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Utilizing Amazon Web Services Tools for Efficient Multilingual Omnichannel Contact Centres

***Mughele, E.S., Ogala. J.O., & Okpako, E.A.**
Department of Cyber Security, Faculty of Computing, University of Delta, Agbor, Nigeria

***Corresponding author email**: s.mughele@unidel.edu.ng

Abstract
A contact centre may face difficulties when there are language barriers between a customer and an agent. To improve customer experience, this study demonstrates how to instantly translate chat conversations between users in real-time, in their preferred language, across multiple channels. The paper used some essential Amazon Web Services (AWS) to implement this solution. At the core of the demo is our machine learning models, which help to auto-connect, evaluate and translate the customer experience. Researchers used Amazon Connect to modernize the information technology (IT) service desk with omnichannel contact centre capabilities. Customers could utilize Amazon Connect's flexible chat APIs to enable multilingual conversations. Developers can use Amazon serverless and API-based artificial intelligence/machine learning (AI/ML) services to incorporate machine learning capabilities into their apps.

Keywords: Multilingual, Customer Experience, Omnichannel, Amazon, Web Services

Introduction

Amazon offers a complete cloud computing platform called Amazon Web Services (AWS). It provides a vast range of services, such as processing capacity, storage solutions, different networking tools, machine learning (ML), artificial intelligence (AI), and analytics technologies. (ATSG.net). AWS enables businesses to scale their operations efficiently, reduce IT infrastructure costs, and deploy applications globally with ease. With its pay-as-you-go pricing model and extensive suite of services, AWS supports diverse workloads and industries, fostering innovation and agility in the digital landscape. Amazon Web Services (AWS) tools that enhance an efficient multilingual omnichannel contact centre involve leveraging a suite of advanced cloud-based technologies designed to enhance customer service operations. AWS offers powerful tools like Amazon Connect, a scalable cloud contact centre solution that seamlessly integrates with other AWS services, providing a unified platform for voice, chat, and task management (Mabrouk et al., 2021). Additionally, AWS's artificial intelligence services, such as Amazon Translate, Amazon Transcribe, and Amazon Polly, enable real-time language translation, transcription, and text-to-speech capabilities, ensuring effective communication across multiple languages (Srinivasan &Vasquez, 2024). By utilizing these tools, businesses can create a responsive, scalable, and customer-centric contact centre that supports diverse linguistic needs and delivers consistent, high-quality service across various channels.

Deploying AWS tools for contact center eliminate the challenge language barrier for a customer who speaks French calling a contact center agent who understands only English language. This paper addresses this problem by deploying a conceptual architecture that uses the potential of cloud and artificial intelligence (AI) technologies to tackle the problem of language barriers for both clients and contact centre agents. Figure 1 shows the languages spoken by agents and customers across the globe.

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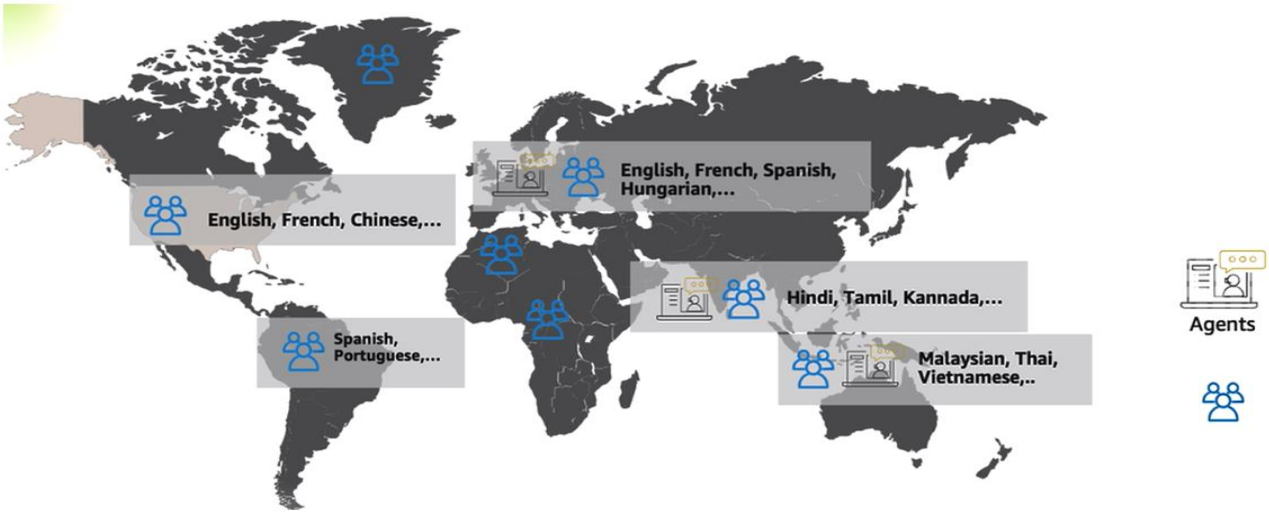

Figure 1: Languages spoken by agents and customers across the globe

Transforming a contact centre into a multilingual omnichannel contact centre may drastically improve the customer experience. This can help widen the appeal of the customers to a more significant portion of the market by providing multilingual support in a range of communication channels that seamlessly link up to one another, no matter where the consumer is, and by giving them their choice of Language to interact and engage with the organization's call centre. This improves customer service, sales, and repeat business are all advantages that contribute to client loyalty. These combined advantages are life-threatening for long-term corporate success. A multilingual omnichannel contact centre has a customer service strategy in place that allows consumers to contact and connect with the company using their chosen form of communication, regardless of their original language, culture, or location. Customers receive a consistent experience from a multilingual omnichannel contact centre, regardless of their preferred communication medium, native language, or stage in the customer journey (Harvard Business Review). For any contact centre, overcoming language barriers between a client and an employee may be difficult. This paper demonstrates how contact centre can automatically translate real-time chat interactions between users into the chosen language across several channels, resulting in a better customer experience (Multilingual omnichannel contact centre with Amazon Connect)

Conceptual Solution

There are three device demos in the conceptual solution, each using different channels, followed by an architectural perspective, that shows how these various services combine to provide an easy-to-use solution for any workload. Global businesses must interact with their workers, customers, and partners in their preferred languages. Moreover, as an aide-mémoire, the agents are the face of any business since they are the ones who communicate with the consumers when they are in need of assistance. As such, organizations must strive to leave a positive impression on their customers. For instance, a scenario where an English-speaking agent and a non-English-speaking customer need to communicate. The conceptual solution may first enable automated identification of the customer's language. Second, it facilitates real-time bidirectional translated conversations between the customer and the agent in their native languages. Third, the possibility of a multi-lingual call centre system will result in improved call centre agent performance and enhanced customer satisfaction.

Channels

Customers communicate with agents through various methods in today's digital world, either through a website, or it could be a voice assistant like Alexa. This can also be through a social channel utilizing WhatsApp, as well as how the solution can be used across several platforms to enable this seamless communication. Customer-centric technology (customer-centric solutions) has altered customer behaviour and the competitive landscape in numerous sectors. Retail technology advancements heavily influence the omnichannel retail process. Customers' experiences in each of the company's integrated communication channels are called the omnichannel customer experience. Providing clients with an omnichannel shopping experience could be challenging; it necessitates significant technological investment and cultural and operational changes inside the firm. Most times, customers do not care if they shop at their usual online store, or any of the company's other locations when they shop using an omnichannel retail approach. Physical

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storefronts of retailers must employ in-store technology to provide a different consumer experience and the benefits of internet purchasing (Harvard Business Review 2012).

To complete a single transaction, consumers are increasingly shopping across various media. Customers should get the impression that they are shopping in a single store if these two channels are integrated seamlessly. Brakus et al. (2009) capture customers' affective and psychological responses to all stimuli in their shopping journey represented by feeling and satisfaction (Tranfield et al., 2003). Customers' emotional and cognitive responses to all cues in their shopping trips can be communicated by emotion and satisfaction. This study claims that customer interactions can impact customer experience by combining the idea underlying interpersonal connections and customer experience. The omnichannel customer experience is defined as "the coordinated administration of the various customer touchpoints and access channels in order to enhance the customer experience and performance across channels (Melero et al., 2016)." A customer's experience is defined as "a series of interactions between a product, a company, or a section of its organization that generates a response." The customer must participate in this highly intimate experience on multiple levels, including cognitive, emotional, sensory, physical, and metaphysical (Artusi et al., 2020). According to the Harvard Business Review, "customer experience" is a multifaceted phrase that encompasses consumers' emotional, social, cognitive, affective, and physical reactions to shops. The customer experience includes the customer's cognitive, emotional, sensory, relational, and behavioural reactions to the brand or store. These reactions result from a series of interactions that occurred throughout the pre-buy, purchase, and post-purchase phases (Ameen et al., 2021).

Materials and Methods

Some of the essential AWS was used to implement this solution, at the core of the demo is the machine learning models, which assisted in auto-connect, evaluating and translating the customers' experience.

Amazon Connect

AWS' Amazon Connect is a simple-to-use cloud-based contact center solution with only one channel. It enables for better customer experience at a cheaper cost. Amazon Connect chat allows asynchronous conversation, which means the customers can come back to the previous context of the discussions with the agents very quickly (Cloud Guru, 2022); (Amazon Connect Made Easy, n.d).

With pay-as-you-go pricing, Amazon Connect streamlines contact centre operations increases agent efficiency and minimizes costs. Whether you set it up in-person or virtually, you can set up a contact centre in minutes that can grow to accommodate millions of customers (Multilingual omnichannel contact centre with Amazon Connect). Amazon Connect was designed from the ground up to be omnichannel, giving customers and contact centre agents a consistent and seamless experience across phone and chat. This comprises only one set of tools for skills-based routing, task management, powerful real-time and historical analytics, and intuitive management tools.

Amazon Translate

More than 70 languages may be translated quickly, accurately, and affordably with Amazon Translate, a fully managed neural machine translation service. Automated translation not only enables cost savings and speed, but it also enables a few use cases which are not possible earlier, like live chat. It uses an attention mechanism to identify the context of the discussion. It uses custom terminology that helps you map the custom-specific names or unique content character names or brand names precisely the way you want it and overrides what has been done by the default algorithms or the context of the discussion (Amazon Web Services Inc, 2022).

Architecture View

The reference architecture, depicted in Figure 2, will provide end users with an omnichannel experience when they call the IT Service Desk (SD) via one or more support channels of their choice, such as a landline phone using the public switched telephone network (PSTN), a softphone from their client device, or a smartphone using an internet connection. From a corporate office, the SD agent uses a web-based softphone (CCP) to get connected to Amazon Connect. From there, they engage with end users through making calls, conducting web chats, or updating their status in the CCP UI. Additionally, calls over the public switched telephone network (PSTN) can be placed by SD agents. If the agents have internet access, they can also establish a remote connection to Amazon Connect from their homes and businesses. All information exchanged between the user's web browser and Amazon Connect is encrypted using TLS 1.2 or higher standards.

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With skills-based routing, Amazon Connect offers online and mobile chat capabilities along with inbound and outbound voice channels. As part of the initial configuration, Amazon Connect enables phone number claims, support queues, contact flows, and routing profiles that can notify clients via email or SMS of the status of their tickets. Connect Operations can be used by managers and SD agents to automate repetitive and manual processes such as scheduling reminders and user follow-ups. Customer relationship management (CRM) and business intelligence (BI) applications hosted in AWS or on-premises, as well as any existing ITSM ticketing platforms such as ServiceNow, are interfaced with Amazon Connect to pull caller information. This can be achieved by utilizing connectors established by the AWS Partner ecosystem or by creating a custom integration connection using AWS Lambda.

Using Amazon Connect and Amazon Lex, intelligent conversational chatbots may be developed to automate frequent user interactions at big volumes without requiring more SD agents or degrading the end-user experience. Using natural conversation language, end users may order IT equipment, schedule meetings, and change passwords with the help of Amazon Lex. Companies can turn automated conversations into face-to-face interactions by utilizing Amazon Connect's contact flows functionality.

IT SD may use Amazon Transcribe and Amazon Translate to convert speech to text from audio recordings saved in Amazon S3 to acquire end-user insights and increase the productivity and quality of contact handling. SD agents may use Amazon Athena to assess the essential themes and relationships in any text by utilizing Amazon Comprehend. Amazon Macie may be used to preserve sensitive data contained in call recordings while emphasizing the event or problem at hand. The IT SD can utilize this information to determine user attitudes and solve a common issue or trend that affects end users' productivity or happiness. SD agents would monitor real-time analytics such as the number of SD agents logged in, call abandonment rates, number of calls handled, SD agent activity status, and so on, been made possible by Amazon Connect. This is accomplished by evaluating contact trace records (CTRs) and storing them in Amazon Redshift utilizing Amazon Kinesis Data Streams and Lambda functions (D1.awsstatic.com. 2022). Figure 2 shows the conceptual architectural model for a multilingual omnichannel contact centre.

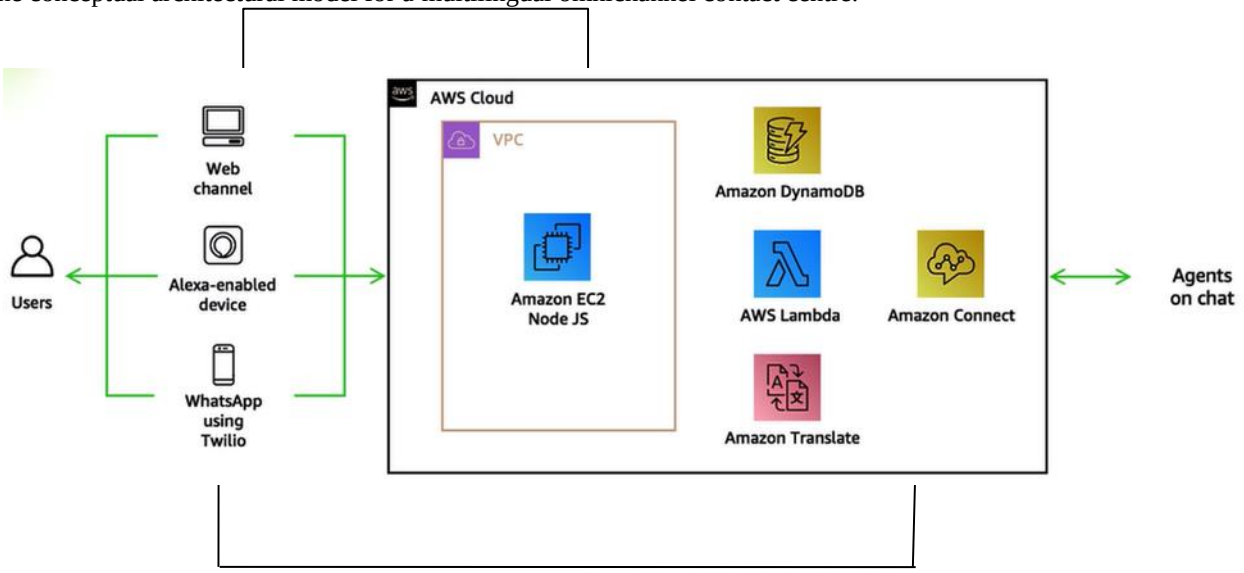

Fig 2: Conceptual Architectural Model

Results

In these sections demo 1, demo 2 and demo 3 are demonstrated to determine the behavior of the Conceptual Architectural model.

Demo 1

The first example is a scenario where a customer that speaks French as their primary language, needs to communicate with an agent who speaks English as a first language. The customer and the agent are to employ a web-based channel method, and the consumer is attempting to change his light share service reservation. The consumer has signed into a Word website, as shown in Demo 1 in Figure 3.

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The customer enters his name and starts a chat session with an agent in his native language. He is speaking in French, and once he starts a discussion, the window in the right corner pops up, which is essentially the client window. The agents' desktop is on the left side as depicted in Demo 1 in Figure 3. The customer inquires about his booking number, provides his booking ID and requests that his destination be changed. So, he is double-checking the details of the reservation. The Customer also makes another request to adjust his trip date and expects that the costs will not change.

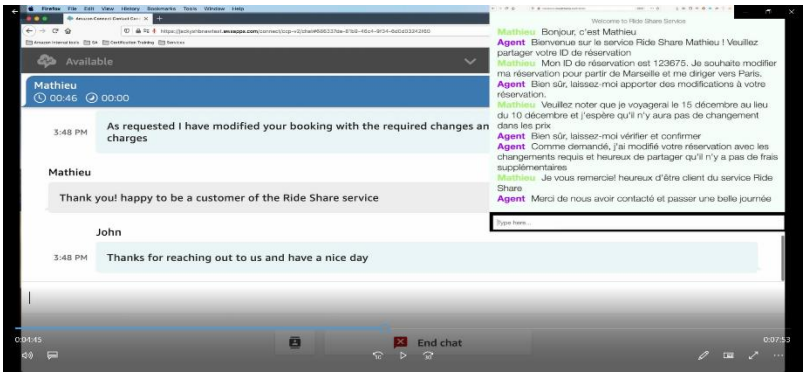

Figure 3: Demo 1

The agent is reviewing the booking in the background, as requested by the Customer, and because they are on board and speaking in their native language, they have a good understanding of the situation. The consumer has made this request and the agent completes the task that the clients want, resulting in a pleasant dialogue between the Customer and the agent.

Demo 2

In demo 2, the Customer uses Alexa Voice to interact with an agent to check the status of their food delivery order. Hindi is the Customer's first language while English is the agent's first language. The consumer is interacting with the agent via Alexa Echo Spot. He is trying to check the status of his food delivery order and obtain a complimentary dessert after placing an order on the restaurant delivery app. Due to delays, the Customer requested contactless delivery with Desi Bites restaurant. He is attempting to contact an agent using his new pod. On the opposite side, he starts a chat session, when he learns that the order will take 45 minutes, he becomes concerned that the order is taking so long. He understands why the order takes so long after he is thrilled that he is receiving a peek. He asks the agent for a contactless delivery. Customers may now converse in Hindi with their Alexa devices while still communicating with the representative on the other end, speaking in English. Two separate languages and two different access techniques, yet each gets a native experience.

Figure 4: Demo 2

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Demo 3

In the demo, the Customer uses WhatsApp to chat with an agent to check why their mobile internet is not working. In this scenario, a customer who speaks Spanish as a native language is communicating with an agent who speaks English as a native language, and they are making use of social media in this situation. The consumer communicates primarily over WhatsApp, while the agent communicates through a web chat. The client is having trouble with his mobile internet, which has been down for several days, and he is attempting to figure out the problem.

Demo 3 Figure 5 has two displays, one is on the left, essentially the Customer's WhatsApp window, and on the right, an agent is utilizing a desktop, with a customer who is communicating in Spanish.

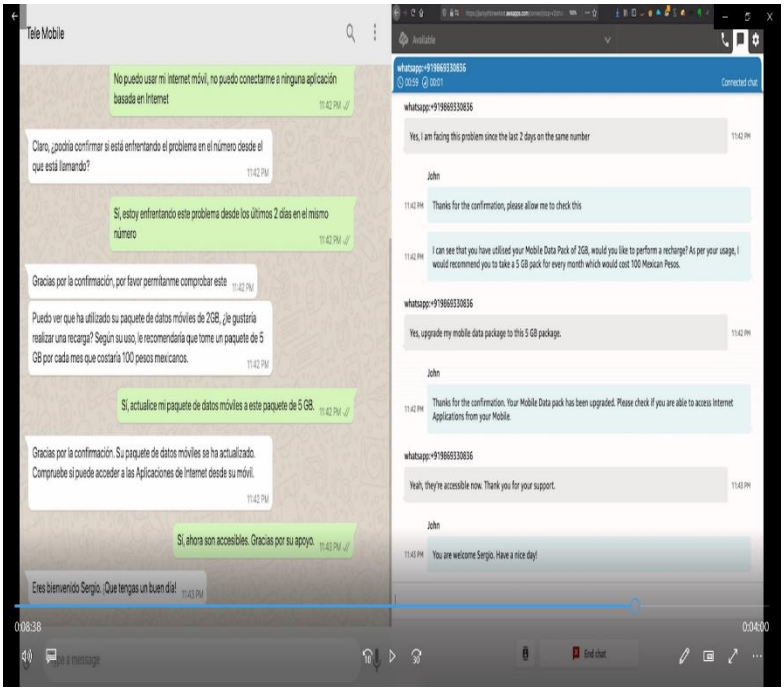

Figure 5: Demo 3

On the right-hand side, the agent is speaking English, and they can still converse properly. The customer complained that he has not been able to utilize his mobile internet for several days, and that he is having problems with the web-based programs. The agent double-checks that he is phoning from the same phone number, goes into the background and checks the genuine issue after he recognizes the request and the customer's cell phone. Then he discovers that the consumer is using an overused mobile data pack, and as a result, he is frequently confronted with this problem.

Recommendations

As global businesses expand, the demand for multilingual support in customer service grows exponentially. Exploring Amazon Web Services (AWS) Tools for Enhanced Multilingual Omnichannel Contact Centres, in the bid to improve customer experience. This is not only timely but also critical for organizations striving to enhance customer experience across diverse markets. This study therefore recommends the following;

1. Relevance to the current trend in Technology: With the emergence of digital communication channels, businesses and developers can use Amazon serverless and API-based artificial intelligence/machine learning (AI/ML) services to incorporate machine learning capabilities into their apps. This will provide seamless customer support across various platforms and communication channels.
2. Addressing Key Challenges: Multilingual support in contact centres often involves challenges such as managing diverse language needs, maintaining consistent service quality, and ensuring quick response times. These can be addressed by examining AWS's capabilities in automating language translation and routing customer inquiries efficiently, thereby reducing response times and improving customer satisfaction.

3. Innovation and Best Practices: further study could identify best practices and innovative approaches to leverage AWS tools for creating a unified omnichannel experience. This can be achieved by analyzing real-world case studies of companies successfully implementing these technologies, this study could provide a blueprint for organizations looking to enhance their multilingual support.

Conclusion

This study has contributed to knowledge by deploying AWS building blocks, to upgrade the IT service desk with intelligent omnichannel contact center capabilities using Amazon Connect. This enables customers to use Amazon Connect's flexible chat APIs to allow multilingual interactions while using various access techniques. Amazon Connect was used to modernize the IT service desk with omnichannel contact centre capabilities. Customers could utilize Amazon Connect's flexible chat APIs to enable multilingual conversations. Furthermore, developers can use Amazon serverless and API-based AI/ML services to incorporate machine learning capabilities into their apps. The use of a multilingual omnichannel contact centre also empowers businesses to deliver exceptional customer experiences across diverse languages and communication channels. AWS's robust infrastructure, coupled with advanced AI and machine learning services, ensures seamless integration, scalability, and real-time responsiveness. By harnessing tools like Amazon Connect, Amazon Translate, Amazon Transcribe, and Amazon Polly, companies can create a dynamic, customer-centric contact centre that meets the evolving demands of a global market. Ultimately, a multilingual omnichannel contact centre not only enhances operational efficiency but also drives customer satisfaction and loyalty, positioning businesses for long-term success in an increasingly connected society.

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