five ATMs of each banks were selected around Jawlakhel, Lagankhel of Lalitpur, five ATMs of each bank were selected from Pokhara around Prithivi Chowk, five ATMs were selected from Biragnagar,

five ATMs were selected from Nepalgunj, five ATMs were selected from each bank from Dhangadi. To get data on the impact of AI, on commercial bank ATMs, the questionnaires were prepared based on major three variables as client service, work efficiency, and security. The survey was conducted among commercial bank top-level employees, managers, and customers. The questionnaires were administered to 30 managers of the 30 branches of the five banks and 30 clients who visited for ATM services.

**Results & Discussion**

AI is an emerging technology that has been used in various sectors mostly in the banking sector. The banking sector is the most sensitive sector because it deals with money and currently ATM machines are giving better services with excellent work efficiency and security.



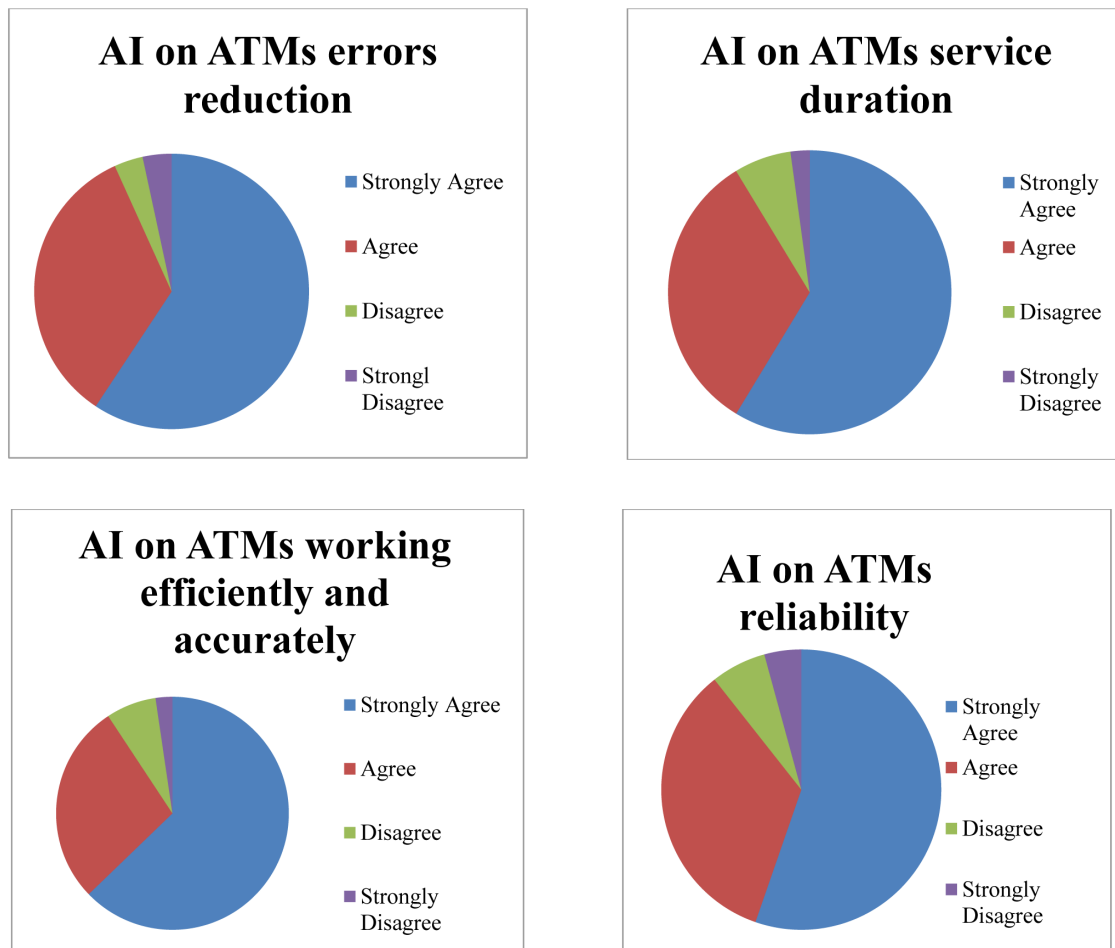
**Figure 2 – AI on ATMs on Client Service**

**Source: Survey of clients 2022**

As the data highlights most of the clients are satisfied with the AI on ATMs services. Regarding the concern of happiness, 60 % of clients are strongly happy with the ATM services. Only 2% of the clients have a problem with AI in ATMs. Likewise in this modern society, manual services are being gradually reduced with the technologies. The data illustrates that AI on ATMs is more reliable than manual services. Most of the clients, almost 97% clients are in favor of AI on ATMs so only a nominal number (3%) are in favor of manual services. Respectively, as the chart demonstrates, in the concern of clients' interest, 96% of clients are interested to receive AI on ATM services. Only 4% of clients have not shown interest in modern technology. Furthermore, in the current situation in the globe, the use of modern

technologies is rapidly used so, in the banking sector 89% of the clients are using ATMs for financial transactions. Only the numbers are out of using the AI on ATMs.

As the subjective judgments, the clients responded that they have the greatest interest in using AI on ATMs because AI on ATMs provides auto service so that clients do not have to wait for any human for their services. Clients are getting demand-based services at any time even at midnight so, clients will not be worried if they lack currency. One respondent tells that when he started using ATMs, his money was prevented from being stolen and biased. On the other hand, some clients are technologically unskilled so, they hesitate to use ATMs. Regarding the client's services, inner mostly clients are happy and immensely interested to use ATMs.

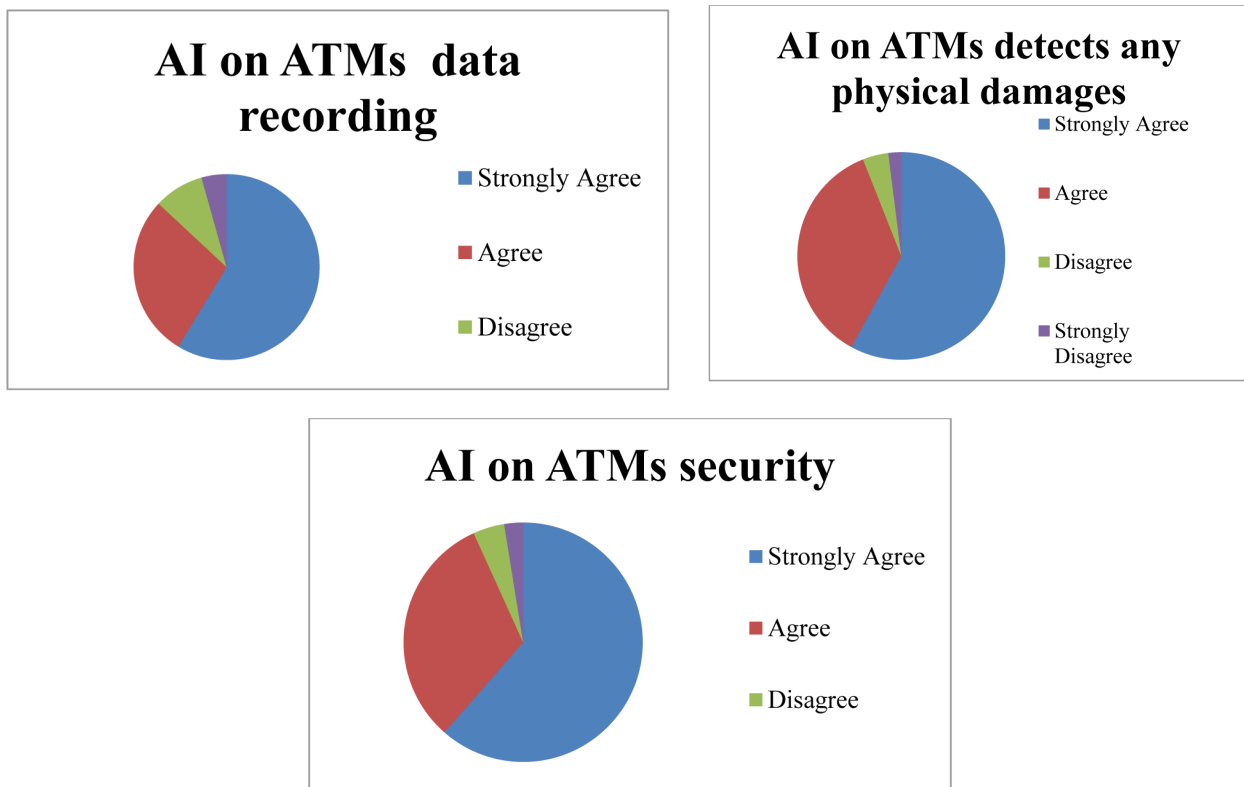


**Figure 3 – AI and Work Efficiency. AI on ATMs working efficiently and accurately**

Table no 3 data elucidates that AI in ATMs has strong work efficiency. Regarding the concern of accuracy and work efficiency, most of the clients are strongly satisfied (97%) so, the craze rapidly inclined towards ATM machines in comparison to manual services. It is crystal clear that AI has deep learning efficiency through big data and metadata so, regarding the error point of view anytime the errors in cash counting, and data recording, errors would not emerge. The data reveals that 98% of clients believed that AI on ATMs has the efficiency to reduce the error. In the context of Nepal, in order to receive banking services, clients have to wait and stay in the queue for a long time for manual services but in the case of AI on ATM machines, it provides instant service. As the data demonstrates 97% of

the banking clients responded with their happiness regarding to the service duration. Furthermore, in this advanced world, the concern of reliability is also a notable factor so, the data represents that 98% of clients are relying on AI on ATM machines which means that AI on ATM machines is tremendously reliable in comparison to manual services.

The subjective view of the client represents that AI on ATMs has got strong work efficiency in comparison to manual work. One said that manual services are so fatiguing, tiring, and time-consuming, staying on the line, and on top of that I have felt so many manual errors, and cash counting errors so the modern implementation of AI on ATMs has been the gift for us. With these remarks, it can be concluded that AI has a strong positive impact on the work efficiency



**Figure 4** – Artificial Intelligence and Security. AI on ATMs maintains perfect security

In this modern time, security concern is inevitably important in all sector but security matter is strongly pivotal in the banking sector, especially in cash counting and all kind of transactions. Table no 4 data demonstrates that AI on ATMs is 98% secured so, most of the clients have a strong belief in ATMs. AI on ATMs has the intelligence to record d tremendous

amount of data in a secure way in which concern 96% of clients believed that AI on ATMs preserves the information of the clients fully. Respectively, the concern of physical damages is equally important so, AI on ATMs has the capacity to study entire information including physical aspects like stealing, fire, destruction, etc. The data highlights that 98%

of clients believed that AI on ATMs protects against any kind of physical damage through its intelligent system.

As the client extended their view that AI on ATMs is fully secured as it has been a computerized system. The view said that AI on ATMs has been linked to the computer system so, the computer itself records the data, and calculates without the inclusion of human efforts, the services of ATMs are really secured, and AI has the strong capacity to record a tremendous amount of data and information like voice recording, clients everything recordings, video recording and on the top of that AI continuously records the videos of the surroundings even it gives the signal if there is any kind of mishappening like stealing, physical damages, fire and so on.

According to the hypothesis, entirely four hypotheses, AI has a positive impact on ATMs. AI on ATMs has a strong positive impact on client services. Eventually, AI on ATMs has a strong positive impact on work efficiency, and AI on ATMs has a positive impact on security concerns.

### Conclusion

Concluding, AI and ATM machines are interdependent relationships as AI provides huge

services to ATMs and AI records a tremendous amount of data concerning ATMs. As the data represents, gradually the manual services are gearing towards modern technology in the banking sector after AI on ATMs is implemented. AI on ATMs has a positive impact on the concern of client services as clients are immensely happy, more believable than manual services, and strong interest and using ATMs greatly. Respectively, modern technology is more reliable accurate, and efficient. In modern technology, AI has a positive impact on work efficiency because manual work is a bit unreliable due to errors so, AI on ATMs has been providing-non error services as well as with an accurate and fixed duration of time so that clients could get services according to their desired time. AI on ATMs has accuracy and efficiency so that clients do not have to spend their valuable time on cash counting, balance inquiry, and so on. In modern society, security concern has been a burning issue so, so AI on ATMs, clients thought that it is more secure than manual services because AI has the efficiency of deep learning so, the entire data of the clients are perfectly secured and well recorded. AI on ATM machines has the true intelligence to detect the entire data including physical aspects so that any kind of physical damage and destruction can be detected.

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