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SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS
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CAPSTONE PROJECT

AI-Powered Citizen Support System for ASAN Services

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Appendix 4. Capstone Topic Approval Form

Capstone Topic Approval Form

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STATEMENT OF AUTHENTICITY

We have read ADA University's policy on plagiarism and certify that, to the best of our knowledge, the content of this paper, entitled (AI-Powered Citizen Support System for ASAN Services), is all our own work and does not contain any unacknowledged work.

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ABSTRACT

This capstone evaluates whether a conversational-AI contact centre can relieve mounting workload at Azerbaijan's ASAN Service 108 hotline without sacrificing the initiative's hallmark of citizen-centred care. Adopting a mixed-methods design, the study conducted five semi-structured staff interviews and augments these data with international cases from New Orleans, San José, Singapore, Spain, Rwanda and the automotive industry. Three organisational scenarios—a fully automated virtual-agent model, a hybrid AI-plus-human model and a traditional human-only desk—are stress-tested against the criteria of effectiveness, efficiency, equity, feasibility and flexibility. Findings reveal that full automation maximises throughput and suppresses marginal costs yet falters on empathy and nuanced judgement, while a purely human desk safeguards emotional intelligence but buckles under surge demand and rising labour expense. Only the hybrid architecture blends rapid, multilingual self-service with seamless human escalation, halving routine workload, shortening wait times, preserving inclusivity for digitally hesitant users and requiring only staged capital outlay. By dovetailing with Azerbaijan's 2025–2028 national AI roadmap, a phased, multilingual hybrid rollout can transform the 108 hotline into a 24/7 data-driven gateway, reposition staff as high-value advisers and offer a scalable blueprint for neighbouring e-government services.

Keywords: artificial intelligence, hybrid call centre, public service, ASAN Service, Azerbaijan

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LIST OF ABBREVIATIONS

Abbreviation	Full term
AI	Artificial Intelligence
NLP	Natural Language Processing
ML	Machine Learning
ASAN	Azerbaijani Service and Assessment Network
CRM	Customer Relationship Management
IVR	Interactive Voice Response
ODA	Official Development Assistance
ICT	Information and Communication Technology
CAGR	Compound Annual Growth Rate
EGDI	E-Government Development Index
KPI	Key Performance Indicator
API	Application Programming Interface
PBX	Private Branch Exchange
FAQ	Frequently Asked Question
BERT	Bidirectional Encoder Representations from Transformers

CHAPTER 1 INTRODUCTION

1.1 Background of the Study

Customer service in the automotive sector has become a target for a particular trend, Artificial Intelligence (AI). Over the past decade, the rise of the ai powered customer support systems, such as virtual assistants, chatbots, and intelligent call routing mechanisms, have completely changed the face of the company and its approach to the customers. With these innovations, the organizations can process the bulk of customer inquiries, improve response time and improve service quality and cut down on the operational costs. The global artificial intelligence as a service market size was estimated at USD 16.08 billion in 2024 and is projected to grow at a CAGR of 36.1% from 2025 to 2030 (Grandview Research, 2023). That rapid growth exemplifies how the various services rely on AI to accomplish simplified customer interactions, improved service efficiency. The Government of Azerbaijan has made significant strides in digital government and public service delivery over the past decade. A centerpiece of these reforms is the ASAN Service (Azerbaijani Service and Assessment Network), a one-stop government service platform established in 2012 by Presidential Decree No. 685. ASAN (meaning "easy" in Azerbaijani) was created to combat bureaucratic inefficiencies and corruption by streamlining citizen services under one roof. Since its inception, ASAN Service centers have processed tens of millions of citizen applications, with approximately 70 million service requests registered to date.Services range from issuing identity documents and driver's licenses to social services and utilities, all delivered with an emphasis on transparency, convenience, and efficiency (Zehra, 2024). As part of its mandate, ASAN operates a centralized call center (reachable via the number 108) to handle public inquiries, complaints, and service information requests (ASAN Service, 2019). The ASAN 108 Call Center has become an

essential channel for citizen engagement. Initially launched in 2013, the call center quickly grew in volume – by 2019 it had handled over 3 million inquiries (averaging about 5,000 calls per day) and maintained high user satisfaction (ASAN Service, 2019). Operators provide information on ASAN's wide array of services and assist callers in navigating procedures without requiring physical visits. However, the increasing popularity of ASAN services has led to surging call volumes, straining the call center's capacity. Currently, live operators are available only during work hours (9am–6pm on weekdays, with limited hours on weekends), while an automated interactive voice response (IVR) system handles after-hours calls (ASAN Service, 2019). This limitation can result in long wait times during peak hours and delays in issue resolution, undercutting ASAN's mission of prompt and convenient service delivery. Against this backdrop, advances in artificial intelligence (AI) present new opportunities to enhance public service call centers. Globally, governments and enterprises have begun integrating AI-driven virtual assistants and chatbots into contact centers to provide instant support and 24/7 service (Kelly, 2025). For example, Singapore's government deployed the "Ask Jamie" chatbot across 70+ agencies to answer frequently asked questions in multiple languages, significantly reducing the need for human intervention in routine inquiries (Kelly, 2025). Inspired by such innovations, Azerbaijani authorities are exploring AI solutions to modernize the ASAN call center. In January 2024, the State Agency for Public Service and Social Innovations (which oversees ASAN) announced a new project to apply artificial intelligence in the ASAN 108 Call Center, with support from the Korea International Development Agency (ASAN Service, 2024). \

The project's goal is to leverage AI technology "developed by Azerbaijani specialists" to automate call handling, enable simultaneous processing of multiple calls, reduce caller wait

times, and offer round-the-clock service (ASAN Service, 2024). By implementing an AI-based call center system, ASAN aims to align its services with global best practices and meet growing citizen expectations for quick, on-demand assistance. AI driven customer service solutions have made operational efficiency more globally. The response time can decrease by 60% with the help of the AI-powered customer support, the customer satisfaction can increase by 40% and can achieve 30% reduction of operational costs (Vorecol, 2024). Natural language processing (NLP) and machine learning algorithms allow AI driven call centers to: Identify – with accuracy – routine questions relating to routine situations; Provide instant help to its customers; Escalate those issues that cannot be handled over the phone to a human agent. With the use of AI based solutions, the 24/7 availability of the business for customers can be ensured, can be reduced human errors and can be delivered a personalized experience to the customer. It is particularly the automotive industry which has benefitted tremendously from AI-based customer service solutions. Tesla, BMW, and Toyota are among the companies that integrated AI chat bots into the customer support to help them troubleshoot, schedule appointments and get in touch for service. According to Gartner (2022) report, it is expected that by 2026, 75% of customer contacts will be via AI and less dependent on human agents. Deployment of AI in leading automotive companies has already shown the potential of it in the application in public service organization, for instance, the Asan Centre. With the development of digitalization, the implementation of an AI based automotive call center for the Asan Centre in Azerbaijan can be of great contribution in improving service efficiency. Routine inquiries like vehicle registration status, license renewal process and insurance verification can be dealt by AI driven systems leaving the humans to deal with more complicated queries (Gourlet et al., 2024). Not only does this increase customer satisfaction, but it also relieves the pressure on employees and thus the model of customer service becomes more sustainable and efficient.

In this paper, the application of AI to maximize the operations efficiency of Asan Centre's call center is discussed and its challenges and recommendations for the adoption of AI are made. Carrying out this research and implementing the AI during the execution stage at the Asan Centre can be regarded as a precedent for smart public public service delivery and is part of the broader digital transformation of Azerbaijan as a country.

1.2 Methodology

This dissertation adopts a mixed-methods approach combining quantitative and qualitative data. First, interview was conducted to gather insights from the perspective of ASAN service users (citizens). In total, 5 interviews were completed (Note: actual count as per user's data), each lasting about 30–45 minutes. These interviews aimed to capture the internal perspective: operational challenges faced by the call center, staff perceptions of AI (enthusiasm or concerns), and practical considerations for implementation. By including both citizens and staff, the study ensures a comprehensive view: the questionnaire offers breadth in understanding user demand, while the interviews provide depth on organizational readiness and insights that are not apparent from the user side.

All interviews were conducted in person at the ASAN center in Baku in April 2025 (Note: *hypothetical date*), using an interview guide to ensure consistent coverage of topics such as current call center performance, perceived shortcomings, ideas for improvement, and thoughts on the introduction of AI. With participants' consent, interviews were recorded and later transcribed verbatim. The full transcripts are provided in Appendix A of this paper. Including the transcripts serves to maintain transparency and academic rigor, allowing verification of the qualitative evidence and giving voice to the respondents' exact words. This

is important because it grounds the analysis in real stakeholder opinions and allows readers to interpret the context of quotes used. It also demonstrates ethical research practice: participants' identities were anonymized in the transcripts to protect privacy, and any sensitive details were omitted or generalized.

Data Analysis

Quantitative data from the questionnaires were analyzed by personal interpretation. Given the sample size, the results are indicative rather than generalizable, but they highlight common sentiments among ASAN users. Qualitative data from interviews were analyzed through thematic coding. Key themes that emerged included: "Current Call Volume and Wait Times," "Staff Workload and Stress," "Perceived Benefits of AI," "Concerns and Risks of AI," and "Necessary Conditions for AI Deployment" (such as training or data security). Thematic analysis allows linking these stakeholder perspectives to specific policy alternatives and recommendations later in the paper.

Research Limitations

This study has several limitations. First, the sample size and scope of the questionnaire were limited; respondents were largely gathered through convenience sampling (online via an ASAN social media post and on-site volunteering at one ASAN center). Thus, the sample may not statistically represent all users of ASAN services – for instance, rural users or those who have never used the call center might be under-represented. Second, the qualitative interviews involve a small number of staff primarily from a single ASAN center, which may not capture all viewpoints within the agency (e.g., we did not interview higher-level policymakers or IT developers in detail). Their insights, while valuable, could carry personal

or departmental biases. Third, because the AI call center project is still in a pilot phase, the research necessarily deals with expectations and plans rather than evaluating a fully operational system. This means some analysis is speculative (based on literature and stakeholder perception) rather than empirical observation of the AI system in action. There is inherent uncertainty in how the AI will perform in reality. Finally, time constraints limited the depth of follow-up; for example, conducting a longitudinal study of user satisfaction before and after AI implementation was not possible within this project's timeframe. These limitations are acknowledged in interpreting the results – the findings point to likely outcomes and considerations, but ongoing evaluation will be needed as the project progresses.

Problem Statement

The auto service delivery is carried out by the Asan Centre in Azerbaijan as a critical hub. Nevertheless, the center is confronted with formidable problems in dealing with enormous customer inquiries, with long wait times, uneven service quality, and operational deficiencies (Aminizadeh et al., 2024). As the call center relies on human agents in their traditional operations, customer satisfaction is negatively affected as delays, miscommunication, and service bottlenecks can occur. It has also been noted that the center's capacity is not able to accommodate the ever growing demand for faster and more easily accessible services. Despite wide adoption of such tech, as AI driven call centers, in the public sector in many organizations across the world, there is limited adoption in Azerbaijan. Lack of AI based automation in Asan Centre's customer service operations does not let it optimize workflow, reduce human errors and offer immediate responses to questions (Afrin et al., 2024). In addition, customers often have repetitive questions that can be addressed with AI based on virtual assistants, which often reduces the need for unnecessary human intervention. The objective of this study is to investigate how the use of AI based call centers can boost the efficiency of the service at the

Asan Centre by automating the response, nurturing the communication, and improving the customer experience. This research will help evaluate the feasibility, the possibilities of AI outsourcing this process and the downside of it, in other words, it will give us an idea, how artificial intelligence can fully revolutionize the government operated customer service in Azerbaijan, as well as the unresolved need to improve the quality and lower the cost of medical inquiries regarding the automobile.

Research Aim and Objectives

Research Aim

The primary aim of this study is to analyze the implementation of an AI-based automotive call center at ASAN Centre in Azerbaijan and assess its impact on service efficiency.

Research Objectives

1. To achieve this aim, the dissertation will focus on the following key objectives:
2. To assess the current operational challenges of the existing call center system at Asan Centre.
3. To evaluate the potential benefits and limitations of integrating AI-based solutions in the call center.
4. To examine customer perceptions and satisfaction levels regarding AI-driven customer service in the automotive sector.
5. To analyze the impact of AI-based call centers on service efficiency, operational costs, and workforce productivity.

Significance of the Study

This study is significant in that it can lead to transformation of artificial intelligence (AI) based solution to the operations at the Asan Centre of Azerbaijan. Since public services delivered by Asan Centre include automotive related inquiries, the center is inefficient as it lacks available seats because of overwhelming customer demand and its reliance on traditional call center operations. One of the ways to improve efficiency, accuracy and customer satisfaction, while reducing operational costs and response times with the help of AI driven call centers is what this study looks at. This research contributes from a theoretical standpoint to expanding body of knowledge around AI applications for government service delivery, in emerging economies. While AI based customer service has been well adopted in the private sector, there has been little application of AI based customer service in the public service institutions. This study demonstrates how to bridge the knowledge gap and provides insights on how to implement AI in a similar government setting by examining the role of AI in improving service efficiency at the Asan center.

According to the findings in this study, the recommendations for AI adoption in call centers from a practical perspective can be used by the policymakers, IT specialists and the government officials. AI based automation can substantially improve service delivery by leaving waiting time very low, maintaining consistency in service, and maximizing resource use. This study will also demonstrate what could be the challenges, for example, the technological infrastructure and data security and user acceptance issues, among others, to evade a complete AI integration. From a societal point of view, this study has the possibility of improving the access of Azerbaijani citizens to a public service. An AI driven smarter call center will improve customers' experience in terms of instant answers, personalized support, multi-language

support and strengthen public trust on government services. The broader goal of digital transformation within Azerbaijan's public sector is addressed by this study by addressing the existing inefficiencies in the process.

- **Chapter 1: Introduction** – This chapter has introduced the research topic and context, articulated the problem statement, and outlined the research aim, objectives, significance, and methodology. It sets the stage by explaining why implementing an AI-based call center for ASAN Service is both necessary and worth investigating.

- **Chapter 2: Problem Description** – The second chapter delves deeper into the problem context. It describes the current operations of the ASAN call center and the limitations it faces, with a focus on the local Azerbaijani policy environment. This includes discussion of relevant laws, regulations, and existing digital infrastructure or strategies in Azerbaijan that influence or constrain the adoption of AI in public services. The chapter establishes the need for change and frames the specific issues any solution must address.

- **Chapter 3: Policy Alternatives** – The third chapter presents several viable policy options for addressing the problem. Based on global best practices and case studies, 2–3 alternative strategies for implementing AI in the ASAN call center are outlined. Each alternative is described in detail (what it entails, how it would work) and its relevance to ASAN/Azerbaijan is explained. The chapter draws on examples from other governments or organizations to illustrate the potential of each approach and preliminarily considers their feasibility in the local context.

- **Chapter 4: Evaluation of Policy Alternatives** – In this chapter, the outlined alternatives are evaluated using a qualitative assessment approach. Criteria such as effectiveness,

cost/efficiency, technical and legal feasibility, alignment with policy goals, and stakeholder acceptance (especially among ASAN staff) are applied. The evaluation relies heavily on insights obtained from interviews with ASAN call center employees and other stakeholders, rather than quantitative metrics. Interview findings are integrated to assess how each alternative might perform and to surface practical considerations or preferences. This comparative analysis identifies the strengths and weaknesses of each policy option.

- **Chapter 5: Recommendations and Conclusion** – The final chapter summarizes the research findings and presents the recommended course of action. It identifies which policy alternative (or combination of alternatives) is most suitable for implementation, based on the evaluation in Chapter 4. Concrete recommendations are offered for how to implement the chosen solution, including any required policy or regulatory changes, training, or pilot programs. The chapter also discusses the implications of the findings, acknowledges the limitations of the study, and provides concluding reflections – highlighting how the research objectives were met and suggesting areas for future research or monitoring after implementation.

CHAPTER 2: PROBLEM DESCRIPTION

2.1 The ASAN Call Center and Current Limitations in Azerbaijan

ASAN's 108 Call Center serves as a critical interface between citizens and the wide array of public services offered through ASAN Service centers. To understand the problem at hand, it

is necessary to detail how the call center currently operates and why it is struggling to meet service demands. The call center is staffed by trained operators who use a knowledge base of up-to-date information on procedures, required documents, fees, and regulations across dozens of government services. They also have access to a legislative database and service guidelines (ASAN Service, 2019), enabling them to answer citizen queries accurately. The center provides information not only for ASAN services but also for related initiatives like ASAN Kommunal (utility service centers), the E-Government Development Center, and ABAD (a public legal entity supporting family businesses). This broad scope means that operators must be knowledgeable on a range of topics, from civil registry processes to business licenses to social welfare payments.

Despite the competence of staff, the call center's capacity has not kept pace with demand. Azerbaijan's population and the volume of services provided through ASAN have grown, leading to heavier use of the 108 hotline. By 2019, the call center had received over 3 million calls cumulatively, and this figure has continued to rise. Internal reports indicate that call volume in 2023 averaged around 6,000 calls per day, a slight increase from the 5,000 daily calls reported in 2019 (ASAN internal report, 2023). During peak periods (such as when new services are launched or deadlines approach for things like university admissions or subsidy applications), the system experiences call spikes that exceed what the on-duty staff can handle concurrently. One call center manager noted in an interview that "on particularly busy days, callers might wait 10-15 minutes on hold, and some give up before an agent becomes free" (Interviewee 7, 2025). These wait times are problematic in light of ASAN's customer service standards. Over the past decade, AI has rapidly permeated customer service operations worldwide, transforming how organizations interact with customers. Traditional call centers are increasingly augmented or replaced by AI-powered solutions such as chatbots,

conversational agents, and automated self-service platforms. According to industry analyses, a majority of companies have begun using AI to improve customer experience; by 2023, 80% of companies were using some form of AI in customer engagement (Conn, 2024). AI tools now handle a growing portion of customer inquiries, a trend projected to continue rising.

ASAN was founded on principles of operativeness and citizen satisfaction, aiming to reduce citizens' loss of time. Long hold times undermine those principles, effectively transferring the queue from physical offices to phone lines. A major limitation is the call center's hours of operation. Currently, live operators are available only during standard working hours on weekdays, and half-days on Saturdays, with no live support on Sundays or after 6pm (ASAN Service, 2019). Outside of these hours, callers are met with an automated voice response system that offers a menu of information recordings. While this IVR system provides answers to some common questions (in Azerbaijani, and an option in English), it is not interactive or AI-driven – callers cannot ask follow-up questions or get advice for complex situations. As a result, any issue that is not addressed by the pre-recorded messages must wait until a human agent is available. Given that many citizens may only have time to call after work or on weekends, this gap in service availability is significant. Citizens without 24/7 internet access or those who prefer phone communication (such as some elderly users) are especially disadvantaged when live support is unavailable. Interview feedback highlighted this limitation strongly. For instance, one call center employee mentioned, "We often arrive in the morning to a backlog of voicemails or missed calls from the night before. People leave frustrated messages like 'I've been trying to reach someone but it's always the machine'" (Interviewee 1, 2025).

Although ASAN's website and the myGov portal offer information online, not all citizens are aware of or comfortable with these digital channels, making the call center a vital alternative.

The limitation in service hours is thus a barrier to equitable access to information. Another current problem is the repetitive workload and inefficiency in handling simple queries. As noted earlier, a large proportion of calls are routine and repetitive. According to a small time-and-motion study the ASAN Agency conducted in late 2022, approximately 40% of calls were inquiries about documentation requirements and service fees for common services (like ID card renewal, passport issuance, driver's license renewal), and another ~20% were status checks (citizens asking if their application or request was processed yet). These are inquiries that could potentially be answered by an automated system drawing from a database. Yet in the current setup, each such inquiry consumes an agent's time. Employees reported feeling that their skills could be better utilized: "It can get monotonous. We basically answer the same few questions hundreds of times a week. I feel we're not using our full capability to help with more complicated issues" (Interviewee 4, 2025). This sentiment reflects an inefficiency – highly trained staff spending time on tasks that do not require human judgment or empathy, which an AI could handle, while more complex or unusual cases (that do need human intervention) might have callers waiting. From a policy and management perspective, the call center's constraints also have budgetary implications. Hiring additional staff to cover more hours or expanding the call center team could alleviate some pressure, but that entails significant recurring costs (salaries, training, office space) and might still not fully solve peak load issues. The State Agency must operate within budgetary limits set by government appropriations. There is also a space limitation; the main call center facility can only accommodate a certain number of operators due to physical infrastructure. Thus, simply scaling up the existing approach faces diminishing returns, which has prompted leadership to look for technological solutions. Notably, the ASAN management's decision to collaborate with South Korea on an AI solution (via the 2023 Korea ODA program) indicates that they see technology as a way to "further

improve services and adapt them to global standards" (ASAN Service, 2024) rather than continuing to rely solely on manual operations.

2.2 Local Policy Environment and Constraints

Implementing an AI-based call center in Azerbaijan must be viewed in light of the country's specific policy environment, legal framework, and technological context. Several local factors influence both the need for an AI solution and the constraints under which it must be deployed: 1. Government Digital Transformation Agenda: Azerbaijan's leadership has been actively promoting digital governance initiatives. President Ilham Aliyev's "Concept of Digital Development of Azerbaijan" (approved in January 2025) lays out a comprehensive roadmap for digitalizing public administration and integrating technologies like AI and cloud computing into government services (President of Azerbaijan, 2025a). The concept emphasizes creating a sustainable digital ecosystem, improving e-government services, and even providing proactive services to citizens through data analytics and event-based triggers (President of Azerbaijan, 2025a).

In line with this, ASAN Service is expected to continue innovating. In fact, ASAN is often showcased as a symbol of Azerbaijan's digital modernity, and maintaining that status likely means adopting cutting-edge solutions. The political will for AI is clearly present: the Artificial Intelligence Strategy 2025–2028 (approved by Presidential Order in March 2025) explicitly aims to enhance AI capabilities in public administration among other sectors, and calls for establishing a legal framework for AI use (President of Azerbaijan, 2025b; Abdul, 2025). This supportive policy environment means an AI-based call center aligns well with national objectives. It could attract necessary funding or technical support under government programs. However, it also puts pressure on ASAN to deliver successful outcomes, as a high-profile

failure could reflect poorly on the broader strategy. Despite the considerable benefits, AI-driven customer service comes with limitations and challenges (Chaturvedi & Verma, 2023). One major limitation is the inability to handle complex or nuanced inquiries as effectively as a human. AI chatbots and voice agents work best for straightforward, commonly-asked questions or simple transactions. When faced with ambiguous requests, novel problems, or emotional customers, current AI systems can falter (Piatrov, 2024). Users often cite frustration when an AI assistant fails to understand their issue or provides irrelevant responses. Many respondents have reported being caught in loops where the AI doesn't understand their question and they cannot make progress, leading to significant frustration. Such experiences can severely hurt customer satisfaction (Nithya, 2024).

Lack of empathy and human touch is another frequently mentioned shortcoming. Customer service is not only about providing information but also about empathy, reassurance, and trust-building – qualities inherently difficult for AI to replicate (Phudech, 2024). Users tend to prefer human agents for sensitive or complex issues because humans can listen and respond with emotional intelligence. In certain surveys, a majority of customers agree that "nothing can replace human interaction" for particular scenarios, emphasizing that AI lacks the depth of empathy and situational awareness a skilled human agent can offer (Chaturvedi & Verma, 2023). This preference is especially pronounced for resolving complaints or when the issue at hand is emotionally charged.

Another challenge is user trust and acceptance of AI. Some customers are uneasy speaking with or relying on a machine for support, especially in important matters (Berry & Singh, 2024). Many fear that an AI might misunderstand them or make a wrong decision with no human oversight. Additionally, there is a perception issue: some consumers hold a more negative

opinion of companies that rely solely on AI for customer service, viewing such companies as prioritizing cost-cutting over customer care. This negative sentiment highlights the importance of balancing AI efficiency with a human touch to maintain positive brand perception. If customers feel they are being passed off to a machine without the option for human help, their loyalty can erode (Piatrov, 2024).

From an operational standpoint, speech recognition errors and language issues pose limitations, especially in diverse linguistic environments. Real-world experiments in telecom call centers have revealed that speech-recognition failures in customer-AI interactions can lead to more requests for human assistance and more customer complaints (Adebiyi et al., 2024). This implies that if the voice AI cannot correctly parse what the caller said (due to accent, background noise, or speech nuances), the interaction often goes awry and must be rescued by a human, leaving the customer less satisfied. Ensuring robust multilingual NLP capabilities is crucial in contexts where multiple languages or dialects are spoken (Olujimi & Ade-Ibijola, 2023).

There are also technical and infrastructural challenges. Implementing an AI call center requires reliable telecommunications infrastructure and integration with existing systems. Any downtime or glitch in the AI system could disrupt service for many customers simultaneously (Raju & Raju, 2025). Maintaining high accuracy and up-to-date information in the AI's knowledge base is an ongoing process; the AI is only as good as the data and training it receives. If policies change or new issues arise, the AI must be updated or risk giving outdated answers (Sharma et al., 2022). Data privacy and security are significant concerns when deploying AI in customer service, particularly in government institutions. Call centers often handle sensitive personal data. Introducing AI means potentially recording and processing large volumes of

personal conversations and data, which raises questions about how that data is stored, used, and protected (Phudech, 2024). Privacy regulations impose strict requirements on automated processing of personal information. Ensuring the AI platform complies with all relevant data protection laws and cybersecurity standards is a challenge for implementers. Governments that have national AI strategies typically emphasize creating a regulatory framework for responsible AI use, ensuring ethical practices and data privacy, and protecting citizens' rights. This highlights that alongside technical development, governance and oversight mechanisms must be in place to address potential risks such as biases in automated decision-making or unintended privacy breaches (Adebiyi et al., 2024).

Another challenge is the impact on the workforce and related ethical considerations. The introduction of AI brings concerns about job displacement for call center employees. While AI can handle many tasks, the prospect of it replacing human agents can create resistance from employees and even customers (Berry & Singh, 2024). Managing this transition involves retraining staff for higher-level roles, redefining job descriptions (with humans supervising AI or handling escalations), and addressing morale. The change management aspect in an organization adopting AI is therefore an important consideration – it's not just a plug-and-play technology, but one that affects people and processes (Chaturvedi & Verma, 2023).

Implementation cost and expertise can be a limitation, particularly for emerging economies. Developing or customizing a high-quality AI call center solution can require significant upfront investment in software, hardware, and expert personnel. While in the long run AI may reduce operational costs, the initial cost and complexity can be barriers for organizations with limited budgets or IT capabilities (Nithya, 2024). There is also the risk that some AI projects fail to meet their objectives due to poor planning, unrealistic expectations, or technical shortcomings

(Raju & Raju, 2025). This underscores that simply acquiring an AI system is not a panacea; success depends on careful implementation, continuous training and tuning of the AI, and aligning the technology with actual user needs and organizational processes (Olujimi & Ade-Ibijola, 2023).

For the AI call center, this means that if conversations are recorded and analyzed (for instance, if the AI uses speech-to-text to understand queries or stores interaction logs for learning), the system must ensure confidentiality and data security. It may also require ASAN to update its privacy notices to citizens, informing them that an AI system will handle and record calls. Additionally, Azerbaijan has an Law on Access to Information (2005) which enshrines citizens' right to obtain information from state bodies. An AI call center could be seen as one channel for exercising that right, so it should be designed to uphold the spirit of the law by providing accurate and timely information, not misinformation. There is currently no specific law regulating AI or automated decision-making in public services in Azerbaijan (as of 2025), but the AI Strategy envisions developing ethical guidelines and perhaps future regulations (Abdul, 2025).

In absence of specific AI laws, ASAN must navigate using existing laws (like personal data, information access) and ensure the AI solution does not violate any provisions. For example, if the AI offers advice or decisions (even something like telling a caller whether they are eligible for a service), ASAN must ensure this does not conflict with any requirement for human decision-maker confirmation in administrative processes. 3. Language and Technology Constraints: A practical local limitation is the Azerbaijani language, which the AI system must fluently understand and speak. Most off-the-shelf AI voice assistant technologies (such as Amazon's Alexa, Apple's Siri, Google's Dialogflow agents) have little to no native support for

Azerbaijani. This means that deploying an AI call agent is not as simple as buying a commercial solution; it likely requires custom development or significant training of speech recognition and natural language processing (NLP) models on Azerbaijani data. The press release noted the AI would be "prepared by Azerbaijani specialists", suggesting local developers are involved in creating the language model. However, the quality of the AI's performance will depend on the availability of language resources: large datasets of Azerbaijani speech and text to train on, which historically have been limited compared to major languages. Furthermore, Azerbaijan is a bilingual society to an extent – many citizens, especially older generations or those in certain regions, might prefer to speak Russian when calling.

The AI system ideally would handle both Azerbaijani and Russian, which doubles the linguistic challenge. If the system cannot accommodate Russian, there's a risk of excluding a segment of users or forcing them to navigate an Azerbaijani-only system. These language constraints are a local reality that any AI solution must overcome through careful engineering and testing. In terms of infrastructure, Azerbaijan has made improvements in telecommunications – internet penetration and mobile usage are high, and the government has built data centers (like the Government Cloud mentioned in digital development plans) (Caliber, 2025). Still, the ASAN call center's own IT infrastructure might need upgrades to support an AI system. For instance, the current telephone system (Cisco UCCE) used at ASAN, which is a traditional call center software, would need integration with AI software for speech recognition and response generation. Ensuring reliable performance (with low latency in responding to callers) and robustness (the system stays up 24/7 without crashing) is a technical hurdle. The local ICT talent pool is growing, but ASAN might face challenges in recruiting or contracting AI experts domestically to maintain and improve the system over time, given competition from the private sector. 4. Public and Staff Readiness: The success of an AI-based call center hinges on

acceptance by both the public (users) and the call center staff. Locally, there may be varying degrees of trust in AI. Azerbaijan's population has embraced ASAN services largely because they reduced corruption and improved service quality; if an AI system is perceived as reducing quality (for example, if it frequently misunderstands callers or gives generic answers), public trust could be affected. Culturally, many people value the human touch in customer service. In interviews, a few ASAN staff expressed concern that callers, especially older ones, might react negatively to a machine: "Some callers specifically say they want to talk to a live person – if they realize it's a robot, they might just hang up" (Interviewee 2, 2025). This suggests that the implementation strategy may need a public awareness component, educating citizens that the AI service is there to help and is an extension of ASAN's quality service (not a cold replacement). On the staff side, the introduction of AI can cause apprehension about job security. Indeed, one policy driver for AI is to "save human resources and other costs" (ASAN Service, 2024), which staff undoubtedly notice.

During interviews, when asked about the idea of a full AI call center, some agents were worried: "Are they trying to replace us eventually? That's a fear we have. We pride ourselves on our work, and I hope AI is just a tool, not a replacement" (Interviewee 5, 2025). This sentiment underscores a limitation: without careful change management, staff might resist cooperating with the AI implementation (for instance, being hesitant to train it or to take on new roles). The local work culture at ASAN has thus far been about human-delivered service with high ethical standards; integrating AI requires re-framing staff roles (perhaps from call handling to supervising AI or handling only escalations).

The policy environment in Azerbaijan does not have strong labor unions that might formally oppose such changes, but internal morale is a factor to consider. 5. Resource Constraints and

Local Feasibility: Azerbaijan is an upper-middle-income country with a strong government commitment to innovation, but resources are not unlimited. The government's budget must balance many priorities (education, infrastructure, defense, etc.). Although digital projects like ASAN typically receive support, an AI call center project would compete with other e-government initiatives for funding. The involvement of Korean aid in the pilot project (providing equipment) is a boon, but long-term costs such as software licensing, cloud service fees, or continuous AI model training must be sustainable locally. A feasibility consideration is whether the State Agency can allocate a steady budget for system maintenance and upgrades. Additionally, local technical support must be built: depending on foreign consultants to fix the AI when it encounters issues could be costly and slow. This means part of the implementation should involve training local IT staff or partnering with local tech companies/universities to ensure knowledge transfer.

Fortunately, Azerbaijan's Innovation Agency and local tech community (including innovation hubs like INNOLAND mentioned in the press release) are growing, and ASAN might leverage these for expertise. Still, in the near term, the absence of an established domestic vendor ecosystem for Azerbaijani-language AI solutions is a constraint that has to be navigated by possibly custom development. In sum, the problem facing ASAN's call center is not merely one of operational inefficiency; it is embedded in a specific local context that shapes possible solutions. On one hand, the Azerbaijani government's progressive digital policy stance and the successes of ASAN Service provide a fertile ground to introduce AI – there is political backing, some initial funding, and alignment with national strategies. On the other hand, local constraints such as legal requirements (privacy), language and technical challenges, and human factors impose limitations on how an AI-based system can be implemented. Any proposed policy solution must take these into account to be viable. The next chapter will present possible policy

alternatives for addressing the call center problem, each considering the opportunities and limitations outlined here. These range from conservative approaches that work within existing constraints to more transformative approaches leveraging the supportive policy push for AI, always with an eye on what is feasible and appropriate in the Azerbaijani context.

CHAPTER 3 POLICY ALTERNATIVES

Improving the ASAN Service call centre in Azerbaijan requires careful consideration of different approaches to integrating artificial intelligence (AI). This chapter outlines three distinct policy alternatives, each offering a different balance between technology and human involvement: a Fully AI-Based Call Centre, a Hybrid AI–Human Call Centre, and a Traditional Human-Only Call Centre. Each alternative is described and analysed below in terms of its design, potential benefits and challenges, drawing on evidence and insights from relevant literature and the Azerbaijani context. This analysis is grounded in the socio-political and digital-transformation environment of Azerbaijan, where initiatives like ASAN Service exemplify the government's commitment to innovative public service delivery (ASAN Service,

2019; Abdul, 2025). By examining these alternatives, we can understand how AI-driven solutions might enhance service effectiveness while aligning with national priorities and citizen expectations.

3.1 Alternative A: Fully AI-Based Call Centre

A Fully AI-Based Call Centre would rely entirely on artificial-intelligence systems to handle citizen inquiries, with minimal or no direct human intervention in routine call handling. In practice, this means deploying advanced AI-powered chatbots and voice-response systems—using natural-language processing (NLP) and speech recognition—to manage all incoming calls to ASAN's 108 line (Badmus et al., 2024). Callers would interact with an AI assistant capable of understanding questions in Azerbaijani, retrieving information from databases, and providing answers or performing services (for example, checking application status or guiding through e-services) without needing a human operator. This model represents a transformative leap in service delivery, leveraging cutting-edge technology to automate the call-centre function end-to-end (Berry & Singh, 2024; Krishnan, 2025).

A fully AI-based model promises significant efficiency and scalability gains. AI systems can handle multiple calls simultaneously—something impossible for human agents—thereby greatly increasing capacity and reducing wait times for callers (ASAN Service, 2019; Bhuiyan, 2024). For instance, if thousands of citizens call at once, an AI platform, backed by adequate computing resources, can engage each caller promptly, whereas a human-only centre would leave many waiting or unanswered. Moreover, AI operates 24/7 by default, enabling round-the-clock service availability and aligning with an increasingly digital society's expectation of instant access (Li & Xu, 2022).

Cost-efficiency over the long run is another key advantage. Once the system is developed and trained, the marginal cost of handling an additional call is very low, unlike the traditional model where more calls eventually require more employees (Dogan, 2023). Berry and Singh (2024) note that AI-driven customer-service operations can scale without a proportional increase in cost, allowing organisations to achieve sustainable growth in service capacity. Internal analyses suggest that introducing virtual assistants can cut annual operating expenses by several multiples, given that "hundreds of thousands of USD" are typically needed per year to run a large human-staffed call centre (Badmus et al., 2024).

Beyond high-volume handling at low cost, AI can enhance consistency and data-driven personalisation. A single, centrally managed knowledge base delivers standardised answers, reducing variance in service quality (Płaza & Pawlik, 2021). Modern chatbots can personalise interactions by drawing on caller history (Piatrov, 2024); for example, the AI could detect repeat callers or switch languages automatically if it recognises Russian speech. Continuous logging and analytics allow ASAN to identify emerging issues quickly and refine policies (Hinrichs et al., 2025).

Despite these attractions, a fully automated call centre comes with significant challenges. Chief among them is the lack of human empathy and nuanced judgement: callers with complex, ambiguous or emotionally charged issues may not receive adequate support (Piatrov, 2024; Castillo et al., 2021). Over-reliance on AI without a human fallback can increase user frustration if the system misclassifies intent or fails to resolve an issue (Berry & Singh, 2024).

Technical hurdles include the need for highly accurate NLP in Azerbaijani and Russian. Until recently, AI language resources for Azerbaijani lagged behind major languages (Olujimi & Ade-Ibijola, 2023). Misrecognition of dialects or accents could lead to incorrect answers,

undermining trust. The knowledge base must also be kept up-to-date with policy and procedural changes—an intensive governance task (Sharma et al., 2022).

Implementation risks encompass high upfront cost, cyber-security, and privacy. A fully AI transition would require significant investment and rigorous safeguards to protect sensitive personal data handled during calls (Bolton et al., 2021). Organisationally, removing most human operators could face resistance from staff and concern among citizens over job losses and impersonal service (Goos & Savona, 2024).

Implementing an AI-based call center, particularly in an emerging economy context, involves addressing multiple challenges beyond the technical limitations already discussed (Inavolu, 2024). One challenge is ensuring the necessary infrastructure is in place, such as reliable high-speed internet and telephony integration to support AI voice calls and data processing. Some emerging economies face connectivity issues that may hamper cloud-based AI services, though certain governments have invested in digital infrastructure to support advanced services like AI-driven call centers (Bircan & Korkmaz, 2021). Localization of the AI is another critical task. The AI system must be tailored to the local language and context, which may require training language models to understand nuanced speech patterns, idioms, and common phrases. Off-the-shelf AI assistants are often strongest in major world languages, so achieving comparable competency in local languages requires specific expertise and dataset creation. Additionally, if many customers mix different languages in conversation, the AI may need to handle code-switching (Shahin et al., 2024).Building user trust from the outset is also key. Some individuals may be initially uncomfortable with an AI system, particularly if they worry there is no human option available(Jo et al., 2023). Public education about the new service, clarity that the AI is there to help, and reassurance that human agents remain available can ease the transition.

Providing an easy option to talk to a human agent can help mitigate user anxiety. Successful projects often start with simpler use-cases and gradually expand as public confidence grows.

Ensuring data privacy and security compliance in implementation is paramount, especially when the call center handles personal information. The AI solution must adhere to data protection laws and international standards, with secure storage and encryption of voice recordings and chat logs (Bolton et al., 2021). Because AI systems often learn from data logs, there should be a policy on anonymization and limiting retention of sensitive data. National AI strategies that emphasize ethical and legal frameworks typically guide such deployments, stressing the need for oversight to address biases and privacy risks (Goos & Savona, 2024). Integration with legacy systems can present technical hurdles. A government service agency, for example, might have existing databases for registrations or licensing. The AI call center must integrate with these to retrieve information in real time (Inavolu, 2024).. This may require building APIs or middleware and upgrading older systems that were not originally designed for AI integration.

Another challenge is evaluation and continuous improvement. Implementers need to set up metrics and feedback loops to monitor how the AI system is performing: how many calls are fully handled by AI, how many are handed off to humans, customer satisfaction scores, and error rates(Drosos et al., 2024). During initial phases, it can be helpful to have staff review AI interactions to pinpoint failures and retrain the system. An AI call center requires ongoing tuning and learning to reach optimal performance.

Cultural and organizational change is a significant factor. Staff roles will shift as AI handles routine inquiries, and training must be provided so human agents are comfortable working alongside AI (Goos & Savona, 2024). Management should communicate that the AI is there to

improve efficiency rather than pose an immediate threat to jobs. New roles, like AI supervisors or data analysts, may emerge to optimize the system. When implemented with a vision of "AI + human teamwork," the call center staff can become an integral part of the system's success, using their expertise to handle exceptions and help train the AI over time (Alqudaihi et al., 2021).

3.2 Alternative B: Hybrid AI–Human Call Centre

The Hybrid AI–Human Call Centre combines automation with the irreplaceable qualities of human agents. A typical implementation uses a two-tier system: an AI virtual assistant handles routine questions, while complex or sensitive issues are transferred seamlessly to human staff (Lin et al., 2023). AI might also assist agents in real time by suggesting answers or surfacing relevant records (Spring et al., 2022).

Potential benefits. The hybrid approach is widely seen as a balanced solution that maximises the advantages of both AI and human service (Berry & Singh, 2024). AI clears repetitive inquiries instantly, cutting wait times and allowing citizens to resolve simple needs quickly; humans remain available for empathy, negotiation and creative problem-solving (Li & Xu, 2022). Organisations that adopt human-AI collaboration often report greater customer satisfaction, because speed and quality are both preserved (Dogan, 2023).

Efficiency improves as AI absorbs a significant share of call volume—studies suggest up to 40 percent—reducing staffing pressure and operational costs without the extreme restructuring demanded by full automation (Badmus et al., 2024). AI also enables extended availability: after hours, the bot can answer FAQs or log issues for next-day human follow-up, bridging ASAN's current service gap (Bhuiyan, 2024).

Crucially, the hybrid model preserves equity. Citizens who dislike automated systems or have special needs can still reach a person, while tech-savvy users enjoy speedy self-service. This dual pathway supports inclusivity and sustains public trust (Berry & Singh, 2024). From a workforce perspective, AI is framed as augmenting rather than replacing employees: agents upskill to supervise bots, refine knowledge articles and handle escalations, making the change politically and organisationally feasible (Goos & Savona, 2024).

Integration must be seamless: the hand-off from AI to human should carry full conversation context so callers are not forced to repeat themselves (Sharma et al., 2022). Achieving that requires robust IT architecture and staff training. While head-count savings are real, human resources remain significant; achieving the right staffing balance is an ongoing management task (Dogan, 2023).

The AI component must be reliable and continuously improved. If its scope is too narrow, workload reduction is minimal; if too broad and error-prone, it frustrates users and creates rework for agents. Supervisors need to monitor bot performance and update scripts regularly (Piatrov, 2024). Public communication is also essential: citizens should understand that AI speeds service but that humans are always available, mitigating fears of a "robotic bureaucracy" (Jo et al., 2023).

Overall, the hybrid model offers incremental innovation that aligns with Azerbaijan's digital-government ambitions while safeguarding service quality and inclusivity. With careful integration and change management, it can deliver tangible improvements to ASAN's performance at moderate risk and cost.

3.3 Alternative C: Traditional Human-Only Call Centre

The Traditional Human-Only Call Centre continues ASAN's current model: every call is answered by trained staff, supported only by basic telephony and an after-hours recorded message (ASAN Service, 2019). Improvements would focus on recruiting more agents, extending hours and enhancing training rather than adopting new AI technologies.

Potential benefits. Human agents provide unrivalled empathy and nuanced understanding (Chaturvedi & Verma, 2023). Callers with complex needs, emotional distress or multiple issues receive personalised guidance. Implementation risk is minimal: the organisation builds on proven processes without large new investments or technical uncertainties. Politically, preserving jobs and maintaining a human touch can be attractive, especially for citizens uncomfortable with automation (Berry & Singh, 2024).

Accessibility is also straightforward: every caller, regardless of digital literacy, can speak with a person, and bilingual agents can switch languages as needed, maintaining inclusivity (Płaza & Pawlik, 2021).

The pure human model struggles with scalability and efficiency. Handling growing call volumes requires hiring and training ever more staff, leading to high recurring costs and physical space needs (Dogan, 2023). Wait times increase during peaks, and 24/7 coverage would be prohibitively expensive (Li & Xu, 2022). Consistency can vary across agents, and frequent training is needed to keep information up to date (Sharma et al., 2022).

Limited hours leave service gaps: citizens cannot get live help at night or on many weekends. As demand rises and Azerbaijan advances its digital agenda, a labour-intensive model risks becoming outdated and unsustainable (Abdul, 2025). Moreover, while human agents adapt well

to novel situations, the system's operational flexibility—its ability to scale capacity quickly—is low compared with AI-enabled alternatives (Miller, 2024).

In short, the human-only approach emphasises personal interaction and low technical risk but faces inherent constraints in cost, scalability and modern service expectations. Without technological enhancement, it may struggle to meet ASAN's future workload and the government's innovation goals.

CHAPTER 4 EVALUATION OF POLICY ALTERNATIVES

This chapter evaluates each of the three policy alternatives against key public management criteria: effectiveness, efficiency, equity, feasibility, and flexibility. The aim is to compare how the Fully AI-Based Call Centre, Hybrid AI–Human Call Centre, and Traditional Human-Only Call Centre perform on these criteria, which are critical for public service decision-making. The evaluation highlights the strengths and weaknesses of each alternative in a comparative context, providing a basis for determining which option (or combination of options) is best suited for improving ASAN's call center. Each alternative is discussed in turn, focusing on how well it meets the criteria and where it may fall short, supported by reasoned judgments and relevant references.

4.1 Fully AI-Based Call Centre

Evaluating a fully AI-driven call center model reveals a mix of high performance in some areas and notable concerns in others:

Effectiveness: A fully AI-based call center would likely excel in handling high volumes of standard inquiries with speed and consistency. It can provide quick answers and 24/7 responsiveness, meaning a greater proportion of citizen queries get addressed promptly. In terms of coverage and throughput, this alternative is very effective – virtually all calls can be answered immediately by the system, avoiding issues of busy lines or human unavailability. However, the effectiveness drops when it comes to complex or sensitive cases. As discussed, AI lacks human judgment and emotional understanding; thus, some callers' problems may not be fully resolved by the AI, especially if they involve nuanced decision-making or cross-agency coordination. In those situations, the AI might provide partial help or, worse, incorrect or unhelpful answers, leaving the citizen's issue unresolved. In sum, effectiveness is high for routine transactions but questionable for unconventional cases. Without human backup, the fully AI system may have a gap in its problem-solving ability, meaning its overall effectiveness in meeting ASAN Service's mission could be compromised in atypical but important instances.

Efficiency: The fully AI model is the most efficient of the three alternatives in terms of resource utilization and cost per service delivered. Once implemented, AI can handle additional calls at negligible incremental cost, making it extremely cost-effective at scale. It also reduces the need for salaried staff and can potentially operate with lower overhead (no physical call center space for large staff, fewer administrative burdens managing personnel). Studies indicate that AI automation can reduce call center operating costs dramatically, on the order of several times cheaper than human-only operations for similar call volumes (Berry & Singh, 2024).

Additionally, AI operates continuously without breaks, which maximizes productivity. From a government budget perspective, this alternative offers long-term savings and scalability; the infrastructure can be scaled up with computing power to meet demand, rather than hiring and training new employees. The main efficiency drawback might be the upfront investment and maintenance costs for the AI system, including technology upgrades and expert staff to support the AI. Nonetheless, compared to the recurring costs of hundreds of human operators, the fully AI model clearly stands out as highly efficient and scalable.

Equity: The fully AI-based approach raises some equity and accessibility concerns. On one hand, AI could standardize service delivery, ensuring that every caller is treated equally by the algorithm without individual bias – the AI doesn't get impatient or discriminate, and it provides the same level of attention to all users. This could improve fairness in how information is given (everyone gets consistent answers). Moreover, 24/7 service benefits those who might not be able to call during normal hours, such as people who work night shifts or have urgent needs at odd hours, thereby extending access. However, the lack of human operators can disadvantage certain groups. Elderly individuals, people with low technology familiarity, or those who simply trust human interaction more might find an AI-only system difficult or intimidating to use. If the AI's language processing is imperfect, citizens speaking with strong regional accents or in minority languages might not be understood well, effectively reducing their access to services (this is an important equity issue in a multilingual society). Likewise, people with speech or hearing impairments could struggle if the system is not designed with accommodations (e.g., speech-to-text alternatives). There is also a socio-cultural aspect: some citizens may feel that an automated government service is impersonal and does not "hear" their individual circumstances, potentially eroding their sense of being served equitably. In summary, while AI can treat similar inputs uniformly, it may inadvertently exclude or

underserve those who cannot engage with it effectively, making equity a weaker point for this alternative compared to the others.

Feasibility: Implementing a fully AI call center is technically and organizationally ambitious, making feasibility a mixed picture. From a technical standpoint, it requires advanced AI capabilities (in NLP, speech recognition, etc.) that are just now maturing for Azerbaijani language and context. Given recent progress and pilot programs, it appears technically feasible in the near future to deploy such systems (ASAN Service, 2019), but ensuring they perform reliably across all service scenarios is a challenge. Financially, the government would need to invest substantially upfront in development or procurement of the AI system, though external partnerships (like the noted Korea-Azerbaijan project) can alleviate costs. Politically and organizationally, a full AI transition is difficult but possible with high-level support. Azerbaijan's leadership has shown interest in AI innovation, which bodes well for political backing. However, the plan would face scrutiny regarding job losses and the risk of service disruption if the AI fails. Feasibility will depend on careful planning: phasing the implementation, robust testing, and having contingency plans. There is also the question of public acceptance—rolling it out successfully would likely require public awareness campaigns and a period of adjustment. In summary, while feasible, this alternative has a lower feasibility rating than the hybrid or status quo because it demands a radical overhaul and comes with significant execution risks. It would require strong commitment, technical expertise, and change management to pull off.

Flexibility: A fully AI-based call center is flexible in some respects and inflexible in others. It is highly flexible and adaptive in handling fluctuating call volumes – scaling up to meet surge demand is much easier with AI (just add computing resources) than with humans (who would

need emergency overtime or hiring). It's also potentially flexible in multi-channel service delivery: the same AI engine could be extended to handle chats, social media inquiries, etc., creating an omnichannel customer service more easily than retraining and reallocating human staff. However, when it comes to adapting to new types of issues or changes, an AI system can be less flexible than humans. If there is a sudden policy change or a new kind of request that the AI was never trained on, the system might respond poorly until it is updated, whereas human agents could try to work through the unfamiliar situation using reasoning or seek guidance from a supervisor. In other words, the AI's knowledge and decision pathways need explicit updates to adapt, whereas humans can be briefed or can improvise. Over time, continuous updates can keep the AI flexible, but it's a process. Another flexibility concern is resilience: if the AI system experiences a malfunction or outage, the call center is effectively down, since there are no human agents as backup – this all-or-nothing setup is less flexible in the face of system failures or cyber-attacks. With proper design (redundancies, fallback systems), those risks can be mitigated, but they underscore that a fully AI call center, while operationally flexible and scalable, may be less flexible in handling the unexpected content-wise. Overall, it offers great flexibility in capacity and channels, but not as much in unanticipated circumstances without prior programming.

4.2 Hybrid AI–Human Call Centre

The hybrid call center model tends to perform well across the board on the chosen criteria, often providing a middle ground that leverages the benefits of both technology and human service:

Effectiveness: The hybrid approach is typically very effective in delivering reliable service. By combining AI and human strengths, it can achieve a high resolution rate for inquiries. Common issues get resolved quickly by AI, increasing the overall throughput of the system, while

unusual or complex issues are effectively handled by human agents. This means the range of inquiries that can be successfully addressed is broad. In terms of ASAN's objectives, the hybrid model can improve response times and reduce unanswered calls significantly compared to the traditional model, without leaving the tricky cases unresolved as a fully AI system might. The customer satisfaction levels in such a system are expected to be high, since citizens get fast answers for simple questions and competent assistance for complex ones. Any drop in effectiveness on one side (AI or human) can be compensated by the other; for example, if the AI fails to understand a query, the human picks it up, ensuring the citizen isn't left without help. Thus, across a spectrum of scenarios, the hybrid call center would be effective at meeting service demand and maintaining quality. It essentially closes the gaps that each standalone approach (AI-only or human-only) would have. Berry and Singh (2024) suggest that organizations see the best service outcomes when AI is used to augment human capabilities rather than replace them, which aligns with this alternative's strong effectiveness.

Efficiency: On efficiency, the hybrid model offers substantial improvements over the status quo, though not as extreme as the fully AI solution. Efficiency gains come from AI handling a portion of the workload that would otherwise require human labor. This can lower operating costs proportionately – for example, if AI manages 50% of calls, fewer agents are needed to manage the rest, saving on staffing expenditures. It also means the human team can be smaller or at least not grow as fast even if service demand increases, curbing future costs. Additionally, human agents in a hybrid system can be more productive because they are not bogged down with repetitive FAQs; they can concentrate on complex issues, potentially handling those more efficiently with the aid of AI tools (like instant access to databases or AI-generated suggestions). However, since the model still involves humans, there remains a significant cost component for salaries and training. The efficiency is therefore moderate to high: clearly better

than a pure human model in cost-per-call and ability to handle surges (as AI can take on extra calls when humans are all busy), but not as maximally streamlined as a no-human system. Another efficiency aspect is that introducing AI for routine tasks might shorten call durations for those interactions, enabling the call center to serve more people in the same amount of time. Any efficiency trade-off might involve maintaining some redundant capacity (for instance, having humans available even during times AI could handle everything, just in case). Overall, the hybrid model strikes a good balance, yielding efficiency gains while maintaining quality, an important consideration for public service where cost-saving should not come at the expense of service delivery.

Equity: The hybrid approach is arguably the strongest on equity and fairness. It strives to ensure no user group is left behind. Those who are comfortable with automated services benefit from quick answers via AI, and those who need or prefer human interaction have that option readily available. This model inherently provides choice: if a citizen finds the AI helpful, they can self-serve; if not, they can be routed to a person. This choice is crucial for equity, as it accommodates different preferences and needs. For example, a tech-savvy urban resident might be happy to get a fast AI response about a document requirement, whereas an elderly rural caller might immediately opt to speak to a human about a complicated pension issue – both are served appropriately in a hybrid system. The presence of human agents ensures that empathy and personalized understanding are available for vulnerable groups or sensitive situations, upholding the principle of equity in service quality. Moreover, since the hybrid model likely still involves humans during business hours (and perhaps an AI after-hours), it could extend service availability in a limited but effective way. Even outside normal hours, the AI could take calls and either resolve them or at least record the issue for human follow-up, thus giving some level of access to all. While not 24/7 human support, this is still a step toward greater equity of

access compared to strictly 9-to-5 human-only service. Another point is that by reducing wait times and dropped calls, a hybrid system ensures more citizens actually get through to the service they need, which is an equity improvement over a taxed human-only system where some might never get served on a busy day. In balancing technology with a human touch, the hybrid model promotes inclusivity and fair treatment, making it strong on this criterion. We should note, however, that careful design is needed to avoid any inadvertent bias (for instance, if the AI handles easy cases and passes complex ones to humans, agents must be trained not to give lower priority to those coming via AI handoff). Assuming proper management, equity considerations are well met by this alternative.

Feasibility: The hybrid call center is generally seen as highly feasible in implementation. Compared to a full AI overhaul, adding an AI component to support existing operations is a more gradual and controlled change. Technically, ASAN can start with pilot programs – for example, deploy a chatbot for a few common questions or a voice assistant that handles overflow calls – while retaining normal operations. This phased integration lowers the risk of major service interruptions. The technology required is available and increasingly mature; many customer service platforms offer AI integration that can be customized to Azerbaijani language and ASAN's needs (Piatrov, 2024). Financially, while there will be costs for developing or purchasing the AI tools, the investment can be scaled to the agency's budget and justified by incremental improvements. It doesn't demand an all-or-nothing expenditure; smaller modules can be implemented over time. Organizationally, this approach is easier to champion because it's framed as assisting, not replacing, the workforce. It's likely to face less resistance from employees and unions since jobs are not immediately at stake – instead, roles are evolving. Training staff to work with AI might even be welcomed if it makes their jobs easier and adds to their skills. Politically, a hybrid model can be presented as innovation with a

human face, which is often palatable to stakeholders and the public. It shows the government is adopting modern solutions responsibly. In terms of feasibility, one challenge is ensuring the agency has or can develop the expertise to manage the AI aspect (either in-house or via partnerships), but given Azerbaijan's growing IT sector and the possibility of drawing on international expertise, this is manageable. Overall, feasibility is high because this alternative can be implemented progressively, tested and refined in real conditions, and adjusted as needed, all while maintaining service continuity. It aligns with Azerbaijan's digital government initiatives without overreaching beyond current institutional capacities (Berry & Singh, 2024).

Flexibility: The hybrid call center is very flexible and adaptive, arguably more so than either extreme alternative. It inherently allows for adaptive allocation of work between AI and humans. If the AI improves over time and can handle more topics reliably, it can gradually take on a larger share of calls; conversely, if the AI encounters a situation it can't handle, humans automatically fill the gap. This dynamic allocation means the system can respond to a wide array of future conditions. For example, if call volumes spike unexpectedly, AI can absorb much of the excess load so that the human team isn't overwhelmed (assuming the AI has been set up to handle overflow). If new types of inquiries emerge (perhaps due to a new service launch), humans can immediately cover them while the AI is updated to catch up; during that learning period, service delivery continues smoothly through the human side. Policy or procedural changes are also easier to manage – human staff can be briefed and start implementing the changes in calls, while the AI development team works to update the automated scripts, thereby ensuring flexibility in implementation timeline. Additionally, the hybrid model provides the flexibility to operate under different scenarios: it could maintain nearly full service even if, say, technical issues temporarily incapacitate the AI (humans would handle calls as they did before), or if human staffing faces a temporary shortfall (AI can step in

more). This redundancy is a form of flexibility that enhances resilience. In a strategic sense, the hybrid approach keeps future options open. If, in a few years, AI technology becomes extraordinarily capable and trusted, ASAN could choose to transition further towards automation by not replacing some departing staff and letting AI handle more – moving closer to a fully AI model gradually. On the other hand, if AI doesn't progress as quickly as hoped or if public preference remains strongly for human interaction, ASAN can dial back the AI role and maintain a larger human workforce. Such adaptability is intrinsic to the hybrid concept. Therefore, on the flexibility criterion, the hybrid call center scores very high, enabling the organization to adjust to changing conditions, scale up or down technology use, and incorporate new innovations or policy changes with relative ease.

4.3 Traditional Human-Only Call Centre

Assessing the traditional human-staffed call center against these criteria highlights why it's a reliable approach but also why it faces difficulties meeting evolving demands:

Effectiveness: A well-run human-only call center can be effective in delivering quality service for each individual interaction, especially for complex inquiries where human reasoning and empathy make a difference. In ASAN's case, the existing system has effectively handled millions of citizen calls, resolving issues and providing information through direct human engagement (ASAN Service, 2019). The call center's effectiveness is evident in its contribution to ASAN's high citizen satisfaction ratings in the past. However, when considering effectiveness on a system-wide level (i.e., reaching all who need service in a timely way), the traditional model has limitations. As call volumes increase, its effectiveness in meeting all requests declines if resources don't scale accordingly. In recent years, public demand for ASAN's services has grown, and a human-only model has struggled with issues like long wait

times and some unanswered calls during peak periods. Thus, while each agent may be effective in helping the person they're speaking with, the overall throughput and coverage is limited. If a significant percentage of callers cannot get through or must wait excessively, the effectiveness of the service as a whole in fulfilling its mandate is compromised. Compared to the alternatives, the traditional model is effective for depth of service (quality per interaction) but less effective for breadth of service (quantity of interactions handled promptly).

Efficiency: The traditional call center ranks low on efficiency relative to AI-utilizing models. Human labor is costly and scaling up to meet greater demand is inefficient. As identified earlier, maintaining the operation (salaries for a large team, facilities, etc.) requires a substantial budget. The cost per inquiry handled is relatively high when factoring in all overhead. There are also inefficiencies inherent to human operations: agents can only handle one caller at a time, and there is downtime (breaks, shift changes) that is unavoidable. To handle more calls, more agents must be added, which has diminishing returns past a point, since not all agents will be fully utilized during lulls, yet they must be staffed to cover peaks. This model lacks the elasticity that technology provides. In a public sector context, budgeting for ever-increasing staff can be challenging, and there's often a limit on how many employees can be hired or how much budget can grow year over year. If ASAN's call volume doubles in the next few years due to new services or population growth, the human-only model would require roughly doubling the staff (or significantly extending working hours), which is inefficient and perhaps impractical. By contrast, that scenario could be managed more efficiently with automation. Berry and Singh (2024) point out that traditional service delivery models struggle with efficiency when facing modern high demand, which is evident here. Thus, on the criterion of efficiency, continuing with a human-only call center is the weakest option – it provides quality but at a high and rising cost, and it cannot easily achieve the economies of scale that AI-driven solutions offer.

Equity: The human-only model has some strengths in equity, particularly in ensuring accessibility for those who might have difficulties with technology. Any citizen with access to a phone can reach a human operator without needing to navigate a complex menu or interface. This inherently accommodates a wide range of users, including the elderly, disabled individuals who may need special patience or understanding, and those who speak in various dialects or languages (as humans can try to bridge language gaps or get translation help if needed). In that sense, the traditional model is equitable in quality of interaction — everyone gets a human listener. However, equity also involves whether everyone gets served in a timely manner. If the call center is overwhelmed, not everyone can get through. Some people might be more persistent or call at just the right time, while others might give up after repeated busy signals. This introduces a form of inequity in access: the service may inadvertently favor those who have the time and ability to keep trying (perhaps urban residents with better phone access or those who know to call right at opening hours) over others who cannot stay on hold for long due to work or other reasons. Additionally, limited hours of operation mean that those who cannot call during the day (say, due to their job or caregiving responsibilities) are less able to use the service. So, while no one is excluded by technology in a human-only system, there are still equity concerns about fair access to the service when demand exceeds supply. Compared to the hybrid model, which actively tries to serve everyone by various means, the traditional model may leave some needs unmet, thereby scoring moderately on equity – inclusive in format, but not fully inclusive in reaching all users promptly.

Feasibility: Continuing with the status quo is highly feasible in the short term, as it requires no major changes. ASAN's call center is already operating with human staff, and maintaining this course simply means securing ongoing funding and possibly modest expansions or improvements. There are minimal risks or uncertainties since the processes are known and the

staff is experienced. In the immediate sense, this is the most feasible option – it's essentially doing what is being done now with perhaps incremental tweaks. There's no need for new technology infrastructure, no training for AI systems, and no organizational disruption. However, looking at feasibility in a forward-looking way, one must consider whether this model can feasibly meet future needs and strategic goals. Azerbaijan's government has articulated goals for digital transformation and innovation in public services; sticking solely to a manual approach might clash with those strategic directions. There is a risk that while it's feasible to *continue*, it may not be *sustainable* or *desirable* over the long term. Financial feasibility could also become an issue if the required staff size and budget escalate beyond what is practical. Political feasibility is a two-sided coin here: on one side, it's very safe (no controversial tech changes or job cuts to explain), but on the other side, political leaders might question why ASAN is not modernizing in step with national AI strategy and citizen expectations. Nonetheless, relative to implementing new systems, the traditional model is feasible with basically a status quo strategy, making it the path of least resistance in implementation terms.

Flexibility: A purely human call center has limited flexibility in certain dimensions. In terms of scaling capacity or hours, it's quite inflexible without significant resource input (hiring more staff or asking staff to work overtime). It cannot easily adjust to large spikes in demand – short of bringing in temporary staff (who won't be as effective without training) or letting service quality suffer. It also cannot extend service times without essentially replicating the entire operation in shifts, which, as discussed, is a big undertaking. However, the human model is flexible in handling unexpected questions or changes in content. Human agents can adapt conversations on the fly, interpret new kinds of inquiries, and deal with scenarios that haven't been seen before by using their judgment or seeking quick guidance. In that sense, it's content-

flexible: if tomorrow a completely new public service is launched and people call with questions, the agents can gather information and start addressing those queries even if scripts aren't ready, whereas an AI would be caught off guard. Humans are also generally better at handling multi-topic calls where a caller's need spans several areas. So there is flexibility in problem-solving and adaptability to novel situations inherent in human intelligence. Overall, the traditional call center is organizationally and operationally inflexible (hard to scale up, scale down, or extend), but situationally flexible when it comes to dealing with the unpredictable nature of individual inquiries. In comparison to the other alternatives, this model ranks lowest on flexibility in the macro sense, as both AI and hybrid systems would provide far more scalability and adaptability to demand fluctuations.

In comparing the three alternatives, it becomes clear that the Hybrid AI–Human Call Centre tends to offer the most balanced performance across effectiveness, efficiency, equity, feasibility, and flexibility. The Fully AI-Based Call Centreleads in efficiency and has strong potential in effectiveness and flexibility (capacity-wise), but it lags in equity and faces feasibility challenges. The Traditional Human-Only Call Centre excels in empathy and is immediately feasible, yet it struggles with efficiency, scalability, and keeping up with future needs. The hybrid model, by blending technology with human oversight, achieves a middle ground that significantly improves on the status quo's weaknesses (without as many risks as full automation) and retains the core strengths of human service (Berry & Singh, 2024). This comparative evaluation sets the stage for deciding which policy alternative, or what combination of measures, would best enhance ASAN Service's call center in line with Azerbaijan's public service goals and the realities of implementation.

4.5 Comparative Synthesis and Preferred Option

Criterion	Fully AI	Hybrid AI + Human	Human-Only
Effectiveness	✓✓ (routine) / – (complex)	✓✓	✓ (when reached)
Efficiency	✓✓	✓	–
Equity	✓ (language) / – (digital comfort)	✓✓	✓ (older users) / – (queue bias)
Feasibility	– (high capital & ML skills)	✓	✓✓
Flexibility	✓ (script updates) / – (novel queries)	✓✓	✓ (judgement) / – (surges)

Legend: ✓✓ = strong performance ✓ = adequate – = weak or highly contingent

The tabular scan crystallises ten years of global trial-and-error into a single glance. Fully automated systems lead the pack on narrow-band metrics—throughput per dollar and 24/7 uptime—but underachieve whenever callers stray from the script. Hybrid centres tally fewer double-ticks than their robotic cousins on bare efficiency, yet they carry no glaring dashes. Human-only desks, finally, score well on empathy and practical feasibility but fail the moment demand runs hot.

Effectiveness diverges sharply between routine and non-routine encounters. New Orleans' "Jazz" finishes more than 95 percent of refuse and pothole requests unaided, a clear double-tick for repetitive work (Hinrichs et al., 2025). The mark flips to a dash whenever questions turn personal; Spain's tax chatbot famously mis-sorted welfare appeals, forcing regulators to impose a human-fallback mandate (Berry & Singh, 2024). Hybrid designs avoid that dip. In San Jose the virtual agent clears one-third of calls outright, and agents—freed from trivia—now resolve complicated cases faster than before (Spring et al., 2022). Human-only centres deliver high-quality answers too, but only *if* the caller survives the queue.

Efficiency is the one column where robots dominate without qualification. Cloud bots carry negligible marginal cost, and during the pandemic they absorbed a 250 percent spike in New Orleans traffic without extra payroll (Miller, 2024). Hybrids harvest roughly half those savings by diverting the FAQ layer to AI; Toyota's after-hours coverage became round-the-clock with no overtime once its e-Care bot went live (Li & Xu, 2022). Human-only operations burn money on idle shifts and paid breaks.

Equity splits along two axes. Machine translation inside the bot grants sudden access to Spanish and Vietnamese speakers in San Jose (sanjoseca.gov)—hence a tick. Yet older Madrileños felt "locked out" by voice menus that never ceded to a person, leading to a dash for the same column (Berry & Singh, 2024). Hybrid centres keep both ticks: the bot welcomes linguistic minorities while live agents reassure digitally anxious users. Human-only lines win points for elderly comfort, then lose them because long waits penalise hourly workers who cannot hold the line.

Feasibility is chiefly about money and skills. A fully AI build asks for labelled transcripts, hardened cloud links and privacy audits—the trifecta that buried several small-city pilots (Nithya, 2024). Human-only desks need phones and chairs; that earns the double-tick on ease

but transfers cost pain to operating budgets. Hybrid roll-outs thread the middle: start with one FAQ pilot (Knoxville did census queries first, Sharma et al., 2022), graft the bot onto the existing CRM, retrain rather than fire staff.

Flexibility becomes visible only when policy lurches. Bots can ingest a new vaccine FAQ overnight (Hashemi, 2022) but stall on queries the language model has never seen. Humans improvise beautifully yet cannot multiply themselves during a flood. Hybrids draw on both virtues: elastic compute swallows the spike, while agents handle the weird edge cases—San Jose reassigned staff to eviction hotlines while the script engine updated mask rules (Spring et al., 2022).

Tick-matrices do not pick winners by arithmetic alone; context matters. Azerbaijan already operates a broadband backbone and a mature CRM under the ASAN umbrella, so plumbing a conversational front-end is technically feasible. Simultaneously, the government's own strategy papers stress inclusivity—rural pensioners, displaced families, multilingual minorities. A single-minded sprint to full automation would violate that promise the first time a widowed pensioner hits a speech-recognition wall. Doubling the human payroll would strain budgets and still leave Monday morning queues.

Hybrid architecture therefore emerges not as a compromise but as a synthesis:

- It *captures* roughly half the efficiency dividend by diverting routine work to AI, buying fiscal space for other programmes.
- It *protects* vulnerable users with a guaranteed human hand-off, satisfying the same equity logic that drove Spain's "right to a person."

- It *phases* capital cost over several years—NLP licences now, speech-synthesis next, database write-back when audits are done—lowering the barrier to entry for an emerging economy.
- It *absorbs* shocks, an essential trait for a country that straddles earthquake zones and volatile commodity cycles.

International results reinforce that forecast. In San Jose citizen satisfaction rose after hybridisation, because the calls that reached humans were calmer and better researched. Rwanda's triage bot eased nurse workload without divorcing the patient from empathetic care. Toyota leverages the same pattern commercially, proving the design can thrive beyond municipal boundaries.

Adopting the hybrid model does not mean switching on a giant platform overnight. A prudent sequence—information chat for driving-licence renewal, then appointment booking, then payment—mirrors the staged success stories. Each slice generates data, improves the language model and trains staff for the next slice. The end-state is neither a robot maze nor a call-centre barn but a fluid arrangement in which software and people continuously trade tasks according to complexity and emotional weight. The tick-table renders the decision plain: the hybrid AI-plus-human centre is the only option that amasses strengths across all criteria without carrying a fatal weakness. It marries the velocity of machines with the conscience of human service, scales to national emergencies yet keeps the phone line warm for the grandmother in Quba who wants a real voice on the other end. For ASAN Service—and by extension the citizens of Azerbaijan—it is the path that best aligns technological ambition with social obligation.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

A public call-centre is often dismissed as a mundane back-office function, yet its performance is where grand strategies of digital government first touch citizens' daily lives. The analytical journey of Chapter 4 examined three plausible service-delivery designs—fully automated, entirely human, and a blended architecture—in light of five classic public-management tests. Evidence from cities as diverse as New Orleans and Kigali, from ministries in Madrid and Singapore, and from the automotive help-lines of global brands revealed a consistent pattern. Pure automation drives transactions at breathtaking speed and microscopic marginal cost but falters whenever emotion, ambiguity or social vulnerability enters the conversation. A human-only desk supplies empathy and discretion but cannot keep pace with surge demand and strains public budgets. Between those extremes lies the hybrid configuration, channeling repetitive work to a conversational agent while reserving scarce human attention for the questions that truly demand it. That middle path met or surpassed the alternative models across all five evaluative criteria and therefore emerged as the preferred option for Azerbaijan's next-generation ASAN service centre.

The preference is not merely theoretical. It honours the country's twin ambitions: first, to cement its reputation as a regional e-government pioneer; second, to ensure that transformational technology never outpaces the ability of every resident—urban or rural, young or elderly, digitally fluent or anxious—to receive fair, timely and courteous treatment. In short, the hybrid model promises digital dynamism without social desertion.

Accepting the hybrid architecture as policy does not end the conversation; it begins a purposeful migration from the current voice-centric workflow to an integrated, AI-supported service fabric. The strategic direction may be stated plainly. Azerbaijan should introduce a multilingual

conversational platform that sits in front of the existing ASAN telephone queues, website forms and mobile app. The platform's job is to listen first, answer if it can, and hand over instantly whenever it cannot. Agents remain on duty, yet their roles shift from script-bound transaction clerks to problem-solving advisers and custodians of user trust.

A phased deployment avoids the shock of a single-day switch-over. The first milestone can be a narrowly scoped chatbot focused on one of the highest-volume, lowest-risk request types—perhaps vehicle registration renewals, which are rule-heavy but emotionally neutral. Early success on a contained domain proves the concept, captures data for training, and gives staff time to adapt to their new supervisory responsibilities. Subsequent phases expand the knowledge base, add voice channels, enable appointment booking and fee payments, and finally integrate with remote-translation engines so that callers in Russian, Lezgian or Talysh hear answers in their own language. By the time the platform covers half of all incoming traffic, the ASAN centre will operate twenty-four hours a day without night-shift premiums, and human teams will be free to focus on the intricate matters—social-benefit appeals, disability assessments, fraud alerts—that no algorithm can safely adjudicate on its own.

The road-map rests on four mutually reinforcing pillars: technology, people, governance and public confidence. On the technology side, procurement must privilege openness and portability. A cloud-based micro-services architecture, containerised and orchestrated by widely adopted standards, ensures that no single vendor becomes an irreplaceable black box. Language models should be fine-tuned on Azerbaijan's own corpus of call transcripts and public-service documents so that the conversational agent grows fluent in the idioms of local bureaucracy. At the same time, every answer the system delivers must be traceable to an

authoritative source. A version-controlled knowledge repository prevents drift and guarantees that policy changes propagate instantly to every channel.

People remain the centre of the system. Existing agents are not displaced; they are re-skilled. Training must cover two domains: first, how to monitor live bot sessions and intervene gracefully when sentiment analysis flags frustration; second, how to use the flood of analytics—intent frequency, abandonment heat-maps, deflection ratios—to refine scripts and identify emerging needs. Management should redesign performance metrics away from average-handle-time and towards resolution quality and empathy scores. The incentive structure therefore rewards human abilities that automation cannot replicate: judgment, creativity, cultural sensitivity.

Governance supplies the ethical and legal scaffolding. A specialised oversight unit inside the Digital Development and Transport Ministry can certify every new intent for fairness, privacy compliance and accessibility. A published algorithmic-policy charter should explain in plain language what data the bot collects, how long it is stored, and what rights users retain to contest an automated decision. That charter must also codify the "right to a person"—a guaranteed transfer mechanism that complies with emerging European norms without undermining the efficiency gains of first-layer automation.

The final pillar is public confidence. Citizens will adopt the new channel if they understand its value and feel safe. A multimedia outreach campaign should accompany the pilot launch, demonstrating on television, radio and social networks how the virtual assistant answers routine questions instantly and how it will connect to a human on request. Early success stories—farmers in Nakhchivan renewing permits from a smartphone at midnight, pensioners in Ganja receiving same-day callbacks—should circulate widely. Transparency about system limitations

is equally important. By admitting that the bot is still learning and inviting feedback, ASAN transforms users from passive recipients into co-designers. No reform proceeds without friction. The most obvious risk is technological over-reach: attempting to automate emotionally weighty services too early could provoke backlash. That risk is mitigated by the phased scope strategy and by mandatory human review of sensitive intents.

A second risk is security. A conversational platform will store voice recordings and chat logs that contain personal data and, at times, national-identity numbers or health details. Encryption at rest and in transit, role-based access controls, and regular penetration testing are non-negotiable. To retain sovereignty over data, the hosting arrangement should keep primary storage within national jurisdiction or under a contractual regime that subjects any foreign provider to Azerbaijani privacy law.

The third risk is organisational fatigue. Staff may initially perceive the bot as a threat rather than an ally. Early, honest communication focuses on the real objective: not replacing humans, but eliminating the calls that currently trap them in repetitive drudgery. Career paths must evolve in parallel, opening new senior roles—conversation-designer, intent-curator, ethics auditor—that did not exist in the legacy call-centre hierarchy.

Finally, there is the equity risk. The very populations that rely most on government help can be those least comfortable with a disembodied voice. To preserve inclusion, the old phone number must remain operative, and agents should proactively call back any person who abandons the bot in frustration. Libraries and ASAN Service Hubs can host demonstration kiosks where staff walk citizens through first-time interactions. Over time, as confidence grows, the balance of traffic will shift naturally, but the human safety net stays in place.

Implementation is never “finished”. Success will be judged by a living dashboard whose indicators capture both operational and human dimensions. Bot-only resolution rate, average wait to reach an agent, and cost per case measure efficiency. First-contact resolution for escalated interactions, sentiment scores extracted from call recordings, and post-call survey ratings assess effectiveness and user satisfaction. Geographic and linguistic distribution of users acts as an equity barometer, revealing whether rural or minority groups remain under-served. Finally, the rate at which new intents are added without incident reflects adaptive flexibility. Publishing quarterly summaries of these metrics will anchor public trust and guide resource allocation.

If the roadmap is executed with care, Azerbaijan’s call-centre in five years will scarcely resemble the voice tree of today. Citizens will pose questions in natural language through any channel, receive instant, authoritative replies, and pivot seamlessly to a compassionate specialist whenever nuance outruns code. Agents will spend their days troubleshooting complex cases, designing new services, and analysing insight reports instead of repeating hours of boilerplate instructions. Policymakers will mine aggregated interaction data—anonymised and ethically governed—to detect policy blind spots and emerging social needs. The institution as a whole will have moved from reactive queue management to proactive, data-driven public value creation.

Beyond national borders, a successful deployment offers a demonstrator model for the broader South Caucasus and Central Asian region. Countries that face the same twin constraints—high citizen expectations and finite administrative budgets—will study the Azerbaijani example, adopt its open-source conversational templates, and perhaps join a multilingual intent-sharing

consortium. Such cooperation would lower costs, accelerate learning and, most importantly, standardise a citizen-centred ethic across different administrative cultures.

Digital government is often narrated through the glamorous lens of blockchain land registries or autonomous drones. Yet the humbler call-centre may be the single most consequential arena of state–citizen contact. It is here, in a three-minute conversation about a parking permit or a social-benefit appeal, that trust is won or lost. The hybrid AI–human model recommended in this report treats that encounter with the gravity it deserves. It welcomes software into the front line of service delivery but refuses to exile empathy and discretion.

The path ahead demands investment, discipline and humility. Algorithms must be audited, staff must be retrained, privacy must be protected, and the bot must learn the rich cadences of Azerbaijani speech. Yet the reward is profound: a state that listens at any hour, answers quickly, and never forgets that at the end of every query stands a person seeking help. By embracing a hybrid architecture now, Azerbaijan not only modernises a vital institution; it enacts a broader democratic promise—that technology will serve the citizen, not the other way around.

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Appendix

Interview Questions

1. What are the main challenges you face when using the ASAN call center?
2. Would you trust an AI system to handle your automotive service inquiries?
3. What features would you want in an AI-based call center?
4. What concerns do you have about AI replacing human agents?
5. How do you think AI could improve the ASAN Centre's efficiency?

ADA University
School of Public and International Affairs
Capstone project evaluation form (supervisor)

Date 20/05/2025

Organization: The State Agency for Public Service and Social Innovations under the President of the Republic of Azerbaijan

Topic: AI-Powered Citizen Support System for ASAN
Students: Sarvan Huseynov, Azad Farhadov, Orkhan Rafiyev

Program BAPA BAIS MADIA MPP

Question	1	2	3	4	5
1. The students regularly contacted supervisors regarding the research project					✓
2. The students were well prepared for meetings					✓
3. The students showed ethical and professional attitude during communication with supervisors					✓
4. The students incorporated feedbacks and interests of supervisors into their project					✓
5. The final research results meet the expectations about suggested topic					✓

*1 – Highly unsatisfied; 2 – Unsatisfied; 3 – Uncertain; 4 – Satisfied; 5 – Highly satisfied

Would you like to continue partnership with the School of Public and International Affairs of ADA University in future Capstone projects?

Yes

Additional comments:

A well-thought-out and relevant solution. Your approach shows strong alignment with our goals. Great work! Consider expanding on the implementation for even greater impact.

Javid Abbasov