

## A study on usage of voice assistants in different sectors (medical sector, banking sector, automobile sector)

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### Abstract:

Voice assistants react to voice commands and give the user relevant information about his inquiry. The voice assistants can process orders of products, answer questions; perform actions like playing music or start a simple phone call or text. The basics of the technology currently exist and the next few years will be used to develop these artificial intelligence assistants even further, enabling them to have more complex capabilities. Voice assistance is used across various sectors, mainly in the medical, banking, and automobile sector. Voice assistants like Google Assistant voice search, Amazon Alexa, Amazon's Echo, Google Home, Siri, Cortana, are being adopted by various sectors. In this research paper, based on the usage of voice assistants, we will study on various companies specifically in the medical, banking, and automobile sector utilizes these voice assistants as a platform for building up customer relationships. By voice assistant, both customers and companies are being benefitted and are expected to grow drastically in the future ahead.

Keywords: voice assistant, artificial intelligence, medical, banking, automobile

### Purpose:

A digital assistant that uses speech synthesis to provide aid to users through phones and voice recognition applications and natural language processing is referred to as a voice assistant. Nowadays, people are more active in their adoption of technology. The voice assistants are popular and functional with increasing popularity and overtaking traditional modes of services. With the increasing revolution in technology, more data and artificial intelligence are needed for voice assistants. The acquisition of voice assistants has grown rapidly over the

years and across multiple industries. The usage of voice assistants in different sectors is basically for building customer relationships, consumer satisfaction, and understanding consumer buying behaviour, which can increase a company's productivity levels. Hence, to know the benefits of voice assistants in different sectors this research has been surveyed and studied.

## Research Objective:

The objective of the paper is to understand the usage of voice assistants in different sectors, i.e., medical, banking, and the automobile sector.

## Literature Review:

- (Huan F, Kassem F, and Kang, 2017) conducted research on continuous authentication for voice assistants. Voice is considered as one of the popular user interaction channel used for various purposes such as driving and at home. Voice assistants such as Siri, Alexa, and Google Assistants are nowadays becoming everyday fixtures. For this, a system was introduced which provides continuous authentication for various voice assistants.
- (Emre S, Lisa K, Yungui H, Simon L, 2020) reviewed the scope of patient-facing and behavioural health interventions with voice assistants. The market is growing increasingly for the usage of voice assistants for their daily tasks with innovative solutions. This research paper mainly focuses on the behavioural health interventions to address the population, intervention, comparison, and outcome related to their healthy lifestyle. With high usability, feasibility, efficacy, satisfaction of voice assistants enabled people to use healthy lifestyle.
- (Dimitri D, Andrej I, Marjan G 2019) studied about the interactive home healthcare system with voice assistant. To improve patient easily, home healthcare is preferred by doctors through voice assistants. The suffering patients can easily access information, communicate health issues & guidance through various services by voice assistants. This feature is mainly used for geriatric population having issues related to blood pressure or diabetes. Voice assistant help improve patient-centric approach by Alexa and Google assistant to gain the benefit of technology in the healthcare sector.
- (Farzaneh N, Mohsen A, One-ki (Daniel) Lee, 2017) elaborated on artificial intelligence based voice assistant systems with emerging new technologies. In this research paper, a conceptual model was developed that involved interaction quality to describe more about artificial intelligence based technology. To check the model, voice assistant technology was tested as an example of technology. However, it was confirmed about interaction quality that significantly affects individual's belief which leads to more adoption of technology.

- (Lin Y, Yanhong Ge, Weiming Shen, 2014) proposed a home mobile healthcare system for wheelchair patients. The rise in applications of Internet of Things (IoT) technologies has benefited the quality of life. Recently the research and development are highly focused on geriatric population for their healthcare monitoring at home. This research paper is related to the home healthcare services being provided with the internet of things. For chronic diseases, monitoring of motor, sensory and cognitive functions is required especially for elderly patients. Thus, home security is required after the monitoring to protect the daily life and schedule. Therefore, the traditional method needs to be improved by the portability and flexibility of the healthcare system. By the home healthcare services with the advanced technologies, remote monitoring can take place, thus improving the services being provided to the elderly patients.
- (Amrita S, Sudhir N, 2018) surveyed on virtual assistant and human interactions. The Intelligent Virtual Assistant utilizes information to make suggestions and perform respective activities. There are various voice recognition, contextual understanding and human interaction that need to be focused to survey about the services provided by virtual assistants. Many services provided by assistants require various improvements. The services provided by Siri, Google Assistant, Microsoft Cortona and Amazon Alexa are considered as intelligent virtual assistant that are used in cell phones, at home and in automobiles. With the growing technology, there are still some improvements in voice recognition and in contextual understanding. There are few limitations in the survey of human interactions with virtual assistants among disabled community having hard time with cognitive disabilities from personal assistant. Therefore, to overcome some limitations, there is a medium in testing various areas such as banking, counselling, education, business, etc. Along with this, the advancement or improvements in machine learning technologies and algorithms need to be focused that increases new possibilities and changes.
- (Gamal B, Veton Z, 2018) studied about the next generation of virtual personal assistants. Nowadays, artificial intelligence is one of the growing medium between humans and machines. The researchers designed a structure for the new virtual personal assistant. The virtual personal assistant system designed has used video, graphics, gestures, speech and different modes of communication in input and output. This system can be used in different tasks such as medical assistance, robotics & vehicles, security access control and education assistance.
- (Dinithi W, Agra G, Chathurya D, 2019) studied about the digital assistant for customer service in banking sector. In Banking, a chat-bot is used to improve customer interaction by providing solutions to customers by the mode of user interaction. This is developed mainly to focus on the customer satisfaction with the usage of chat-bot. This system provides service of answering questions by the customers to solve their banking related questions. The inquiry by customers are extracted and converted by using natural language processing techniques suitable with the system. Thus, answer with respect to question is formulated based on saved

knowledge data. Therefore, by this mode of digital assistant, the customer needs is achieved leading to customer satisfaction.

- (Lugan G, 2017) surveyed about the virtual assistants in self-driving cars. The research was more inclined towards the extent of artificial intelligence needed in the coming next generation autonomous vehicles. With the technology and development, it is predicted that in the next decade self driving cars will reach the highest level of automation. Many researches have been conducted related to the role of artificial intelligence in the advanced human-autonomous vehicle interaction to achieve benefits in the self driving ecosystem. Thus, the survey and study on virtual assistants in self driving cars is drastically increasing with the rise in artificial intelligence along with technological and societal futures.

## Research Methodology:

This research is mainly based on studying the use of voice assistants in different sectors. The approach of research is based on qualitative research to understand a situation in depth. The qualitative research generally includes interpretation and naturalistic approach to the subject matter. This research approach enables in gaining motivation, reasons, and opinions related to the topic. Qualitative research gives rise to non-numerical data that seeks to interpretation.

The qualitative research method is mainly used to understand the experiences, interactions, behavior, and beliefs of people. For research design, exploratory research is used to design the objective. Exploratory research is considered as the first step of research, forming the basis of conclusive research. The data being studied is based on secondary data. The secondary data is acquired from secondary research that is based on a systematic investigation of the existing data. The existing data is collected and summarized to increase the overall effectiveness of the research. The research is based on secondary research method. Secondary research is also known as desk research including the collection of information from summaries, collation and/or surveys, and synthesis of existing research.

## Findings:

This analysis investigates the usage of the voice assistant in the medical sector, banking sector, and the automobile sector. Some of the common voice assistants being used are Siri (Apple), Alexa (Amazon), Watson (IBM), Bixby (Samsung), Viv (Samsung), Google Assistant (Google), M (Facebook).

Alexa: Amazon's Alexa was founded in 1996 in the world of Analytics. Alexa mainly focuses on analytical tools for customers. Alexa voice service is designed to imitate real conversations by using intuitive voice commands to get the services. It is considered as an intelligent voice recognition and natural language intellect service.

**Siri:** Siri was introduced as an application for iOS in 2010 by Apple. Siri offers faster and easier ways by intelligent assistant, to get things done on people devices. Through Siri a person can set alarms, timers & reminders; play music; quickly answers questions; performs multiple tasks; access to different languages; and keeps privacy related to the information.

**Bixby:** Samsung's Bixby was founded in 2017 as an intelligent assistant to interact by using voice, texts or taps. Bixby performs multiple tasks in a specific order depending on the hearing of commands. It also connects with day-to-day life depending on the requests being given.

**Google Assistant:** Google introduced Google Assistant in the year 2016 as an artificial intelligence-powered voice assistant for it to be conversational and to gain two-way experience. Google Assistant interacts with Android services, provides answers to all queries, and provides web-wide search results, learning & knowledge.

#### ❖ Voice assistant in the medical sector:

The accessibility to use voice-activated speakers is considered as a part of the healthcare management system & considered as a niche segment of the voice ecosystem. Voice assistants have two major groups of users in the medical sector, physicians and patients. Physicians utilize programs to take patient notes, data, and access records. Voice assistant enables time-saving for organizing various data. For patients, the voice assistant provides 24 hour care to a wide range that needs access to care on-demand. Through voice assistants, there is increased security around patient data, and cost-cutting for administrative needs. Voice assistants such as Alexa, Google Assistant, Cortana, and Siri are mostly used in the medical sector which can free up healthcare provider's time by taking care of billing, claims management, and inventory. Amazon's Alexa is in a growing position that greatly impacts the communication, quality of care, and responsibility of doctors, nurses, healthcare professionals to the patients. According to the American Hospital Association, Alexa achieved Health Insurance Portability and Accountability Act compliance and invested USD trillion in the healthcare sector. In this sector, Alexa helps type 2 diabetes patients to integrate with new routines for the improvement and their daily activities; can improve the interaction of patients with the nurses; to calculate blood pressure and communicate the readings; provides instant access to first-aid; provides guidance to patients related to health tips for a healthier lifestyle; provides medical assistance to ambulance personnel.

#### ❖ Voice assistant in banking sector:

In banking, for testing security features using artificial intelligence-based voice recognition, it can automatically confirm the identity of a customer when they call into customer service. Customers of the banks can ask for a service they require such as making payments, transferring money, and reporting stolen or lost ATM and credit cards and receive an accurate response from an assistant on their devices. The banking sector introduced voice assistant as a customer service interface to interact with customers. It is interpreted that by

2020, fifty percent of all online queries can be done through voice assistants. Banks and financial institutions are integrating their products and services with existing voice services such as Alexa, Siri, or Google Assistant. The use of Google assistant enables customers to make payments to others through the android platform. The customers can use their voice to check their account balances, transaction history, and other bank details. The usage of voice assistants creates massive convenience for customers allowing them to get personalized banking experience.

#### ❖ Voice assistant in automobile sector:

The use of voice assistants in car was initiated by people bringing in and using mobile devices with them to answer messages, make calls, and finds their way via navigation applications. Thus, usage of voice in the automobile sector primarily focuses on accessing navigation information, controlling in-car features, and initiating phone calls. According to the Capgemini Research Institute 2019 Report, 73% of drivers are expected to use voice assistants in their cars by 2022. The phone-calls continue to be the top use of in-car assistants. In addition to this, voice assistants are used to controlling music and navigation also. In this sector, more commonly Google's Assistant and Amazon's Alexa are widely used. Recently Amazon has made its car-focused device known as the Echo Auto. The usage of voice assistants in a car requires little cognitive load for one time commands so the voice is the unique method to use while driving.

#### Research limitations/ Implications:

- The devices without better 4G or other network services may face a struggle to keep their digital assistant alive. High-speed internet is preferred for smart speakers, which has to be fairly fast and clean for the best results.
- The voice assistants are powered by narrow artificial intelligence but are unable to make general or abstract decisions like the human mind.
- The privacy violation has created a great impact on the usage of voice assistants.
- The natural language processing is a challenging part of smart speakers.
- The voice assistants also suffer from the known limits of deep learning algorithms, which mean that they can only work in the domain they have been trained for.
- There have been privacy issues related to personal information without appropriate assurances.

## Originality/ Value:

The purpose of this study is to study the usage of voice assistants in different sectors including the medical sector, banking sector, and automobile sector. The rising technology has brought voice assistants usage on increasing demand. The usage of voice assistants has enabled patients; customers and drivers for easy interaction and communication for various purposes. Amazon's Alexa, Google Home Google Assistant, and Apple's Siri are most widely voice assistants in the medical, banking, and automobile industry.

## Conclusion:

Nowadays, the technology has driven many innovations and advancements for the day to day purposes. From the last few years there has been an increase in artificial intelligence related aspects in different fields. With this, voice assistants have been on rise with high demand in the medical, banking and automobile sector. The most common voice assistants being used are Amazon Alexa, Amazon's Echo, Google Assistant, Siri, Cortana, Bixby, M, and Watson. In medical sector, voice assistant is considered as a niche segment of services provided by healthcare management system. Alexa, Google Assistant, Siri, and Cortana are mostly used in medical sector. In banking, voice assistant acts as a customer service that provides an interaction among customers and banks. Through this service, customer satisfaction is easily achieved by providing voice services along with Alexa, Siri, or Google Assistant. The usage of voice assistant in automobile sector is focused mainly on navigation, controlling features, and initiating phone calls. Therefore, voice assistant is highly been adapted in every sector and is expected to rise in the future ahead.

## References:

- Huan Feng, Kassem Fawaz, and Kang G. Shin (2017) 'Continuous authentication for Voice Assistants' Retrieved from <https://dl.acm.org/doi/pdf/10.1145/3117811.3117823>
- Emre Sezgin, Lisa K Militello, Yungui Huang, Simon Lin (2020) 'A scoping Review of patient-facing, behavioural health interventions with voice assistant technology targeting self-management and healthy lifestyle behaviors' Retrieved from [https://www.researchgate.net/publication/332951249\\_A\\_Scoping\\_Review\\_of\\_Patient\\_Facing\\_Behavioral\\_Health\\_Interventions\\_with\\_Voice\\_Assistant\\_Technology\\_Targeting\\_Self-management\\_and\\_Healthy\\_Lifestyle\\_Behaviors](https://www.researchgate.net/publication/332951249_A_Scoping_Review_of_Patient_Facing_Behavioral_Health_Interventions_with_Voice_Assistant_Technology_Targeting_Self-management_and_Healthy_Lifestyle_Behaviors)
- Dimitri Dojchinovski, Andrej Ilievski, Marjan Gusev (2019) 'Interactive home healthcare system with integrated voice assistant' Retrieved from [http://docs.mipro-proceedings.com/dc/21\\_dc\\_5503.pdf](http://docs.mipro-proceedings.com/dc/21_dc_5503.pdf)
- Farzaneh Nasirian, Mohsen Ahmadian, One-ki (Daniel) Lee (2017) 'AI-based voice assistant systems: Evaluating from the interaction and trust perspectives' Retrieved

from

<https://pdfs.semanticscholar.org/d6df/b61a662cf159e0d715e2c687bf902d5be700.pdf>

- Lin Yang, Yanhong Ge, Wenfeng Li, Wenbi Rao, Weiming Shen (2014) ‘ A home mobile healthcare system for wheelchair user’ Retrieved from <https://ieeexplore.ieee.org/document/6846914>
- Amrita Sunil Tulshan, Sudhir Namdeorao Dhage (2019) ‘Survey on Virtual Assistant: Google Assistant, Siri, Cortana, Alexa’ Retrieved from [https://www.researchgate.net/publication/330165159\\_Survey\\_on\\_Virtual\\_Assistant\\_Google\\_Assistant\\_Siri\\_Cortana\\_Alexa\\_4th\\_International\\_Symposium\\_SIRS\\_2018\\_Bangalore\\_India\\_September\\_19-22\\_2018\\_Revised\\_Selected\\_Papers](https://www.researchgate.net/publication/330165159_Survey_on_Virtual_Assistant_Google_Assistant_Siri_Cortana_Alexa_4th_International_Symposium_SIRS_2018_Bangalore_India_September_19-22_2018_Revised_Selected_Papers)
- Gamal Bohouta, Veton Z Këpuska (2018) ‘ Next Generation of Virtual Personal Assistants (Microsoft Cortana, Apple Siri, Amazon Alexa and Google Home) Retrieved from [https://www.researchgate.net/publication/322418348\\_Next-Generation\\_of\\_Virtual\\_Personal\\_Assistants\\_Microsoft\\_Cortana\\_Apple\\_Siri\\_Amazon\\_Alexa\\_and\\_Google\\_Home](https://www.researchgate.net/publication/322418348_Next-Generation_of_Virtual_Personal_Assistants_Microsoft_Cortana_Apple_Siri_Amazon_Alexa_and_Google_Home)
- Dinithi Weerabahu, Agra Gamage, Chathurya Dulakhi, Gamage Upeksha Ganegoda, Thanuja Sandanayake (2019) ‘ Digital Assistant for Supporting Bank Customer Service’ Retrieved from [https://doi.org/10.1007/978-981-13-9129-3\\_13](https://doi.org/10.1007/978-981-13-9129-3_13)
- Giuseppe Lugano (2017) ‘ Virtual Assistants and Self-Driving Cars’ Retrieved from <https://sci-hub.tw/10.1109/ITST.2017.7972192>

#### Websites:

- <https://onlim.com/en/what-are-voice-assistants-and-how-do-they-work/>
- <https://dotcms.com/blog/post/4-industries-amazon-alexa-will-disrupt>
- <https://healthcareweekly.com/alexa-in-healthcare/>
- [https://voicebot.ai/wp-content/uploads/2019/01/in-car\\_voice\\_assistant\\_consumer\\_adoption\\_report\\_2019\\_voicebot.pdf](https://voicebot.ai/wp-content/uploads/2019/01/in-car_voice_assistant_consumer_adoption_report_2019_voicebot.pdf)
- <https://voicebot.ai/2019/11/17/73-of-drivers-will-use-an-in-car-voice-assistant-by-2022-report/>
- <https://tendercapital.com/en/the-voice-assistant-trend-opportunities-or-limitations/>