

Application of Artificial Intelligence (AI) in Customer Service (CS) in Islamic Banks in Oman for Sustainable Development

Dr. Dhanuskodi Rengasamy¹, Ravi Thirumalaisamy², Mahmoud Abouraia³, Velmurugan Ramasamy⁴, Dr. Sudarvel Jeyaraj⁵

¹Head, Department of Accounting and Finance,
Curtin University, Malaysia.

E-Mail: ghanuskodi@curtin.edu.my

²Assistant Professor, Department of Accounting, Finance and Economics, Faculty of Business and Economics, Modern College of Business and Science, Sultanate of Oman.

E-Mail: ravi@mcbs.edu.om

³Professor, Department of Accounting, Finance and Economics, Faculty of Business and Economics, Modern College of Business and Science, Sultanate of Oman.

E-Mail: Mahmoud.Abouraia@mcbs.edu.om

⁴Associate Professor of Commerce, Karpagam Academy of Higher Education,
Coimbatore – 641 021, Tamil Nadu, India.

E-Mail: drvelsngm@gmail.com

⁵Associate Professor of Management, Karpagam Academy of Higher Education,
Coimbatore – 641 021, Tamil Nadu, India.

E-Mail: j.sudarvel@gmail.com

Abstract

Although artificial intelligence is being brought about in the form of a radical change in the paradigm of customer relationship and operations in the banking sector as it is redefining the sector with leading the fairway of artificial intelligence (AI), the banking sector has been redefined by artificial intelligence (AI). Overall, AI is a computer's ability to think in the way a human physically thinks. AI contribution in the finance market have statistics that include banks at US\$38.36 billion in 2024 and is projected to be US\$190.33 billion in 2030. In the context of AI all supplied services by the banking sector began to provide all services, which it was rendering previously to customers, as well. Main aspect of this study is to look into application of AI in customer service in the Islamic banks of Sultanate of Oman. Oman has two Islamic banks; Bank Nizwa and Alizz Islamic Bank. Both the two banks are considered for the research. In detail, the banking sector application and AI application in customer services was discussed. Next, it goes onto further ephemeral details of Islamic banks in Oman. In this present case, the study is completed via a qualitative study where discussion was made on the nature of Islamic banks' adoption of AI in the provision of customer service. It has been derived from the secondary data that has been collected from the bank's website. A text mining approach is applied in this will when applied to the website, after be selecting said key terms (such as speak to it, chatbot, virtual assistant, etc). A thematic analysis of which has been done based on the information extracted through the bank website and the findings of the analysis was that Alizz Islamic Bank and Bank Nizwa have put an AI based customer services for its customers. The second is to better understand that the banks had one or the other AI based customer service implemented once a year and it is a bank's agenda of interests of continuous future development.

Keyword: Artificial intelligence (AI), customer service, chatbot, virtual assistant, Islamic banks, sustainable development, environmental

1. INTRODUCTION

In this decade, the human and machine produce huge data for their social and business purposes. The human being was this one because it was to allow this data to be used and make viable decisions. The amount of big data is more humans can observe, comprehend, learn what to do, what to do about these data, and what solid decisions. Therefore, when the condition become critical, a matured and advanced device is needed. One of the technologies on the tip of the development lane of the world is artificial intelligence (Kochhar et al., 2019) for the community at large.

First, it is necessary to start the study and to begin with the term AI. According to what Latimore, 2018, here states about this term, AI is a term that represents the ability to learn, and use the knowledge and skill of doing that because machines and computers are already learn along with use other knowledge and skills of doing that through copy process or copy procedure that human beings can do. AI is the ability of computer to think like a human being. Compared to another study, the first level of contribution to digitalisation and transformation of organizations now is AI. In other words, it is related to the tech ability to learn without programmer's (Kaya, 2019). The algorithms used within a dynamic computing environment when building simulation of human cognitive processes is important, AI being an important factor in this. It basically attempts to replicate the way humans conceive computers work ... (dailymail.co.uk, 27 Dec 2024).

The banking sector is also not an exception where all the industries are using AI for performing various purposes and then there are other allied sectors like customer service, fraud detection, risk management, personalised banking, operational efficiency, etc. As we all know what artificial intelligence is as it has never been so popular in our lives until now, having a minimal reference to the banking AI will be sufficient for us to understand the concept. Furthermore, the phrase AI is further explained to be artificial intelligence which is the technology that is used by banking institutions so as to produce artificial intelligence in interaction of member and customer, and in analysis and decision. An article by Director, Product Management (Data and Marketing) Mark Leher mentioned that AI utilizes robotics; machine learning; and natural language processing to help boost the effectiveness and productivity of banking services as it was published on the website alkami.com on December 28, 2024 (cited). In an article concerning Allen (2024), Brian describes the AI (the computer's ability to learn or perform some undertaking befitting the mental abilities that typically are ascribed to a human) as something that has nevertheless been getting a great deal of attention from public, business, and government officials.

2. AN OVERVIEW OF ISLAMIC BANKS IN OMAN

As mentioned in the Central Bank of Oman - Annual report 2023, there are five major categories of banks in the Sultanate of Oman: i) local banks, 2) foreign banks, iii) specialised banks, iv) Islamic banks; 5) Islamic windows. The total number of local banks and foreign banks are 7 and 9 respectively. There are two for each of the specialised bank and the Islamic banks. There are five banks, which operate under the Islamic window. In this present study two Islamic banks are concerned and the way AI is being utilized in these two Islamic banks in Oman is studied. IBRF deals with Oman as a whole, in covering every aspect of the regulatory requirements for banks and financial institutions. Sharia governance structure as well as licensing and standards are offered by the central bank and IBRF to Islamic banks and Islamic windows in Oman.

The first Islamic bank in Oman, Al Bank Nizwa is promulgated by Royal Decree No. 114 of 2000; which provides entirely with the Shari'a complaints services and products. The banking license was given to the central bank of Oman in December 19, 2012, but it started its operations on December 23, 2012. In Oman, the bank has twenty two branches, these facts are according to the bank's annual report for the year 2023. In the year of 2023, progress made to the bank was good and total assets to the bank was OMR 1.6 billion and grew by 8%. The total portfolio financing and customer deposit rose by 12 percent and 6 percent respectively

to OMR 1.38 billion, and OMR 1.26 respectively. It also raises the total shareholders equity by 3% up to OMR 253.5.

Alizz Islamic Bank is the second Islamic bank in Oman. The bank is a totally functional Islamic bank, established with the Royal Decree No. 69/2012. It started its operation on 30 September 2013. On June 30, 2020, later, its shares were bought by Oman Arab Bank SAOC, the parent company, and Alizz Islamic Bank subsided to the parent company as a subsidiary. The bank's performance according to the report is as follows, as indicated by the annual report of the bank (2023), the bank's profitability increased by 22% and the total assets of the bank increased by 9% when compared with the previous year. The increase in wholesale banking operating cost and sales were 8% and 25 percent respectively.

3. LITERATURE REVIEW

3.1 Application of AI in the banking sector

In current times, due to the existence of fierce competition and immense evolution in the banking industry, it has become an essential norm for all banks to adopt AI into their business plans. The importance of applying AI in the banking sector is assessed by a study: hence the banking sector is able to grow, and it is projected to save more than 1 trillion by 2030 (Maskey, S., 2018). This historical information about the AI implementation is categorized into an early and a modern period of AI implementation for the easy understanding purposes.

More than 90 years ago, the period history relating to AI implementation on finance sector is brought up. In the 1950s, people were very enthusiastic that automation would allow banks and accountants to process and analyse their work quicker than any person could. During the 1960s, stock market prediction and the auditing was one of the things that AI technology was used for, and much of the earlier days' research in the field of machine learning was mostly discussed. A study period was particularly active for AI research during the periods of 1956–74 and 1982–1994 in which funding was plentiful and the topic was still popular (Sydney Swaine-Simon, 2018).

Algorithmic trading is now used by the banking industry, and this is the modern period of its application in the banking sector that is in the late 20th century. The AI task was initially employed for investment banking in the 1980s and later it was implemented in the form of the AI technique for fraud detection in the banking operation in 1990. The banks in the millennium period (starting from 2000s) utilized the use of AI in risk management and customer service sector. The AI technique was implemented in the lending platforms and used as a creditworthiness of the customer in the period of the 2010s. In this period of the 2020s, AI has advanced in many ways in the banking sector with more efficient and affordable banking in a personalised way (website: loanworks.ai, cited 24 December 2024).

The application of AI in banking sector is very discussed and there are many studies that provide information on how AI is used, Mark Leher (2024) is one of such studies which explains the key application of the AI in the banking sector. The figure 1 depicts the application of AI in the banking sector in order to probe further.

Key applications of AI in the
banking sector

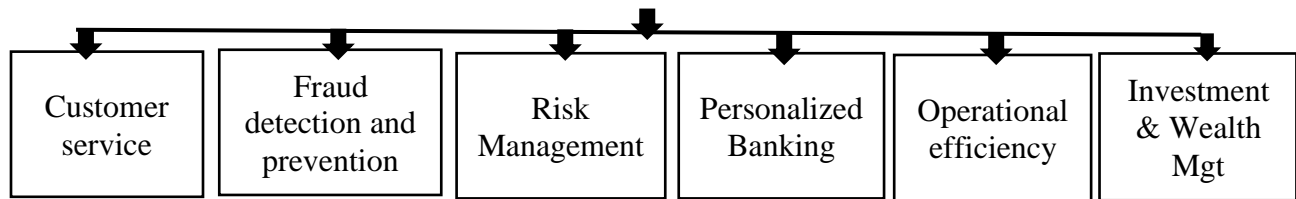


Figure 1 Key applications of AI in the banking sector

Source: Adapted, Mark Leher (2024)

The author conceives the AI to be applied as customer service in the banking sector, which gets derived from the graph. Secondly, this research divert towards the use of AI application in the customer service, especially in case of Islamic banks in Oman. Different aspects of AI application in the banking sector were part of various information extracted from the internet. Given the online source's information, the following figure is based.

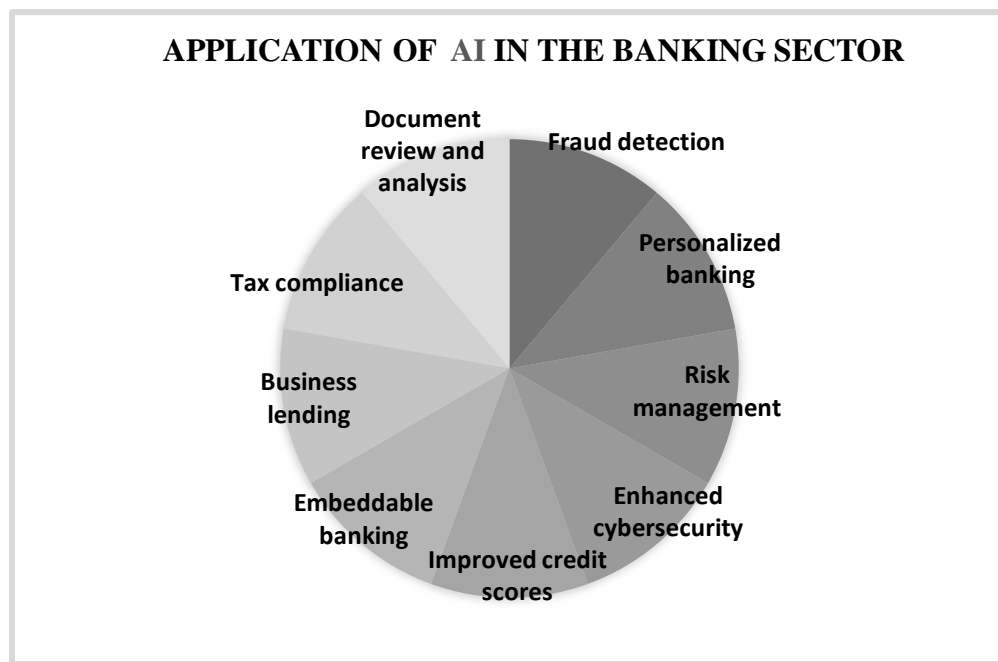


Figure 2 AI Application in the banking sector

From the graph it is inferred that there are nine sectors of the AI applications in the banking. So, personalisation is nothing but customer services. For this reason, the following paragraph is about AI based customer services.

3.2 Application of AI in customer service in the banking sector

All efforts have always been put in place by the banking industry to introduce various cutting edge technologies in order to improve its operations and customer experiences. AI is a transforming industry and has offered extraordinary services to the customers in many respects in today's environment. The AI always analyses the customer's behavior and what was learned, to provide services, like a tailored model and to suggest banking products. Xu, Y., C. H. Shieh, P. et al. (2020) give a definite meaning of the term AI in customer service: AI is a system based on the technology enabled, that is, it is looking at the real time service scenarios, from a digital or physical data collection source for offering personalized advice, alternatives and answers to customers' problems and enquiries, including the complex ones. The banking sector uses the AI services to customers in many aspects and compile them in Figure 3 based on the internet sources.

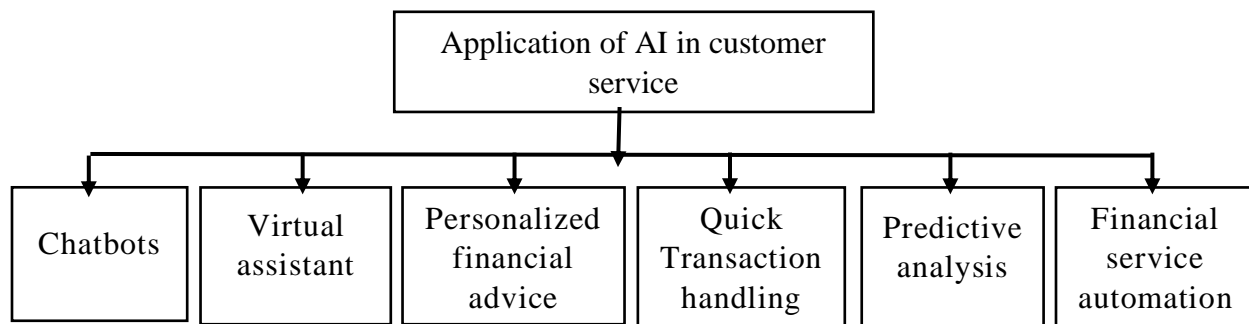


Figure 3 Application AI in customer service

3.2.1 Chatbots

Banks depend on the interaction services which AI like the chatbot provides for their customers. Chatbot is the agent of the bank and observes the reactions of the human customers who come for availing the services. For that basis, when they are enabling live chat, they will provide the services. As a trained language model, the chatbot is working, by setting a recorded answer to the question and which was the policy to this answer or refusing to answer based on information from the record of the bank's policies on the database and, in the absence of any answers in the database, the completed of the most popular questions (FAQ). Caldarini (2022) noted that "a chatbot is a software or web interface application that is meant to simulate human conversation with extended texts or voice". It is more beneficial to the customers by providing them to be around the clock. In the viewpoint of reducing queue and wait times as well as the labour cost for the banks, the chatbot helps the customer (Ostrom et al., 2019; Turel and Connelly, 2013; and Xu, 2016).

3.2.2 Virtual assistant (VA)

Also, banks provide their customers with another convenient service using AI – a virtual assistant – which is a new and creative tool for all the banks, in particular, and for the financial sector as a whole, as it is used for rendering services related to customer service support and the fulfillment of administrative tasks (Mori, Margherita, 2021). VA is an administrative company supplying administrative services to customers from clients outside an office. VAs are the computer based software program that is used by the AI to communicate with the people and is attuned with the use of voice recognition and machine learning in the banking sector. These banking VAs, or enabled banking virtual assistants, are the ones who do a more intricate range of financial related transactions and questions (Will Kenton, 2024). The response is in terms of voice and text enquiries from the customers.

3.2.3 Personalized financial advice

AI has increased the productivity of the financial advisory service hugely. With AI, banks are engaging more proactively, giving easy and individualised financial related solutions to customers. The data is immense and AI can dive into the particulars of each customer's specific financial situation and serve the individual helping them accordingly (Mohammad Arif 2024). AI does not need human intervention for complex algorithms, and prediction as well, and services can be personalised as per the customers (Zhu et al. 2024). In adopting the interactive interface design, these are otherwise called robo-advisers, or robo-of-advisory service, however, such a combined name suggests financial advisory services (Day et al., 2018; Jung et al., 2018).

3.2.4 Quick Transaction handling

AI is used by the banks and they continuously watch the transactions in live, and thus they detect unusual pattern of transactions and consider a potential case of frauds while it is occurring. This aids the customers to deal with the transactions easily with security (Ishan Gupta, 2024, cited on 30 December 2024).

3.2.5 Predictive analysis

Predictive models designed using the power of AI determine potential fraudulent activities that are influenced with risk factors, market trends, historical data. The machine learning algorithms feed on the past fraud transactions in order to predict emerging threats and to update the strategies of their detection. Using predictive analytics by the banks can stop the fraudulent activities and save them from potential financial loss and, at the same time, protect their reputation (Devan, Munivel, Sanjeev Prakash, and Suhas Jangoan, 2023).

3.2.6 Financial service automation

The automation of financial service by means of AI techniques. The automation of prospects of enabling organisation to modernise the processes, decrease the manual involvement in doing transactions and improve the operations. High value and complex transactions are allowed to be done by an automation system (Sameer Roy, 2023).

This literature review analyzes and provides in depth information on the role of AI in solving problems of banking sector in terms of customer services. The literature is clear that AI is inevitable in the banking sector and in many ways the bank customers are serviced by AI. In terms of knowing application of AI in customer service in Islamic banks in Oman, the literature support is provided. Two Islamic banks exist in Oman, Bank Nizwa in the year 2012 and Alizz Islamic Bank in the year 2013. For the first, it considered the banks with a view to finding out, banks' AI application on their owners services, and to the other the banks.

edictive Maintenance in Banking: Leveraging AI for Real-Time Data

Analytics

Predictive Maintenance in Banking: Leveraging AI for Real-Time Data

Analytics

Predictive Modeling: AI-driven predictive models forecast potential fraudulent activities by leveraging historical data, market trends, and risk factors. Machine learning algorithms learn from past fraud instances to

anticipate emerging threats and adjust detection strategies accordingly. Predictive analytics empower banks to

preemptively thwart fraud, minimizing financial losses and safeguarding reputation (Bhattacharya & Bhaumik, 2021)

Predictive Modeling: AI-driven predictive models forecast potential fraudulent activities by leveraging historical data, market trends, and risk factors. Machine learning algorithms learn from past fraud instances to

anticipate emerging threats and adjust detection strategies accordingly. Predictive analytics empower banks to

preemptively thwart fraud, minimizing financial losses and safeguarding reputation (Bhattacharya & Bhaumik, 2021)

4. RESEARCH METHODOLOGY

The focus of the study is to investigate how AI will be used in customer service by the Islamic banks in Oman. Most of the research methods are divided into three parts: quantitative, qualitative, and mixed methods. An analysis of qualitative research is given in the present research. The purpose of qualitative research is to collect and analyze non numerical data (descriptive) to learn more about what people think, what the social reality is, what people believe, etc. Qualitative (side to side) study that highlights her role in breaking such complex social issues (Lim, Weng Marc, 2024). Data for the study is collected from the banks' website and they are secondary data.

It is applied to text mining, a method, which a data mining technique deals with structured and unstructured text to extract valuable information. As Marti Hearst (2003) says, text mining is extracting the information from the written resources. Such text mining enables the researchers to look through, parse and interpret those combinations (Li, Simon YK, and Eric Tsui, 2024). The Terms used for searching information from the website are artificial intelligence, chatbots, virtual assistants, personalised financial service, quick transaction handling, predictive analysis, and financial service automation. Based on the above, a thematic approach was applied on the data extracted and a thematic analysis approach was used to analyse the data extracted from the selected research articles (Khosravi et al. 2024). It is a method of analysis in qualitative research where analyzed raw data are done, explorations on the topic, and a complete picture of the research theme.

5. DATA ANALYSIS AND RESULTS

In the bank's website, the AI-based customer service terminologies such as chatbots, virtual assistants, personalised financial service, quick transaction handling, predictive analysis and financial service automation are searched. The second part of this section classifies the details of the website sources into two parts which include: an overview of the details of the website sources; and, secondly, description of the collection of information in context to a set of user decision points, e.g., theme. The conclusion consists of the themes which were present across the collections of the banks' banks.

5.1 Overview of the sources

Data obtained from the bank website is tied to the Islamic banks in Oman. Therefore, the websites were applied and a keen observation made, in order to identify the application of AI in customer service within the Islamic banks in Oman. The details of the sources are presented in Table 1.

Table 1 Details of Sources

SN	Name of the Source	Details of the Source
Bank Nizwa		
1	Bank Website: News page	In the Bank Nizwa's website, there is a menu titled 'news.' It is one of the sources for data observation. The study focuses on news archives for the period of five years from 2020 to 2024.
Alizz Islamic Bank		
1	Personal – Digital	In the bank website, the first menu is Personal, and it has pages in the name of 'digital' that are considered as sources for data observation.
2	Business – Accounts	In the bank website, the second menu is business, and it has a page named as 'accounts. It is considered as a source for data observation.
3	The Bank – About us	The third menu of the website is 'the bank', it includes a page 'about us' is considered as source for data observation.

5.2 Application of AI in customer service in the Bank Nizwa

The results of the text mining method applied on this section are presented in this section. One by one, the bank Nizwa's published documents (news) are viewed and any AI based customer services (as mentioned in figure 3) also available in publications are identified and presented for analysis. The website of the bank Nizwa includes different menu pages among which news is taken for text mining purposes. A good news source to find out about the information regarding AI based customer services. The archives of the year are segregated in the news page. Also, each year is classified on a month basis. In the light of this, the information of the news for the period of five years (from 2020 to 2024) has been extracted in the present research. The following paragraph describes the AI based customer services given by the bank to its customers.

5.2.1 Predictive analysis - ISMS

According to the website, one of the AI based customer services is predictive analysis done by information and security management system (ISMS). The statement is reproduced below.

'Recognition by the ISO 27001 accreditation is formal certification informing that Bank Nizwa has achieved the highest levels of security, and that an ISMS, as is the case with the international standards'.

The news page of the website of Bank Nizwa with the article 'Reinforces Cyber Resilience with ISO 27001:2013 Certification' published on date of publication 3 February 2020 [Source: Bank Nizwa website: the news page: article titled as "Reinforces Cyber Resilience with ISO 27001:2013 [...]

The systematic arrangement of ISMS is followed by financial institutions to protect sensitive financial data from such cyber threats, data breaches and other such things. It is a system by means of which the bank Nizwa obtained the certificate ISO 27001, on the basis of which the ISMS system is implemented at the highest level of security. This is a system which secured the banks with their customers.

5.2.2 Quick transaction handling – electronic wallet (e-wallet)

Second information which she has from the bank website is about instant transaction through the use of e-wallet solutions in the customer service. The statement replicated below.

Mr Arif Al Zaabi, AGM of Retail Banking, Bank Nizwa states that contactless payments have been a growing trend worldwide for several years as it is very convenient. The current situation increases the probability of clients to offer the use of e banking and mobile banking options. Our safety was always a top priority in the eyes of our customers who trust us as their trusted partner, seeking the best in the class, most advanced and at all the safest solutions that can automate their banking requirements.”

March 31, 2020.] Bank Nizwa introduces additional features on its e-wallet solution to assist in its efforts to encourage contactless payments was published.

It is a technology that is considered as the modern electronic wallet (e-wallet) through an AI system. The three features of the e-wallet consists for having the money in the form of pre paid accounts where funds are stored virtually and can be transacted and purchased goods and services and pay credit and debit cards. The customer can instantly use contactless outflows or scanning quick response codes (QR) code.

5.2.3 Virtual assistant – WhatsApp

The third information is the one linked to customer service of the virtual assistant through WhatsApp, using the bank’s website. The information as announced is copied below.

Bank Nizwa , Oman’s largest and most trusted Islamic Bank, has launched its new WhatsApp banking service that will provide its accountholders with an effective front door to provide internationally advanced customer experience.

[Dr. Sami Al-Saidi, Assistant General Manager at Bank Nizwa answered a telephonic inquiry from the OMAN TIMES (pictured bottom image) to detail the new WHATSAPP banking facility that is launched: the other bank pictures appear without caption]

To get queries related products and services answers 24/7 and anywhere in the world, the bank WhatsApp number needs to be provided the registered mobile number through the customers. Additionally, it contains frequently asked questions (FAQs) for the bank operations. All this is in the shape of a virtual assistant (in the form of WhatsApp).

5.2.4 Financial service automation – Instant auto finance

The fourth financial service obtained from the bank website is about instant auto finance. The copy of the information exactly from the website is given below.

Globally, Bank Nizwa Oman’s leading and most trusted Islamic bank, has announced partnership with first of its kind Shariah compliant fintech solution IFIN (Islamic Finance Initiation Network) allowing customers to finance with ease to buy what they want. The instant approval service is strategized as "10 minute financing process", and it would be a simple and easy application process and time saving instant financing. The retailers will be submitting requests for finance through a web based application available from a closed down group of retailers only, there will be no ability for finance to be pulled out without the knowledge of the customer and full transparency in terms of costs involved prior to submitting a finance request.

[Source: the news page: article titled as ‘Bank Nizwa Offers Instant Auto Finance’, which was published on Bank Nizwa website on date, January 31, 2022]

Based on banks in Oman, and especially Bank Nizwa, Islamic Finance Initiation Network (IFIN) is tied up with the Islamic financing process digitalisation, where the applicant from banks is connected through web based application to get the loan benefit immediately.

5.2.5 Financial service automation – Digital-only branch

The fifth information gleaned from the bank website in the news page regarding the use of financial service automation through a digital-only branch. Everything is reproduced here from the extracted information.

It has three machines that customers can use to perform a number of transaction and activity. The First is an Interactive Teller Machine; an ATM fitted with video call facility to allow for transaction by physically remote customers to withdraw or deposit large sums of cash (up to OMR 20,000), that would ordinarily not be possible on an ATM. The second machine is a working machine, fully that customers can regular deposit or withdraw and pay bills. The kiosk is the last machine which is used by the customers for the fulfillment of their debit card issuance needs. The machine can issue a new, lost or expired card in minutes. After the transaction, the customer will receive a new debit card and it will already be activated by the end of the transaction. This machine is thereby able to incorporate the existing debit card migration. Those customers who come at their convenience to get their card replaced have been able to access it at free of charge. Additionally, these cards that this kiosk issues are eco friendly.

This news article refers to: Bank Nizwa Inaugurates a Digital-Only Branch at Mall of Oman (December 25, 2022 on the Bank Nizwa website news: page).

With the aim to educate customers on Islamic financial products, the Bank Nizwa has opened its first digital only branch within the Mall of Oman. Furthermore, the branch has three machines for advanced facilities for customers to financial service automation ground. The most remarkable thing from the statement is that the machine features video calling.

5.2.6 Financial service automation – minor account digital onboarding

The sixth information about the bank website indeed reflects that the bank offers the service to their customers using financial service automation through minor account digital onboarding. The following is the message extracted.

'We tried to bring the culture of banking to everyone at Bank Nizwa.' 'As always we are providing them simple, accessible and hassle free as only we can provide them,' concluded Sadiq Baqer Al Lawati, Head of Digital, eSales & Payment at Bank Nizwa. This is why, we launched the digital on boarding service of Minor Accounts. That's how we were able to protect their children's financial futures from wherever they were at their homes, offices or on the run. "We want to provide the next generation of Omani the ethical knowledge of Islamic banking he/she deserves, and we want to give him/her life long skills of money, to survive.".

From Date of Publication, 6 September 2023, Bank Nizwa released the article as "Bank Nizwa launches Minor Account Digital Onboarding" on its news page in the news page of its website Bank Nizwa. [Source: Bank Nizwa news page.]

This is exactly what the bank claims, about giving technological services to the customer through the application of AI techniques and an application of AI techniques in the customer's work.

5.3 Data analysis – Alizz Islamic Bank

This section analyses the application of AI to the customer services in Alizz Islamic Bank in Oman. We apply the text mining as well as checking 3 important menu pages available at the bank's website – personal, business, and the bank. In fact all three pages are viewed for the data mining purposes. From the observation from the website, the following AI based customer services are presented in the following paragraph.

5.3.1 Chatbot services

AI based customer service aka the chat bots are the first thing that has been extracted from the Alizz Islamic Bank website. A computer orientated program that talks with a user in a way that simulates human conversation using whichever mode of a text chat... So in other words the chatbot is an AI component that is used through any messaging application. The extracted qualitative information from the website and reproduced below.

Recently Alizz Islamic Bank revealed the Chatbot service, which attends to customer queries about the products & services and leaves room for direct communication with the bank thus opening lines to talk to the bank 24/7 on 24166000. This is part of the bank's vision to become digital, and also to improve customer experience. The launch of the Alizz Islamic Bank Chatbot has already been made on WhatsApp and the official instagram page of the banks expecting to add its presence to the banks corporate website soon.

[Source: The bank page and location is from media press releases: article titled as "Alizz Islamic Bank Introduces Chatbot Service for Instant Responses to Enquiries [Cited on 2 January 2025],: URL: <https://alizzislamic.om/the-bank/media/press-releases/2>]

The customers have to provide the WhatsApp number to their bank, for which, they will need to register on it through their registered mobile and they can send a message or any product and card information questions and they get an instant response regarding their questions. But, the same service is offered by the bank through its Instagram page. Moreover, customers can send a direct message and bank machine learning solution provides the answer to the question instantly.

5.3.2 Financial service automation – Mobile banking

The second piece of information from the bank's website, which is concerned with the AI applications in terms of customer service automation, is about the financial service automation through mobile banking. Now, the mobile devices like tablets, smartphones, etc. helps the customers to operate the bank transaction from remote by the bank itself. This is a service provided by Bank Alizz to its customers whose related information was taken out from the website and reproduced below.

Alizz Islamic Bank's all new mobile banking application that is simple to introduce and use with fast banking. The new Alizz Islamic Bank Mobile Banking application is right at your fingertips with your smartphone or tablet device with financial transactions wherever you go. From your smartphone or tablet, you can bank anytime, anywhere in safe and secure way.

[The source is found on the website of Alizz Islamic Bank; the page is personal page; the article title is "All Your Banking Needs are Just a Click Away," dated on 2 January 2025; <https://alizzislamic.om/personal/digital>]

The given statement is clear with complete details regarding the mobile banking services of the bank for the customers. The thing worth noting in the statement is that this service is 24/7 and available to the customers anywhere in the world. This is provided by the bank through the safest application experience by multilayered security infrastructure.

5.3.3 Quick transaction handling – Internet banking platform

The third of the quick transaction handling AI-based service provided by Alizz Islamic Bank in Oman. A new internet banking platform is offered by this bank in this category. It is worth mentioning that this is a service related note extracted from the website and is reproduced below.

With a simple banking experience in the Internet banking, Alizz Islamic Bank introduces a new all Internet banking platform. You can now bank seamlessly from anywhere in the comforts of your own home or away from your home, from your PC, laptop or tablet device with the new Alizz Islamic Bank Internet Banking platform. Prestige QAQQA Kareers & QA Jobs bring the comfort of banking at your convenience. No traffic jam, look for parking, wait in long queues ~ use us and do your banking in just minutes. We take utmost security very seriously. That's why, for extra security, we employ the toughest encryption methods using Symantic's Verisign and onetime passwords for transaction security.

[Source: Citation for access to Alizz Islamic Bank website and the location is online banking: article titled as "All Your Banking Needs are Just a Click Away," dated 3 January 2025 from the personal page; <https://alizzislamic.om/personal/digital>].

The term online banking is taken to mean the same as internet banking and vice versa. Web banking (or virtual banking) is also known as. It allows customers of the bank to organize a variety of banking transactions through the bank's website or mobile application in this system. Also from the statement on the website, we can tell that Alizz Islamic Bank is serving this service to its customers without interruption and that the bank has the multi layered security infrastructure in place.

5.3.4 Financial service automation – Interactive teller machine (ITM)

The fourth qualitative information is derived from the Alizz Islamic Bank website based on customer service from the financial service automation part, the interactive teller machine. The website has information about this service, which is reproduced here.

This is the first time a bank in the sultanate is introducing an ITM which is also short form Interactive Teller Machine. According to the video two way that Alizz Live will do, you can be able to watch the Teller or perhaps the Teller can watch you. In addition, the branch staff can use a receiver and two way speaker to have a dialogue with it. No one will hear what you are saying because just like you are talking to a teller in the branch, your conversation is as private as it can be. On completing any existing transaction, you don't have to worry, the teller will do it in real time and without any delay thus completing any transaction in real time.

[From the homepage of personal page and the location shows that I am using interactive teller machine: location <https://alizzislamic.om/personal/digital>; Source: on anytime Interactive Banking at Your Convenience, article on 3 January 2025]

A further glance at the bank's website reveals that the bank is offering ITM activities to its customer. This is a video based banking machine that enables the customers to have a face to face interaction with a live teller real time. It provides extra time for the banks to its customers to deposit.

5.3.5 Personalized financial advice - Corporate Internet Banking Platform

The fifth qualitative data being obtained from the Alizz Islamic Bank website was the corporate internet banking platform which is an area of personalised financial advice. Here is the same information reproduced below.

The Corporate Internet Banking Platform Alizz Connect is made for the Wholesale Banking customers of Alizz Islamic. Our electronic based platform can be tailor to any specific business need that include Money Collection Solutions, payments ability in totaling single & bulk payments, WPS salary payment, cheque book request, local transfers or international / cross border transfers...

From the source:[Alizz Islamic Bank website as a company page on the business page and the location of the article is internet banking: article titled as "Alizz Connect," cited as of January 3, 2025; <https://alizzislamic.om/personal/digital>]

According to the statement given above the Alizz Islamic Bank has specifically enabled to its target wholesale banking customers explicit facilities for secured operations through internet baking.

5.3.6 Personalized financial advice – Alizz Business (AB)

The sixth type of AI based customer service is AB under the personalised financial advice. This qualitative information about AB is reproduced in a publication in the newspaper.

The bank will also put in place an enhanced state of the art internet banking platform for the satisfaction of the corporate customer's business transactions securely at any time and any place.

The newspaper: Muscat Daily: article titled as "Alizz Islamic Bank launches 'Alizz Business' its new value proposition for SMEs" (March 11, 2024, as title).

<https://www.muscatdaily.com/2024/03/11/alizz-islamic-bank-launches-alizz-business-its-new-value-proposition-for-smes/>]

According to the newspaper information, it is one of the bank services based on AI given to its customers, which are shari'a compliant retail and corporate customers.

5.4 Conclusion

The objective of this study is to discover how the Islamic banks in Oman are using the AI in customer service. Currently, there are two fully fledged Islamic banks, Bank Nizwa, together with Alizz Islamic Bank, both of

these banks are considered for study. The study is qualitative and the study deals with the use of AI on customer service applications in the Islamic banks in Oman. The qualitative collection is done through bank's website. The data is extracted from both banks' websites and contained in various menu pages on both banks' websites. From Bank Nizwa website news page, the main focus is extracted years 2020– 2024. On the Alizz Islamic bank website, personal, business and bank are the three main pages. There are different headings for the headings on each page such as Digital, Accounts, and About Us." Be it any year, irrespective of the data present on this website, AI customer service orientated data are extracted for the analysis. It applied a text mining approach for extracting the information from the sources. This method is the thematic approach of collected data and it is a method as an analysis that shows the whole content of research theme.

According to the literature, the AI based customer service is classified into chatbots, virtual assistants, Personalised financial data, quick transaction handling, predictive analysis and financial service automation. The text mining approach is then implemented such that the six customer services are searched on the website and related information is extracted. The banks, which provide AI based customer services, are applied with the help of the thematic approach. Based on data extracted from the Bank Nizwa website and the analysis performed under supplier, the bank utilized AI in customer service as it was used for predictive analysis, quick transaction handling, such as virtual assistants, financial service automation. Moreover the bank as well displays the interest in the usage of AI-oriented services in relation to customers. The Bank Nizwa in general, gave a swan service to its customers in terms of AI service. Shown in the case of Alizz Islamic Bank's website data, this offers four forms of AI orientated customer service to customers. These services are chatbots, financial service automation, quick transaction handling and personalized financial advice and are based on AI. During the application of the text mining approach, it is noted that the Alizz Islamic Bank is very cautious about the AI based customer services. From the whole analysis, it is clear that the Islamic banks in Oman can use the application of AI-based customer services to its customers.

Oman Vision 2040 is fit with the sultanate of Oman's launch of the National Programme for Artificial Intelligence (AI) and Advanced Digital Technologies. The program opens the way for the different aspects in the area of global development. In such a period, the two Islamic banks exercised the business of providing AI related customer services and, therefore, supported and contributed to Oman Vision 2040. This study also provides future research with theoretical knowledge. Additionally, the banks and the policymakers would also make use of this study for future planning. This study offers future research on banks application of AI in other areas such as fraud detection and prevention, risk management, personalised banking, operational efficiency, investment and wealth management and so on.

REFERENCES

1. Brian Allen, "Navigating Artificial Intelligence in Banking", Bpi BITS report (2024).
2. Caldarini, Guendalina, Sardar Jaf, and Kenneth McGarry. "A literature survey of recent advances in chatbots." *Information* 13, no. 1 (2022): 41.
3. Day, Min-Yuh, Tun-Kung Cheng, and Jheng-Gang Li. "AI robo-advisor with big data analytics for financial services." In 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), pp. 1027-1031. IEEE, 2018.
4. Devan, Munivel, Sanjeev Prakash, and Suhas Jangoan. "Predictive maintenance in banking: leveraging AI for real-time data analytics." *Journal of Knowledge Learning and Science Technology* ISSN: 2959-6386 (online) 2, no. 2 (2023): 483-490.

5. Ishan Gupta, "AI in Banking – How Artificial Intelligence is Used in Banks", Inside AI News, July 26, 2024.
6. Jung, Dominik, Florian Glaser, and Willi Köpplin. "Robo-advisory: opportunities and risks for the future of financial advisory." *Advances in Consulting Research: Recent Findings and Practical Cases* (2019): 405-427.
7. Kaya, Orçun, J. Schildbach, and S. Schneider. "Artificial intelligence in banking: A lever for profitability with limited implementation to date." *Deutsche Bank Research* (2019): 1-9.
8. Khosravi, Mohsen, Zahra Zare, Seyyed Morteza Mojtabaeian, and Reyhane Izadi. "Artificial intelligence and decision-making in healthcare: a thematic analysis of a systematic review of reviews." *Health services research and managerial epidemiology* 11 (2024): 23333928241234863.
9. Kochhar, Khyati, Harsh Purohit, and Ravisha Chutani. "The rise of artificial intelligence in banking sector." In *The 5th international conference on educational research and practice (ICERP)*, vol. 127. 2019.
10. Latimore, Dan. "Artificial intelligence in banking." Oliver Wyman: Boston, MA, USA (2018).
11. Li, Simon YK, and Eric Tsui. "Introduction to data/text mining." In *Handbook On Information Sciences*, pp. 256-272. Edward Elgar Publishing, 2024.
12. Lim, Weng Marc. "What is qualitative research? An overview and guidelines." *Australasian Marketing Journal* (2024): 14413582241264619.
13. Marti Hearst, "What is Text Mining?".
<https://people.ischool.berkeley.edu/~hearst/text-mining.html>
14. Maskey, Sameer. "How artificial intelligence is helping financial institutions." New York City: Forbes Technology Council (2018).
<https://loanworks.ai/artificial-intelligence-in-financial-services-a-historical-review/>
15. Mohammad Arif, "AI-Powered Personalized Financial Advice: Transforming Customer Experience in Banking", LinkedIn, August 10, 2024.
<https://www.linkedin.com/pulse/ai-powered-personalized-financial-advice-transforming-mohammad-arif-oxuwc/>
16. Mori, Margherita. "AI-powered virtual assistants in the realms of banking and financial services." *Virtual assistant* 1 (2021): 65-93.

17. Oliver Wayman, Celent, "Malaysian Bank Customers Ready to Embrace Artificial Intelligence and Automation in Digital Banking - Unisys Banking Insights Survey", Unisys, 2017.
<https://www.unisys.com/news-release/my-malaysian-bank-customers-ready-to-embrace-artificial-intelligence/>
18. Ostrom, Amy L., Darima Fotheringham, and Mary Jo Bitner. "Customer acceptance of AI in service encounters: understanding antecedents and consequences." *Handbook of service science*, volume II (2019): 77-103.
19. Sameer Roy, Dominance of Automation in Financial Services Industry, Artha , e-journal of FRTL @IIM Calcutta , May 2023, volume 11, issue 1, 2023.
20. Sydney Swaine-Simon, "The History of AI in Finance", Medium, District 3 March 9, 2018
<https://medium.com/district3/the-history-of-ai-in-finance-7a03fcb4a498#1ce0>
21. Turel, Ofir, and Catherine E. Connelly. "Too busy to help: Antecedents and outcomes of interactional justice in web-based service encounters." *International Journal of Information Management* 33, no. 4 (2013): 674-683.
22. What is a virtual assistant, and what does one do? Will Kenton updated May 10, 2024 9cited on 30 December 2024)
<https://www.investopedia.com/terms/v/virtual-assistant.asp>
23. Xu, Jingjun David. "Retaining customers by utilizing technology-facilitated chat: Mitigating website anxiety and task complexity." *Information & Management* 53, no. 5 (2016): 554-569.
24. Xu, Yingzi, Chih-Hui Shieh, Patrick van Esch, and I-Ling Ling. "AI customer service: Task complexity, problem-solving ability, and usage intention." *Australasian marketing journal* 28, no. 4 (2020): 189-199.
25. Zhu, Hui, Olli Vigren, and Inga-Lill Söderberg. "Implementing artificial intelligence empowered financial advisory services: A literature review and critical research agenda." *Journal of Business Research* 174 (2024): 114494.