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AI IN IT SUPPORT ROLES

Leveraging Large Language Models in IT Support.

M.Sc. Thesis

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Abstract

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The use of AI across various human endeavour is on the rising, as it augments task processes, problems, bugs and more importantly increase efficiency. However, many resentments especially in tech world with the fear of AI replacing people. Hence, the study examined the use of AI in IT support roles to determine the implication of AI adoption in IT support roles. The study examined this through the three objectives; Identifying practical use cases by analysing common IT support tasks and determining where LLMs could have a significant impact based on current advancements in the technology; evaluating the performance of these models, focusing on aspects such as response time, resolution accuracy, and user satisfaction; highlighting potential challenges (such as data privacy and reliability) and limitations (including risks associated with managing high-priority issues).

The study used structured interview and interviewed key managers in IT department. The result revealed that; Key findings indicated that IT support tasks like addressing IT supports complaints and requests which was previous sent through emails or calling in or ticket systems that waste too much time were identified as one of the places AI can be used to aid process.

Evaluating the performance of these models, focusing on aspects such as response time, resolution accuracy, and user satisfaction. The study further revealed that the models were built by through the analyses of historical records of events and processes in the organisations, current knowledge and previous ticket information. So, AI was able to provide accurate answers at a very fast time. Lastly, the study revealed that Introducing LLMs into customer service operations lessened IT teams' duties, made answers more accurate and pleased users. Challenges encountered with the use of AI that made users unhappy were the mix of ticket categories which caused problems in sending tickets to the right team and delayed fixes. Other challenges include data privacy and reliability which made the technology to not be introduced in certain part of IT roles. It then revealed that AI in IT support roles can help in augmenting processes and in future times may take over less technical duties and save time.

The originality of this thesis has been checked using the Turnitin Originality Check service.

USE OF AI IN THESIS

I have utilized AI tools in my thesis:

Yes

The AI tools utilized in my thesis and their purposes are described below:

The AI tool used during this thesis is ChatGPT4.

ChatGPT was used to get more comprehensive explanations of some key concepts that were not clear previously, I was able to get some perspective and context to it, to study further. Additionally, I used it to get more findings o literature to review.

In section 2, AI was used to get knowledge about various AI tools and possible literatures to read on it. Their conceptions and advancement over the years.

I acknowledge that I am fully responsible for the entire content of my thesis, including the parts generated by AI, and accept accountability for any violations of ethical standards in publications.

PREFACE

This thesis is submitted as part of the requirement for the completion of my M.Sc program in Computer Science at the Tampere University. This thesis was inspired by my growing interest in the discussion about AI around IT and fears many experts about danger of AI replacing IT experts in their job roles. This thesis will contribute to the software engineering industry and IT support psychologically, and also professionally. Likewise, help businesses and managers in IT supports make meaningful decisions that will help optimise their process and give a better customer experience to their audience.

My sincere gratitude goes to God who made this day a success. I will also love to say a big thank you to my family, and friends for their supports and encouragement. Lastly, I will also love to express my sincere gratitude to my supervisor for his guidance, support and suggestions that have led to the success of this thesis.

Tampere, 2025

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1 Introduction

In today's technology-driven world, IT support is one of the most essential foundational units in the corporate environment, from business and academia, to governance, security and health sectors. IT support systems are increasingly getting adopted, becoming the backbone of business operations and smooth governance both cooperatively and politically, ensuring seamless technology integrations, trouble-shooting and cyber security management. It majors in duties from resolving technical difficulties to managing the IT infrastructures, these systems improve productivity, ensure data protection and continuity in business.

With the increasing adoption of technology across different facets, complexities in IT have grown, and the demand to fill this vacuum is on the rise. Moreover, this is further anticipated to grow higher with newer innovations. According to Deloitte (2024), global IT spending was projected to grow by 9.5% in 2025, with data centers and the software segment expected to grow at double digits.

As companies build new technologies and software and adapt various infrastructures, IT support becomes largely indispensable. Investment in IT support, from proper IT support staff recruitment to appropriate tool usage, has been shown to reduce downtime issues, improve staff efficiency, and enhance security.

IT support ranges from help desk support to customers or staff, to infrastructural management like cloud computing administration, as well as IT security and cyber protection and prevention. This support cuts across different sectors and human endeavours, resulting in increased needs and rising complexities in delivery within the field.

These rising needs and complexities have led some firms and companies like Bank of America adopting artificial intelligence in supporting related tasks like; chatbots support, predictive management, automated problem resolution support for instance; Bank of American rolled out Erica to 25 million mobile customers considering the need for speedy delivery in support and response (Laurence, 2025). Artificial intelligence as a tool in technology began with computing machines used for large-scale calculations. The idea of a machine that can perform functions by itself, and ultimately make independent

decisions has been in the works for quite a long time. Over the years, more advancements have been witnessed, from the large computing machines to medium-sized computers and the hand-held devices, technologies have been evolving to adapt to situations and perform human-like functions.

Artificial intelligence was first linked to the 'Turing Test' developed by Alan Turing, it aimed at assessing machines to see how well they could simulate human intelligence in 1950. Basically, because of their discussions about the "thinking machine" in 1956, Professor John McCarthy and his team of researchers are recognized as the pioneers of artificial intelligence as a field.

The work of Geoffrey Hinton, though rooted in the 1970s, surfaced in 2012 and served as the foundational knowledge for 'Deep Learning' and AI processes. Over the past few years, it has become more apparent that the future of deep learning is heavily dependent on technology, leading to more technological advancements. From 2020 till date, artificial intelligence has gained more prominence and has been constantly improving since then with the introduction of generative AI, which was capable of generating human-like responses to the introduction of GPT (generative pre-trained transformers) with models 1, 2, 3 and eventually 4. A further advancement is the Large Language Model (LLM), a type of software used for deep learning because it's trained to understand human language by the tremendous number of texts it has been trained with. Some features include troubleshooting, problem solving, analysis, generating texts, understanding context and the human language, image and speech recognition, and memory retention, among others (Elastic, 2024; IBM, 2023; Amazon, 2023).

Adopting LLM models into IT support has already significantly changed the way businesses manage issues, optimise operations and improve user experience around the world. This solution has evolved over the years, from basic software automations to more profound learning software capable of performing independent tasks and self-learning with zero intervention. With these initial AI interventions in the form of automations, businesses and institutions could only ease IT support roles in ticketing and password resetting.

With the inception of advanced AI like deep learning, AI-operated support systems began to adopt using pattern data to solve common identified problems with potential future occurrence to improve their ability to solve technical difficulties in future. Increasing the sustainability of IT systems with the ability to use historical data to identify issues and provide the best possible solutions.

1.1 Problem Statement

The advancement of global technology presents challenges for traditional IT support teams. Key issues include heavy workloads leading to burnout, knowledge management, and a reactive approach to damage recovery instead of proactive mitigation (Vosburg and Vosburg, 2023). Other challenges encompass a lack of automation, insufficient real-time data, and extended downtimes that hinder productivity (Office Technologies and Wingman, 2024; Assman, 2024; Johnson, 2023).

As businesses evolve, there's a rising demand for skilled IT support experts to address complexities and enhance user experience. The rapid growth of globalisation and technology access has resulted in longer response times for high volume glitches (Pereira, 2023). The need for effective IT support has become critical for ensuring smooth operations in various sectors (Stan and Molleman, 2023). Traditional troubleshooting processes are often time-consuming, leading to delays in problem resolution.

Moreover, the nature of IT support has become increasingly complex due to the adoption of cloud computing and hybrid infrastructures, resulting in knowledge gaps and increased demand for expertise (Parry and Battista, 2019; OECD, 2019). Compounding this is the risk of human error and inconsistent troubleshooting, negatively affecting service quality and user experience.

In response to these challenges, AI solutions are being embraced across sectors to enhance efficiency and recovery times. Advances in AI, particularly with large language models (LLMs), are transforming IT support by shifting from simple interactions to more interactive, self-learning systems. However, the rise of AI has sparked concerns about job losses in the IT support sector, with projections suggesting a significant reduction in staffing (Arora, 2024; Trevor, 2024). This has led to fears regarding future job dynamics, as recruitment may decline due to increasing AI integration (Bryan, 2025).

The ongoing rise in the adoption of large language models has led to improvements in the speed and efficiency of work processes. However, this has also raised concerns about the potential for these models to replace certain human functions, resulting in diminished relevance for some job roles. Nonetheless, some experts believe that AI may not entirely replace humans, but rather alter the dynamics of IT support roles, enhancing the skills and competencies of professionals in the field (Kumar Sar, 2024). This underscores the need for this study, which aims to examine the usage of large language models in IT support and assess the extent to which these models can take over human processes. Furthermore, the study will investigate the impact of these large language

models on labor dynamics within the industry, evaluating whether they will enhance roles or lead to a reduction in employment opportunities.

1.2 Research Objective

This research aims to achieve a comprehensive understanding of the use of large language models (LLMs) in IT support and the implications of their adoption in this field.

The objectives are outlined as follows:

1. Identifying practical use cases by analysing common IT support tasks and determining where LLMs could have a significant impact based on current advancements in the technology.
2. Evaluating the performance of these models, focusing on aspects such as response time, resolution accuracy, and user satisfaction.
3. Highlighting potential challenges (such as data privacy and reliability) and limitations (including risks associated with managing high-priority issues).

1.3 Research Questions

1. What are the practical ways LLM could affect IT support tasks?
2. How fast, accurate, and user-satisfying are LLM models in IT support roles?
3. What are the possible challenges and limitations of using LLM models?

1.4. Significance of the Study

The difficulties encountered with traditional IT support required alternative methods to enhance the speed and delivery of work processes. Hence, the integration of LLMs in IT support roles necessitated a new shift in solving real-time support request problems. This study examines the implications of LLM usage on IT support efficiency, UX experience, and potential job security. Through the findings of this study, valuable insights for IT professionals, organisations, and researchers will be discovered.

Large language models were introduced to enhance learning, improve work processes, due to their speed. Due to these advantages, they are of great use in IT support by offering troubleshooting and problem-solving features using products like chatbots,

which are available always to provide support, unlike traditional IT support. Its introduction now allows automations of first-line supports, streamlined supports workloads and vastly improves response time in businesses and ventures. This software, like the AI-powered assistance, enables IT support professionals to focus on more technical issues instead of expending energy on routine tasks like troubleshooting.

With the increase in the use of LLMs, it has become easy for the average individual to get more knowledge on any subject matter due to the vast amount of resources available to the models and the ability to search online and get relevant information regarding any subject matter (Zhu et al., 2025). Not just average individuals, but also IT support professionals now have access to vast possible information and tools to solve potential customers' issues and provide faster solutions more accurately. All these are done within seconds, and responses are relatable and easy to understand since the models are trained using human language, which enhances interaction. Abolghasemi et al., (2024). as compared to human limitations which provide varied knowledge and solutions based on their level of experience which largely impact individual users experience. Ensuring standard at all levels through using vast amount of datasets and self-training times which has largely reduce errors and inconsistencies experienced in traditional IT solutions before the adoption of AI. Some other advantages include automation and its ability to detect threats through analysing previous records.

Using these models also has downsides, as many are skeptical about data privacy and other ethical concerns with the use of LLMs. There are also concerns around the cost of using LLMs for large computations, as individuals may be unable to afford this. Further concerns revolve around the fear that LLMs would replace human jobs in no time, which has made many reluctant to embrace the technology (ProjectPro, 2024; Pavlick, 2022).

This study seeks to find the practical usage of LLM in IT support, considering its impact on work processes, speed and reliability, and the challenges and limitations that may arise from using these models.

1.5. Scope and Limitations

While this study aims to provide qualitative insights into LLM usage in IT support roles, certain limitations must be acknowledged. Relying solely on primary data in the form of interviews responses from IT support experts will impact analysis in-depth in terms of interviewee numbers. More so, their responses may not universally be applicable across industries or regions worldwide, and the ever-evolving digital landscape's changes may not be represented holistically. Publication bias in the existing literature and the absence of statistical rigour in the qualitative approach as regards this topic may further constrain

the study. More so, especially in the area of quantitative survey. Despite these limitations, the research offers valuable qualitative exploration, contributing practical insights to understanding the requirement of AI in IT and actual perspective about its application.

This study covers the usage of LLM, impact areas, speed, accuracy, and reliability within the scope of IT support. Limitations revolve around the lack of detailed data from previous years regarding LLMs since they are still a new technology.

2 Literature Review

The importance of Information Technology (IT) support systems in today's organisational infrastructure cannot be overemphasised as it stretches across various sectors. They could be considered the backbone of business operations and cybersecurity governance, ensuring digital systems' efficient operation, maintenance, and security across diverse industries. Network administration, cybersecurity monitoring, system diagnostics, and end-user support are just a few areas in which they have been implemented. In addition, the increased need of cloud-based computing, remote work, and growing cyber threats has also increased the need for IT support systems, and now, enterprises use automation and artificial intelligence (AI) more and more to improve user experience, increase service efficiency, and streamline IT support operations as digital ecosystems get more complicated. As a result, the incorporation of sophisticated AI models, especially Large Language Models (LLMs), has become popular as a workable way to improve overall system responsiveness, streamline diagnostic procedures, and supplement IT support roles. Natural language processing (NLP) marks a revolutionary advancement in artificial intelligence as these models are designed to process, create, and interpret human language with extraordinary intelligence. OpenAI's GPT series, Google's Bard, and Meta's Llama are a few examples.

Significant developments in deep learning techniques, especially the transformer architecture, have supported the development of LLMs by allowing these models to identify and produce complex linguistic patterns. LLMs use self-attention mechanisms to create context-dependent linkages within text, enabling logical and contextually relevant interactions, in contrast to conventional rule-based or statistical techniques. Because of their versatility, LLMs are especially useful in settings like IT assistance that call for dynamic, real-time participation. This literature review combines previous research to critically analyse the relationship between LLMs and IT assistance, examining their uses, constraints, and potential future consequences. This review attempts to add to the developing conversation on AI-driven IT support systems by combining knowledge from

industry practice and scholarly research, laying the groundwork for further investigations in the area.

2.1 Theoretical Framework and Key Concepts`

2.1.1 Historical Development of LLMs in IT Support

2.1.1.1. Early Applications of AI in IT Support

Over the past few decades, more success has been recorded in incorporating Artificial Intelligence (AI) into IT support systems. Expert systems and rule-based automation frameworks first appeared in the 2nd part of the 20th century and were the focus of early efforts. These cutting-edge AI techniques were created to help human IT specialists use organised, rule-based logic to diagnose and fix technological problems. The potential of automated reasoning in IT problem-solving was demonstrated by early expert systems like MYCIN and DENDRAL (Shortliffe, 1976; Buchanan & Feigenbaum, 1978). However, they were rigid and challenging to scale due to their reliance on predetermined rule sets (Russell & Norvig, 2021).

The development of helpdesk automation tools and ticketing systems coincided with the slow shift from strict rule-based AI to more dynamic approaches in the 1990s and early 2000s. To improve IT procedures, these systems used decision trees and structured databases. However, their incapacity to dynamically parse natural language hindered their ability to handle complicated, context-sensitive questions (McCarthy et al., 1998). A significant change was brought about by the advent of Natural Language Processing (NLP), which allowed for increasingly complex communication between human users and AI-powered IT support systems.

2.1.1.2. Evolution of LLMs: From Rule-Based Systems to Transformers

The development of Large Language Models (LLM) in IT support reflects a broader paradigm shift away from rule-based AI and toward data-driven machine learning techniques, which gave rise to transformer-based architectures. Early NLP models, like Hidden Markov Models (HMMs) and statistical machine translation techniques, offered probabilistic methods for language processing (Jurafsky & Martin, 2008). However, these models' applicability for IT support applications that require in-depth contextual knowledge was hampered by their failure to depict long-range connections in text effectively.

The introduction of deep learning, mainly through Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks, was a significant advancement in NLP applications. Hochreiter and Schmidhuber (1997) claim that these solutions improved sequential text processing and were crucial in the advent of IT chatbots and virtual assistants that relies on artificial intelligence technology. However, when processing long

textual data, RNNs and LSTMs showed drawbacks such as computational inefficiencies and the vanishing gradient problem (Cho et al., 2014).

Unlike their predecessors, transformers, before their innovation, use self-attention processes to process entire sequences in parallel, significantly increasing contextual comprehension and response accuracy. The innovation was transformer architectures, which were initially presented by Vaswani et al. (2017). This breakthrough led to the discovery of large-scale LLMs like the BERT (Bidirectional Encoder Representations from Transformers) and GPT (Generative Pre-trained Transformer), which revolutionised AI applications in IT support (Devlin et al., 2018).

2.1.1.3. Key Milestones in LLM Development for IT Support

Several pivotal milestones have shaped the integration of LLMs into IT support, enhancing their capabilities and operational effectiveness:

1. **The Advent of Pre-Trained Language Models:** Google's introduction of BERT in 2018 revolutionised NLP with its bidirectional contextual embeddings, enabling more precise interpretation of IT support queries (Devlin et al., 2018). BERT's impact has been particularly pronounced in search-based IT support systems, where accurate query interpretation is essential for retrieving relevant documentation and knowledge base articles.
2. **The Emergence of Generative Models:** The progressive evolution of OpenAI's GPT models to GPT-4, from the previous GPT-2 has demonstrated exceptional advancements in natural language generation. These models' technology enable dynamic, context-aware IT support conversations, mitigating the constraints of rigid, script-based chatbot responses (Brown et al., 2020).
3. **Industry Adoption and Domain-Specific Fine-Tuning:** Leading technology enterprises have increasingly fine-tuned LLMs to optimise their application in IT service management. IBM's Watson Assistant and Microsoft's AI-powered Virtual Agents exemplify the strategic deployment of LLMs in enterprise IT support (Gartner, 2022). These adaptations enhance domain-specific accuracy and improve user satisfaction by aligning AI responses with industry standards and troubleshooting protocols.
4. **Integration with Knowledge Graphs and Hybrid AI Systems:** Recent advancements in IT support AI have focused on integrating LLMs with knowledge graphs and symbolic reasoning frameworks to enhance accuracy and reliability. Hybrid AI methodologies combine statistical learning models with structured

knowledge representations, reducing hallucination risks and improving the credibility of IT troubleshooting recommendations (Chowdhury et al., 2023).

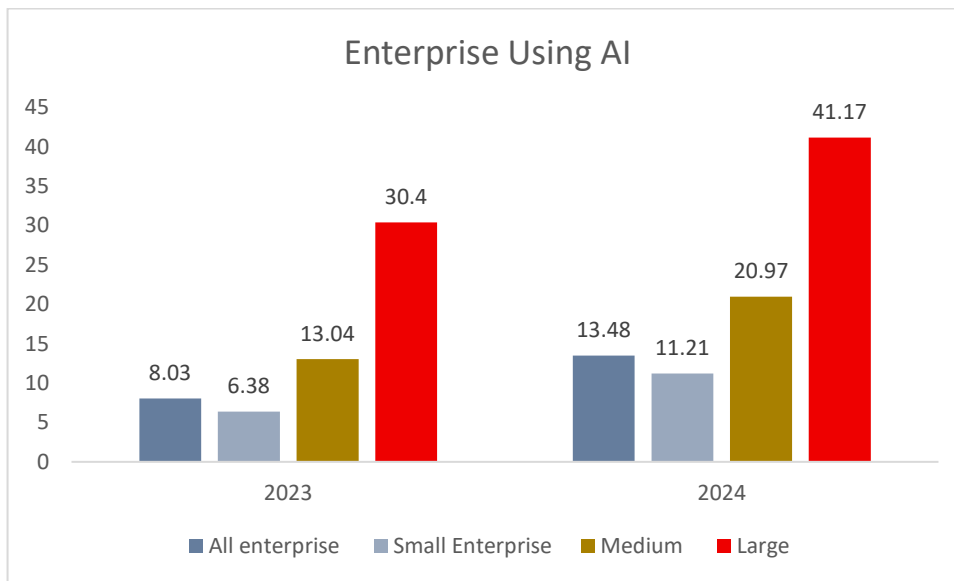
5. **Regulatory and Ethical Considerations:** The widespread deployment of LLMs in IT support has necessitated discussions surrounding ethical considerations, including algorithmic bias, data privacy, and security concerns. Research by Weidinger et al. (2022) underscores the importance of robust governance frameworks to ensure responsible AI adoption in IT environments. Efforts to refine AI alignment techniques continue to evolve, addressing these ethical challenges and fostering transparency in AI decision-making.

The historical development of LLMs in IT support highlights a trajectory of continuous refinement, from rudimentary expert systems to sophisticated transformer-based architectures. As AI research progresses, future LLMs are expected to exhibit enhanced contextual intelligence, real-time adaptability, and reinforced ethical safeguards. As organisations increasingly integrate these models into their IT support infrastructures, the role of LLMs in shaping next-generation intelligent automation is expected to expand significantly.

2.1.2 Current Applications of LLMs in IT Support

One of the technologies with the most potentials currently globally, is the artificial intelligence (AI). It basically uses a system that comprises of computers, systems, algorithms, and programs that mirror intelligent human behaviour (Huang and Rust, 2018; Shankar, 2018). This innovative disruption is finding relevance across fields and economies, including Europe. In report released by Eurostats (2024) as shown in figure 1 below, on AI, In 2024, 13.48% of EU businesses that has 10 or more employees and independent contractors used at least one of the following AI technologies in their tasks: text mining, speech recognition, image recognition, natural language generation, machine learning (e.g., deep learning) for data analysis, automation of various workflows or decision-making support (AI-based software robotic process automation), and technologies that allow machines to move physically by observing their environment and making decisions on their own. Moreover, larger companies in EU are increasingly adopting AI with over 10% increment in companies adoptions. Companies like; BBC using AI to deliver contents, ING Group that adopts AI in streamlining processes.

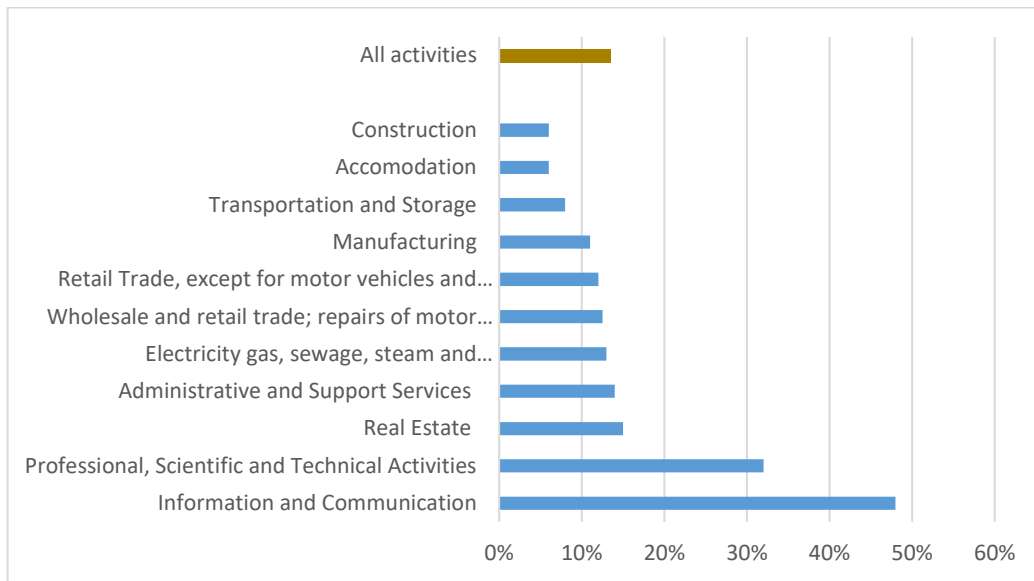
Figure 1: EU's Companies Using AI Categorization by Size (2023 and 2024).



Source: Eurostats (2024).

Likewise, adoption of AI technologies varies across industry in Europe, as revealed by report on trends of AI integrations in Europe shown in figure 2. Eurostats (2024) highlighted those businesses in the media industry, academics, health, retails among others are relatively adopting AI on a very large scale while companies in the constructions, transportation and storage having below 20% in adoption. This reveals adoption in various industry, also largely depends on the level of development and innovative discovery made in the AI industry that are peculiar to this respective industry and economy.

Figure 2: EU's Companies Using AI Categorization by Economy Activity (2024).



Source: Eurostats (2024).

1. Chatbots and virtual agents

Chatbots and virtual agents have gained momentum in recent IT support industry, specifically for solving Level-1 queries. This technology is designed to imitate human conversation. This AI innovation automate routine interactions, provides prompt feedback and effective responses while substantially streamlining workloads on IT personnel (Clark, 2020). They use natural language processing technology and machine learning to process queries and engage with users in intuitive manner in order to provide accurate solutions.

According to Suthar (2020), one of the human limitations, this technology surpasses is their ability to work around the clock. These tools ensures that the company and its customers enjoy uninterrupted support at any time of day. More so, Moghis (2020), they are efficient in addressing large numbers of queries, putting them as a very indispensable tool especially for the large companies with voluminous demands. They are commonly used for; resetting passwords, unlocking accounts and responding to FAQs (Frequently Asked Questions).

It is highly cost effective for businesses who are excused from responsibility of employing more human power to manage increasing numbers of queries among others (Moghis, 2020). For example; Chatbots can manage multiple queries simultaneously and give a

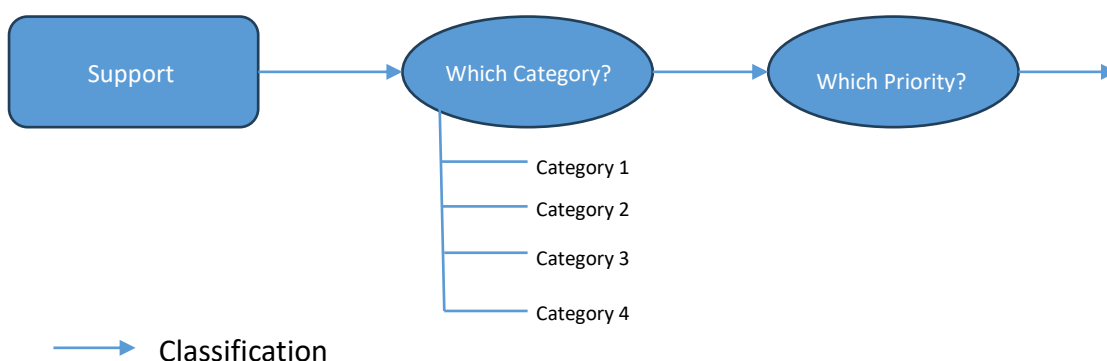
prompt response without delay as compared to human IT support. The ever increasing innovation on these technology and AI in general are gradually leading to fast adoption of AI technologies in daily running of businesses.

However, while chatbots technologies have become increasingly adopted across the globe in running support interface between companies and customers, there are still higher level queries where they encounter difficulty in managing and often face ambiguous issues. Instances like these demands the attention of human IT experts

2. AI Based Ticketing

According to Naven (2024), in recent multifaceted business environment, the adoption of AI in ticketing systems, client facings and operations indicates a big initiative towards improving efficiency in customer experience. AI technologies are largely shaping the way companies and institutions manage and address customer queries through automated routine like as ticket sorting, task flow, and troubleshooting. The advent of machine learning algorithms technology, makes it possible for AI to intelligently route tickets to the most suited agents based on criteria programmed in its learning like; knowledge from previous learning, availability, and the urgency of customer needs (Naven 2025; Truss and Bhum, 2024). This application of AI largely relies on technologies such as Natural Language Processing (NLP) and Machine Learning. AI models detect trends in the text of incoming support requests and extract crucial information such as keywords, urgency, and sentiment. This improves response times and allows human agents to focus on difficult issues that demand a personal touch, resulting in higher quality client encounters.

Figure 3: AI-Based Ticket Sorting Process Flow



Source: Truss and Bhum (2024).

3. Automated Troubleshooting and Diagnostics

The integration of Large Language Models (LLMs) into IT support systems has remarkably enhanced automated troubleshooting and diagnostic capabilities. Leveraging advanced natural language processing (NLP) techniques, LLMs analyse system logs, error messages, and user-reported issues to provide real-time diagnostic insights. Unlike traditional rule-based troubleshooting approaches, LLMs dynamically process complex and unstructured data, enabling a more precise identification of root causes and improving efficiency in resolving technical issues.

A significant application of LLMs in IT troubleshooting is their deployment within self-service IT support portals. Leading technology firms, including IBM and Microsoft, have incorporated LLM-powered diagnostic systems into their support frameworks to facilitate autonomous issue resolution. For instance, Microsoft's Azure AI utilises LLMs to interpret error codes, correlate them with historical incidents, and propose actionable solutions. Similarly, Google's AI-driven support platform employs LLMs to analyse system logs, recognise failure patterns, and generate contextualised recommendations, thereby minimising system downtime and enhancing operational continuity.

Empirical evidence supports the efficacy of LLMs in IT troubleshooting. A study by Xu et al. (2022) indicates that AI-enhanced diagnostic models can reduce incident resolution times by up to 40%, significantly improving IT support service delivery. As LLMs continue to evolve, their integration into IT support systems is expected to deepen, fostering more efficient, data-driven, and contextually intelligent solutions.

4. Helpdesk Automation

The application of LLMs in IT helpdesk automation has revolutionized customer support by enabling highly responsive virtual assistants and chatbots capable of addressing routine IT issues autonomously. Unlike conventional chatbot systems that rely on predefined scripts, LLM-driven helpdesks leverage deep learning architectures to interpret user queries contextually, generate relevant responses, and adapt dynamically based on user interactions and feedback loops.

A primary advantage of LLM-powered helpdesk automation is its capacity to enhance response accuracy and reduce resolution times. Empirical studies reveal that AI-driven virtual assistants, such as IBM Watson Assistant and Google's Dialogflow, can resolve up to 70% of routine IT support queries without requiring human intervention. The integration of LLMs into IT service management (ITSM) platforms allows organizations to optimize resource allocation by shifting complex issue resolution to human agents while automating routine inquiries.

A comprehensive analysis by Gartner (2023) highlights those enterprises implementing LLM-enhanced helpdesk systems have reported a 30% increase in user satisfaction and a 50% reduction in average issue resolution time. Furthermore, sentiment analysis capabilities embedded within LLMs enable real-time evaluation of user frustration levels, facilitating more personalized responses and improving overall customer experience. As advancements in AI continue, LLM-driven helpdesk automation is poised to redefine IT support, offering greater scalability, efficiency, and accuracy.

5. Knowledge Management and Knowledge Base Optimization

LLMs have transformed knowledge management within IT support by automating the generation, maintenance, and refinement of IT knowledge bases. Traditional knowledge management frameworks necessitate extensive manual effort to update FAQs, troubleshooting guides, and technical documentation. However, LLMs streamline this process by autonomously extracting, synthesizing, and structuring knowledge from historical IT support interactions and technical repositories.

One of the key applications of LLMs in knowledge management is their ability to continuously analyze IT support interactions, identify recurring issues, and generate relevant documentation updates. For example, ServiceNow's AI-driven knowledge management platform employs LLMs to detect knowledge gaps, update FAQs dynamically, and enhance the accessibility of technical resources. This capability ensures that IT support teams can access the most up-to-date and contextually relevant information in real-time.

Additionally, LLMs facilitate the automated generation of training materials, technical manuals, and troubleshooting guides for IT personnel. Studies indicate that AI-enhanced knowledge management systems can reduce the time spent searching for relevant information by up to 60%, leading to substantial improvements in IT support efficiency (Chowdhury et al., 2023). As AI-driven knowledge management solutions continue to mature, LLMs are expected to play an increasingly pivotal role in optimizing IT documentation, knowledge retention, and operational efficiency.

2.2. AI Integration in IT Service Management (ITSM) Tools

Artificial intelligence (AI) tools have developed to the point where they are incorporated into support systems for practical uses and significantly influence decision-making. With recent technological advancements, AI is currently a revolutionary force in assisting with IT-related tasks, radically changing the effectiveness and reach of technical assistance. Proactive problem-solving and end-user experience optimisation are made possible by AI-driven IT support systems, which are supported by ML, NLP, and automated frameworks. AI applications in IT support include automated ticketing, anomaly detection, and predictive analytics, all of which help to reduce downtime and improve operational reliability (Russell and Norvig, 2021).

A key advantage of AI in IT support lies in the ability of AI to evaluate large datasets in real time and spot trends that human analysts would miss. In cloud-based IT infrastructures, for example, AI-driven analytics make it easier to identify possible system failures using past data, enabling preventative corrective actions (Smith et al., 2022). Chatbots and virtual assistants driven by AI have also revolutionised customer assistance by providing prompt answers to common technical questions and effectively referring complex issues to human experts (Brown & Lee, 2023).

AI is essential for improving cybersecurity in IT support systems and automating procedures. Businesses that use AI-powered security solutions have improved the overall protection of their systems by drastically cutting down on the time it takes to react to cybersecurity incidents. These advancements emphasise the importance of AI in IT support, promoting continuous innovation in service delivery and system optimisation (Gartner, 2023).

1. Natural Language Processing (NLP) in IT Support

Natural Language Processing (NLP) is a key aspect of AI that enables machines to process, interpret, and produce texts similar to those of humans. In IT support scenarios, NLP could help automated systems contextualise user inquiries, guaranteeing pertinent and accurate responses. According to Jurafsky and Martin (2022), the effectiveness of NLP in IT support depends on complex mechanisms like syntactic parsing, sentiment analysis, and named entity recognition.

One of the most straightforward applications of natural language processing (NLP) in IT support is conversational AI, in which virtual assistants engage with users in a conversational, natural way. This is seen on several platforms and is incorporated into internet pages and mobile apps. According to research by Liu et al. (2022), deep learning architectures' advanced natural language processing (NLP) models have significantly

improved contextual comprehension, enabling IT support systems to provide accurate and pertinent responses. With AI-driven models that automatically classify and rank user-reported issues according to textual descriptions, ticket categorisation is a crucial usage of natural language processing (NLP) in IT support, expediting the resolution process (Chen & Zhang, 2023).

Furthermore, NLP-powered chatbots have been increasingly included in business support systems to increase productivity. These chatbots use sophisticated, pre-trained language models to offer organised troubleshooting advice. According to research by Masongsong et al. (2016), companies that integrated NLP-based chatbots into their IT service desks reported a 30% reduction in resolution times, indicating notable gains in customer happiness and service quality. However, the deployment of NLP in IT support is not without challenges.

One significant drawback is correctly deciphering contextual ambiguities and domain-specific language. General NLP models frequently have trouble understanding technical lexicons specific to IT fields, according to research by Gupta et al. (2023). Specialised NLP models designed for IT support environments are being created to address these issues, incorporating domain-specific knowledge bases to improve response accuracy and comprehension. These improvements highlight NLP's developing function in IT service management and its potential to transform automated assistance systems completely.

2. Large Language Models (LLMs) in AI and IT Support

Large Language Models (LLMs) are a significant development in AI-powered text production and understanding. When producing human-like responses, deciphering user inquiries, and supporting automated decision-making, LLMs—vast neural network architectures trained on vast corpora—display exceptional ability (Radford et al., 2020). Regarding IT assistance, LLMs provide strong tools for information retrieval, intelligent automation, and improved user engagement.

LLMs generate complex and context-aware answers to technical questions, unlike traditional AI-driven chatbots that depend on pre-written scripts. In contrast to obtaining predetermined responses, LLMs can participate in meaningful problem-solving discussions due to their advanced level of contextual awareness (Bender et al., 2021). This flexibility makes LLMs highly valuable in complex IT support scenarios, where users require adaptive and situationally relevant solutions.

The importance of LLMs in IT knowledge management is further highlighted by research, where these models serve as intelligent assistants that can retrieve, summarize, and

synthesize technical material (OpenAI, 2023). IT workers can improve decision-making and service effectiveness by using LLMs for knowledge retrieval, which will decrease cognitive burden and speed up troubleshooting.

LLMs have a lot of potential, but they also come with drawbacks, especially regarding data protection, ethical issues, and the possibility of false information. According to studies by Weidinger et al. (2022), LLMs may produce biased or erroneous replies without adequate control, therefore, strict governance mechanisms and human-in-the-loop assessment are required. Zhang et al. (2023) also draw attention to cybersecurity issues, stressing the importance of protecting LLM-driven IT support systems against hostile manipulations and illegal data access.

A paradigm shift in how businesses approach technical help can be observed with the growing incorporation of LLMs into IT support ecosystems. Future versions of LLMs are anticipated to provide even more accuracy, contextual intelligence, and ethical protections as this field's research and development progresses, thereby solidifying their position as essential instruments in the provision of AI-enhanced IT services.

2.3. Impact of AI IT Support Performance

As the AI innovation advances, many businesses are adopting its technologies and consequentially its impacting their businesses in many areas, including; customer experience, cost effective management among others. Likewise, there are many other limitations that are still very relevant, as many organisations are still relatively pushing back these advances due to fear of data integrity.

Few research have been carried out on AI and IT support, however, many researches over the years, have investigated the AI and related systems to understand the impact of its adoption on them. According to Kassa and Worku (2025), AI plays an important role in improving Organisational Performance (OP), which refers to an organization's overall effectiveness and success in meeting its strategic goals. In this sense, OP refers to a wide range of factors, including profitability, market share, customer satisfaction, innovation, and operational efficiency. Furthermore, AI excels at rapidly and accurately analysing massive amounts of data, offering useful information that influence the decision-making process to make more accurate decisions at all levels of the organisation (Weigel et al., 2022). This decision making data-driven approach can improve better use of resource, customer service's quality as well as market competitiveness.

Likewise, the automating capabilities of AI to automate repetitive tasks and provide employees with more engaging tasks and increasing job satisfaction, hence suggest that

According to Russel and Norvig (2015), AI has capacity to raise job satisfaction and motivation of IT support staffs. This will result to higher level of proactiveness as well as a stronger sense of purpose, absolutely facilitating a better level of productivity among staffs. Moreover, AI may equip people with new set of skills and knowledge by offering access to training packs, making data analysis process easy through automations, and enabling the growth of new skills and attributes among staffs hence, AI can build a more gifted and flexible workforce. This can result in better decision-making, more creativity, and more efficiency, all of which can boost organisational performance (Braganza et al., 2021, Malik et al., 2022).

The application of AI-based technologies in customer assistance provides numerous advantages. According to Chong et al. (2021); Abu Daqar & Smoudy (2019) and De Keyser et al. (2019), Chatbots have the advantage of being available 24/7 even during service disruptions and can reduce client wait times. These benefits significantly increase support quality and customer happiness.

A McKinsey analysis estimates that by 2025, innovations aimed at increasing customer service and experience quality would have a multi-trillion USD impact on the world economy (Manyika et al. 2013). According to a Bain & Company report (Du Toit et al. 2020), many organisations are employing AI-based solutions to achieve a competitive advantage. Chatbots can be more cost-effective than traditional service centre employees. Automation has the potential to reduce retail expenses by about \$400 billion USD annually by 2023 (Williams 2019). Human employees can use leisure time to improve service quality and focus on important tasks (Drift 2018; Needle 2023).

In 2020, it is anticipated that chatbots might handle 80% of normal customer questions (Suthar 2020). Since then, the number has climbed rather than reduced.

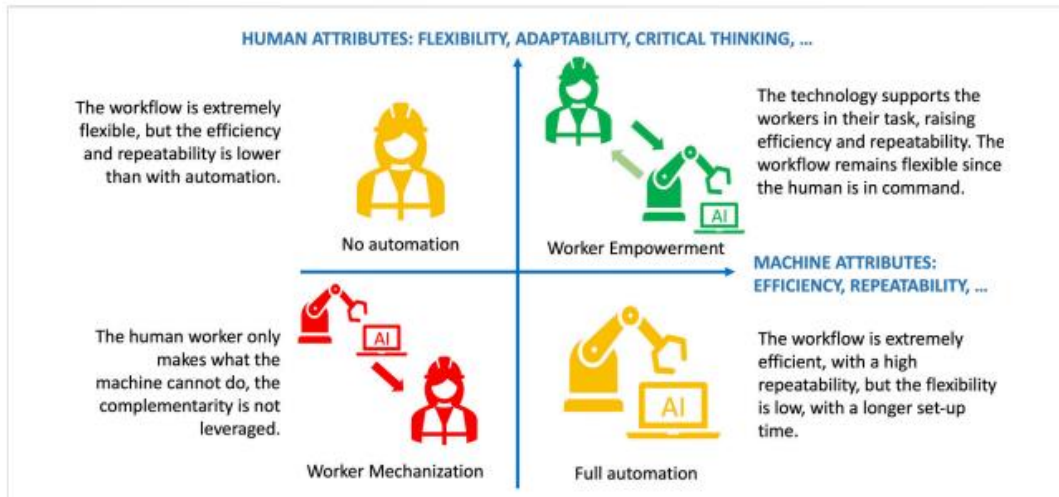
In contrast, some studies have shown that AI has negative consequences such as job displacement, loss of privacy, bias, and discrimination (Abuselidze and Mamaladze, 2021; Packin, 2020). Similarly, Calo (2015) and Lichtenthaler (2020) have expressed concerns about potential job displacement, negative feelings, and social upheaval caused by AI adoption. This uncertainty in findings emphasises the need for a thorough knowledge of how AI interacts with EP and OP in specific organisational situations, such as Ethio Telecom.

2.4. AI vs Human Agents – Replacement or Augmentation

The discussion about the possibilities of AI/robotics replacing humans especially in repetitive tasks and other IT related jobs has been one of the major fears been spread around as the world grows in AI integrations. Recently, companies around the world are

already adopting the practice of using AI in delivery their value to their customer segments and this has cause debates around the possibilities of this practice replacing humans in their jobs.

Figure 4: Human Attributes



Source: Dégallier-Rochat et al (2022).

While AI might be viewed positively, it often revolves around the collective fear of job loss, which has been a common theme in political debates (Goldberg, 2015). Dégallier-Rochat et al., (2022), identifies these fear stems from the threat of machines becoming more productive or intelligent than humans, known as the technology singularity.

Dégallier-Rochat et al., (2022), further identified that to understand thoroughly the general skepticism, AI generally includes “narrow artificial intelligence” (NAI) which purpose is to efficiently provide solution to a complex task and “artificial general intelligence” (AGI) which purpose is to reproduce human intelligence capabilities. This fear is propelled by myths in the technology industry about AI of which some have been sustained by the experts; one of which includes; the myths of autonomy where most people believes that AI/ robotics will in years to come become autonomy (Mindell, 2015). Contrary to the opinion, Dégallier-Rochat et al., (2022), AI/robotics will never be autonomous because per designs, humans will always be the one to determine and define how these technologies will work.

However, the idea of unlimited autonomy persists in public and scientific discourse. An Eurobarometer survey in the year 2017 found that 72% of people resident in Europe fear robotics and AI are stealing jobs (European Commission, 2017). A study conducted by Frey and Osbourne in 2017 discovered that, 47% of employment in the United States are at high danger of automation.

However, the idea of unlimited autonomy persists in public and scientific discourse. In 2017, a Eurobarometer survey found that 72% of Europeans fear robots and AI are stealing jobs (European Commission, 2017). According to a 2017 study by Frey and Osborne, 47% of employment in the United States are at high danger of automation. Arntz et al. (2016) found that while 9% of employment may be automated, they may not be economically viable. Fernandez-Macias and Bisello (2020) and Parker and Grote (2022) differ from Frey and Osborne study, highlighting that Frey and Osborne study focused on automating specific tasks, while these tasks were part of a more complex job that could not be fully automated.

According to (Macias et al., 2016; Autor and Salomons, 2018), past rounds of industrialisation resulted in the automation of most physical labour. However, the remaining tasks are beyond the capabilities of robots and AI. In a 2020 report by the European Commission (Klenert et al.), a comprehensive analysis of automation's influence on jobs in Europe from 1995 to 2015 found that it had a beneficial impact on manufacturing employment. The literature on job substitution has contradictory findings due to varying approaches and levels of study. Although the fear of AI causing unemployment is a concern, however the primary difficulty with AI and robotics is the quality of machine interface.

2.5. Gaps and Industries Yet to Embrace AI

Despite previous research, there are still dearth of knowledge and methodological gaps, specifically in around current perception about AI in Europe and likewise, on AI usage in IT support. More importantly, studies are scarce on the impact of AI on IT support job and potential possibilities of its augmentation of their tasks or replacement in their roles. These gaps hinder a holistic understanding of how AI influences different IT supports roles, this study addressing this will offers valuable insights into the challenges and opportunities associated with integrating AI within IT supports roles. Moreover, there are scarcity of research on the limitations of AI for which organisations are limiting its adoptions in their IT roles, for example data privacy. This gap provides an opportunity to investigate the processes by which AI is employed in IT support tasks and potential challenges as well as investigate the possibilities of AI replacement or augmentations.

3. RESEARCH METHODOLOGY

3.1. Preamble

This chapter provides a comprehensive outline of the methodology employed in this study, which examines the use of AI in IT support roles. The study used a qualitative research method to gain an insightful understanding on adoption, company policies, and possible challenges in the use of ai in IT supports. It details the research design, study area, targeted audience, sampling techniques, sources and instruments for data collection, procedure for data collection, and method of data analysis. It also highlights the ethical considerations observed during data collection.

3.2. Research Design

This study employs a qualitative research design, which is appropriate for exploring the use of AI in IT supports. Interview method was adopted to understand and collect rich, descriptive data from various stakeholders, including IT experts, and managers, to gain diverse perspectives.

The qualitative method allows for a detailed exploration of data privacy, AI usage, and challenges in the use of AI. Data is collected through semi-structured interviews which help capture both individual experiences and policy trends as it provides first-hand insights.

By focusing on qualitative data, this study moves beyond numerical analysis to uncover narratives, opinions, and experiences related to AI usage in IT support role. The research design ensures flexibility, allowing emerging themes to shape the analysis. The findings from this approach are expected to provide a comprehensive and contextualized understanding of the relationship between AI usage and IT supports.

3.1. Study Area

This study focuses on IT supports experts in Europe, considering laws guiding the usage of AI and IT supports in the region.

Europe is one of the fastest growing regions in the adoption of AI in daily operations, however, certain resistance still persist and the need to address the resistance and still protect users and company data among other things has led to this study.

3.4. Targeted Respondents

The population for this study includes individuals and institutions directly involved in the use of AI specifically in IT supports that resides Europe. Its includes Level 1 supports, managers, IT supports heads of companies.

3.5. Sampling Techniques

This study will use purposive sampling to select participants that are specifically relevant to the research objectives. Key participants will include IT supports experts at various level, and managers. These individuals have direct experience in IT supports and AI adoptions and can provide valuable insights into both the adoption and its implementation across all level. In addition, knows about relevant government acts guiding its usage. This sampling approach ensures a focused, in-depth exploration of knowledge from key players in IT supports industry.

3.6. Sources and Instruments for Data Collection

This study will utilize both primary source of data to provide a comprehensive understanding of AI usage in IT supports in Europe.

3.6.1 Primary Data

Primary data will be collected through semi-structured interviews. These interviews will allow for an in-depth exploration of the views, experiences, and expertise of key stakeholders involved in AI usage in IT supports. The participants will include decision making level managers;directors, IT supports experts among others. The semi-structured nature of the interviews will allow for flexibility in responses while ensuring that all relevant areas of the research are addressed. The interviews will be guided by a set of open-ended questions focusing on the effectiveness, challenges, and impact of AI usage in IT supports in the study region.

3.7. Procedure for Data Collection

The data collection process for this study will employ primary data. Primary data will be collected through semi-structured interviews with key participants as stated previously in previous sections. These participants were selected purposively based on their experience in IT support and knowledge about AI usage. The interviews will be conducted in person or via phone/video calls, depending on the participants' availability. An interview guide with open-ended questions will be developed to explore their experiences, perspectives on AI usage, itseffectiveness and possible challenges faced in implementing it. The interviews will be audio-recorded (with consent) and transcribed verbatim for analysis.

3.8. Method of Analysis

The data collected for this study will be analysed using a thematic analysis for qualitative data. For the primary data gathered through semi-structured interviews, thematic analysis will be employed to identify and categorize key themes and patterns in participants' responses. This process involves transcribing the interviews verbatim, then coding the data to highlight significant themes related to AI usage, their effectiveness and potential challenges. These themes will be analyzed to draw insights and conclusions based on the research objectives.

4. DATA ANALYSIS AND INTERPRETATION

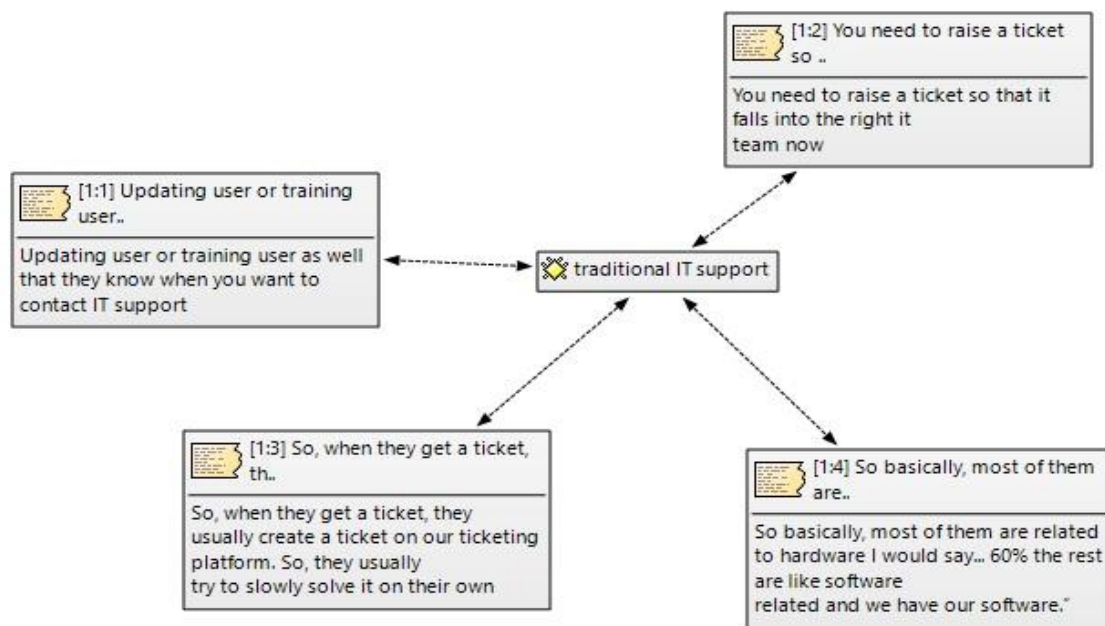
4.1 Preamble

The analysis focuses on how IT support workflows have been changed by the introduction of AI. Using transcripts from Vikas Soni, a senior IT professional, Nuwan, a Second-Line IT Support Specialist and an IT support Lead from Finland, this essay studies the move from using tickets to being supported by AI. Topics discussed are how pre-AI systems were set up, what prompted businesses to adopt AI, how they implemented it and the outcomes on their efficiency, how users felt and the workload of staff.

Research Objective 1: Identifying practical use cases by analysing common IT support tasks and determining where LLMs could have a significant impact based on current advancements in the technology.

Theme 1: Traditional IT Support Setup Before AI

Figure 5: Network Analysis showing Traditional IT Support Setup Before AI



Source: ATLAS TI REPORT

Manual Processes and Communication Channels

Until recently, IT support was handled by manual jobs and humans communicating via emails, phone and online tickets. According to the respondents, the environment relies largely on users to manage, since there is little automation and help from the service team is hard to get.

Respondent 1 a senior IT professional, noted that initiating support was difficult for users. People had to complete an entirely manual process and go through many sections of the portal to direct their tickets properly. In the words of the respondents:

"Updating user or training user as well that they know when you want to contact IT support, you go and open this portal and then you filter out the option then check what the sub categories and then go into the other level down, and check what is another sub category like email not functional and VPN access, and then you will find out, OK, this is where. You need to raise a ticket so that it falls to the right IT team now."

It demonstrates that the process users had to go through could be complicated and might create frustration and delay in submitting an IT issue.

In addition, Respondent 2 states that earlier, most tasks in their setup involved relying on hand-issued and foreign first-line tickets. He stated:

"Receiving a ticket often prompts us to make a new ticket on our system. Issue resolution for customers often starts with a team of about 10 members working from Ukraine. Customers can reach us mainly by calling or sending emails and WhatsApp is also a

support channel available to us". Respondent 3, who is the IT support Lead from the payment as a service, also buttressed that before the introduction of AI saying "The IT support structure we followed before using AI was manual and required more staff than average, as is usual for regular mid-sized organizations. All basic, intermediate, and advanced user support within the company was handled by three specialists working in-house in the company".

It demonstrates that the organization relies on decentralized channels and teams who respond manually without relying on machines. Respondent 2 went on to clarify what types of matters are commonly shared.

"So basically, most of them are related to hardware I would say... 60% the rest are like software related and we have our software."

In instances where issues could not be resolved at the first line, escalation was necessary:

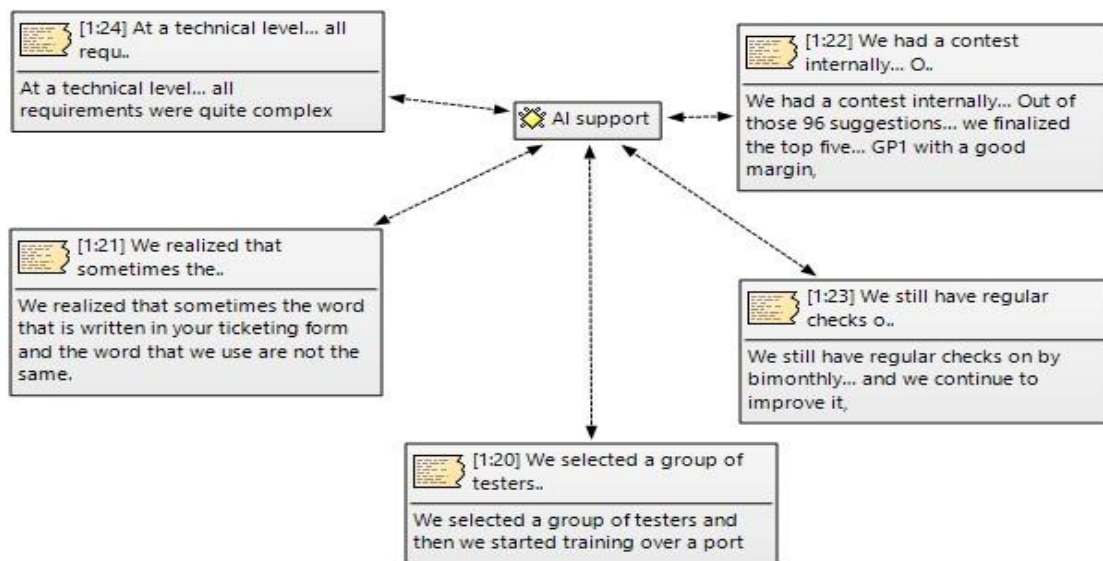
"Whenever a request arrives, the first-line team usually records it on our ticketing system and tries to solve it. If technicians can't fix the issue, they pass it to the next support team."

With no AI assistance, the response and resolution of issues were slowest when customer service received the highest number of requests. It proves that the current approach to IT support is limited and shows that better systems are needed.

Research Objective 2: Evaluating the performance of these models, focusing on aspects such as response time, resolution accuracy, and user satisfaction.

Theme 6: AI-Enabled IT Support System

Figure 6: Network Analysis showing AI-Enabled IT Support System



Source: ATLAS TI REPORT

AI in IT support is helping organizations address user problems and one example started with a pilot project designed with a specific aim. The purpose was to minimize the responsibilities of IT support teams and enhance the quality and speed of support services. At the beginning, the process was aimed at people who relied heavily on IT support and presented different situations. Respondent 1, an important member of the team, remarked about it.

“We selected a group of testers and then we started training over a port... we first collected our type of tickets and different types of forms because that complexity... we wanted that workflow to be taught to AI first.”

Making this the priority allowed the AI system to learn from several scenarios before interacting with real people. The goal was to reduce the number of tickets raised with top-level support by giving the system access to past data and forms. *“So that fixes our first problem that you don't need to go 2 Level 3,”* Respondent 1, mentioned that by handling problems at the first support level, companies save time and money.

It was initially challenging to ensure the AI understood the language users use naturally. Respondent 1, described it as follows. *“We realized that sometimes the word that is written in your ticketing form and the word that we use are not the same. So, we started training both on that as well.”* Since formal IT words or terminologies differ from usual language, the AI had to be familiar with various similar phrases to get the job done correctly.

Additionally, while using the AI, users discovered some issues when having conversations. Talking to the AI, one noticed that it has no sense of when to bring a conversation to a close. *"Thank you' brought the chatbot's response of 'How may I help you? I thought all I wanted was for the conversation to end, so I did not feel it was needed,"* respondent 1 shared. The team changed the way they were training the system.

"It's not about always solving the problem, but... realize that it is solved and let the user leave the tent. Don't ask him the repetitive questions."

Sometimes, questions from users had nothing to do with the service, making the situation even more complex. The AI had to learn to manage and steer these abusive situations back towards being polite and on topic.

So, the company could feel more invested in the AI system, everyone was invited to make suggestions for a name. *"We had a contest internally... Out of those 96 suggestions... we finalized the top five... GP1 with a good margin,"* Respondent 2 said, emphasizing the importance of employee involvement in the adoption process.

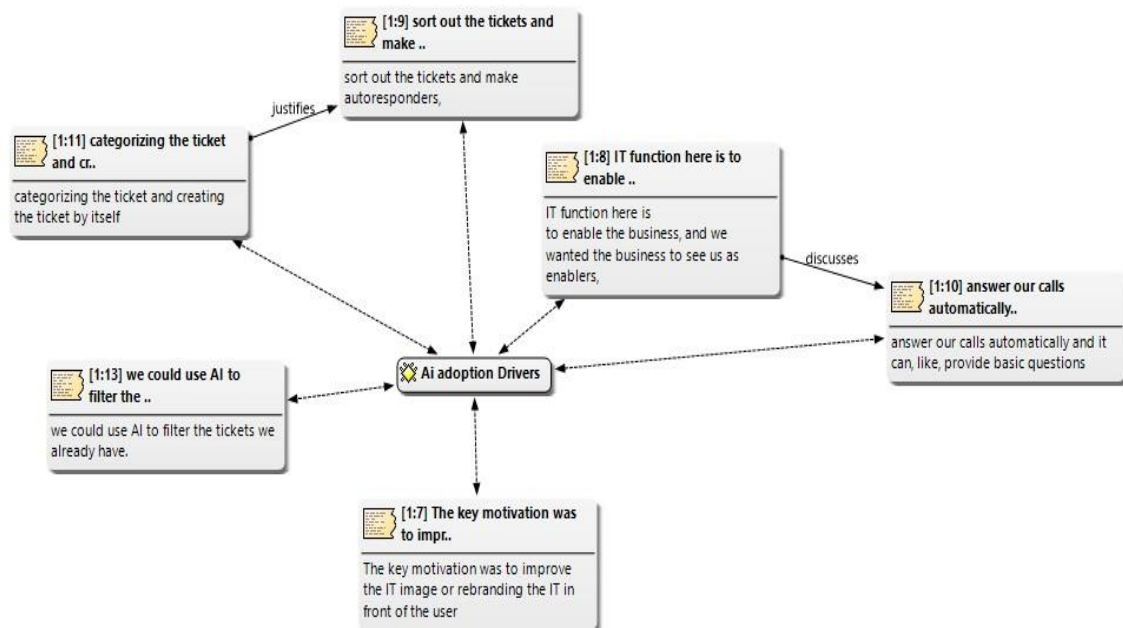
Functionally, the AI was designed to act as a hybrid tool. "It falls into all three categories... If the user is asking something that has an answer somewhere in the knowledge base, it can give you the reference... If the user is asking something that requires a ticket, it will search for out in the form... Otherwise, it will just redirect you towards the live engineer." This versatility enhanced the system's utility and user satisfaction.

Merging the AI with existing systems was not a problem as the vendor provided excellent support, but ensuring it handled challenging requirements was much harder. *"At a technical level... all requirements were quite complex,"* Respondent 1 noted. Thus, iterative training and internal testing were critical. *"We changed it within our group... then selected a group of test users... and we ran that pilot page for almost 4 weeks."*

Following the deployment, it is necessary to regularly check the system and make improvements. *"We still have regular checks bi-monthly... and we continue to improve it,"* Respondent 1 explained. By using the AI, users can quickly identify their issues and find the appropriate information, allowing members of the support team to focus on tough problems.

Theme 3: AI Adoption Drivers and Planning

Figure 7: Network Analysis showing the AI Adoption Drivers and Planning



Source: ATLAS TI REPORT

All interviewees mentioned that the rapidly growing number of tickets and a small workforce were leading to more stress for the IT support team. Because of this imbalance, many businesses began to use AI. From example Respondent 3, the IT support Lead from the payment as a service emphasized that the

“The biggest reason was an increase in ticket volume which rose by 20% primarily because of growth at the company and new people being hired. As a result, the team had to handle even more responsibilities, since it was already small and handling Tier 1 through Tier 3 issues. At the same time, meeting security guidelines was an issue. Manually processing tickets gave employees a chance to make errors, some of which led to accidental disclosure of important data. To reach their IT vision, the company intended to move from handling tasks as they came up to taking action ahead of time.”

Also, Respondent 1, the reason for adopting AI was to raise the image and outcomes of IT services. “The IT department wanted to upgrade its image and to have users think differently about it. Before, many users viewed explaining their issues to IT as too difficult and thought the IT team was too slow”.

Due to this perception, a gap was created between IT and other units, causing the leadership to step in with a strategy.

“We wanted IT to be recognized as a major partner in supporting the business. The company we were working with wanted to see IT as someone who helps them move forward, rather than as someone who gets in the way or delays them.”

Just like the earlier respondent, Respondent 2 also pointed out that technology is needed to handle additional tasks and boost efficiency. He discussed how including AI in the ticket process would be useful.

“I think if we can integrate an AI system into our ticketing system, that would help us, to sort out the tickets and make auto responses.”

Otherwise, he highlighted that AI would handle the most common queries and ticket generation.

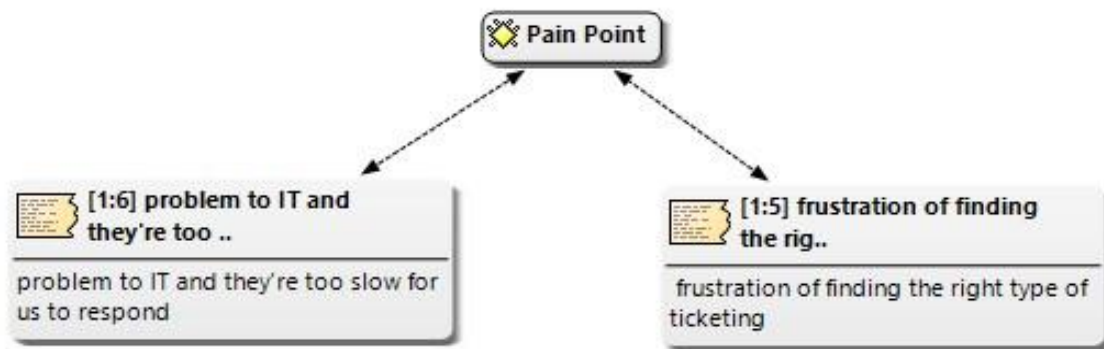
“If we can have an AI to answer our calls automatically and it can provide basic questions, and based on that, if it's capable of categorizing the ticket and creating the ticket by itself, then only transfer to a real person.”

He concluded with a vision of how AI could simplify internal workflows:

“If we didn't have any information missing, our work would be simpler. Sorted and prioritized tickets via AI would be a great help for teams.” Overall, AI was regarded to help IT teams adjust rapidly, make better use of technology and offer a better experience for users.

Research Objective 3: Highlighting potential challenges (such as data privacy and reliability) and limitations (including risks associated with managing high-priority issues).

Figure 8: Network Analysis showing Challenges with Ticket Categorization and System Usability



Source: ATLAS TI REPORT

Users often faced difficulties in the traditional IT support model because submitting support tickets involved many steps and was complicated. They often selected the wrong forms when raising tickets which ended up with tickets being sent to the wrong teams and fixing the problems took longer.

Respondent 1, noted that the complex set-up of categories led to confusion for many users. They observed:

“Understand the basics of requirements, it has to spend a good amount of time. To understand the actual requirement, and that's where we thought that OK, now it's time for us to adopt something which can help the user instead of going 234 levels down to find the right type of form to fill to get the required access or get the thing.”

Since users did not always understand the system, those tickets were assigned, they would sometimes go to the incorrect place. Because of this, automation had to be introduced.

“To save users from the frustration of finding the right type of ticketing and to save a lot of time for IT engineers to figure out what the user was looking for and how to move the ticket to the right queue or right bucket.”

Respondent 2, agreed as a representative of the team facing this challenge. Many users found the ticketing system difficult to use, so they simply called or emailed instead. Nuwan explained:

“Most often, users contact us ahead of the ticketing system or jump straight to our support team without going through the first level. Thus, we lack the required access or recognition to support them properly”

This way of working was against the set guidelines and left some things undocumented and unaccounted for. Moreover, employees had to handle many issues that came up through unofficial channels by hand. Respondent 2 commented that:

“Yes. So, we had to manually add them to the ticketing system by ourselves. So that way we can try to track them and keep an audience.”

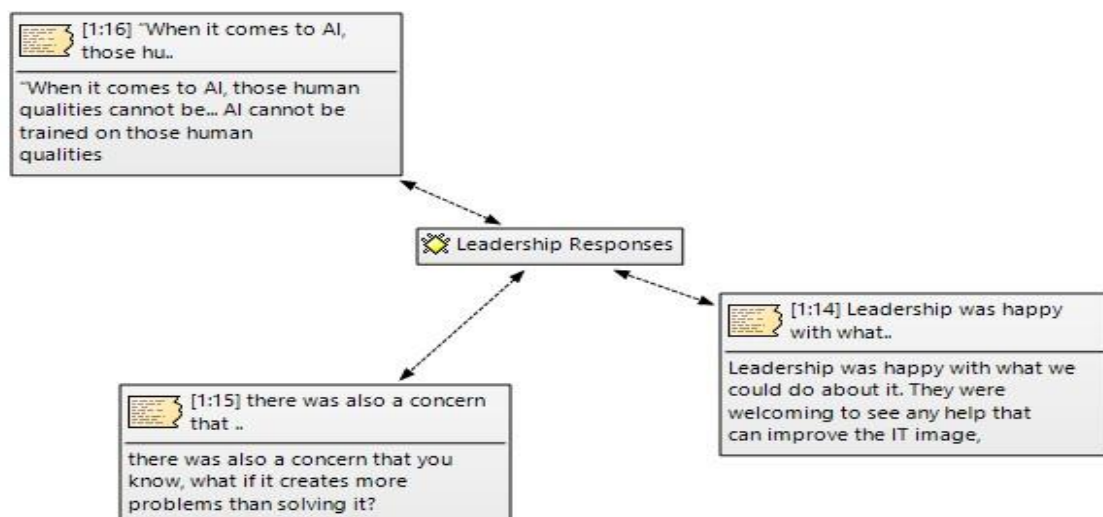
Since remote support did not work, new hardware had to be sent back and forth, slowing down the solution.

“We try our best to support this customer like remotely. If that fails, we have no option but to get the product back to us. In the meantime, we provide replacements.” Also, the Respondent 3, IT Support Lead from the payment processing company stressed, “Repetitive issues overwhelmed the small team. We had 10+ different forms in Jira, and users frequently selected the wrong one, leading to delays and inefficiencies. Tickets required manual categorization and tagging, consuming time that could be spent on more critical tasks”

As a result of these problems, neither users nor the support team were able to work efficiently which negatively affected the whole IT service system.

Theme 4: Leadership Responses

Figure 9: Network Analysis showing the leaders' responses to AI adoption



Source: ATLAS TI REPORT

The success of using AI in IT support largely depended on the leadership involved. Leaders indicated they were interested in AI-driven software and their positive outlook was balanced by cautious optimism and noting the various challenges.

Respondent 1, a senior IT professional, found that the leadership team was usually open to innovations that could help boost both the image and operation of the company's IT team. As stated:

"Leadership was happy with what we could do about it. They were welcoming to see any help that can improve the IT image, or the way IT is perceived by the users."

Because leaders' welcome new technologies, they ensure their companies focus on the user experience and treat IT as an important bridge between employees and business performance. At the same time, I was uncertain about some of the issues. It was mentioned that deploying AI in customer-facing applications may cause more difficulties rather than making things run more smoothly for users. Respondent 2, observed that:

"There was also a worry that trying this could lead to more difficulties rather than fewer. Because interaction is a main part of the service desk, small issues can quickly develop into major ones."

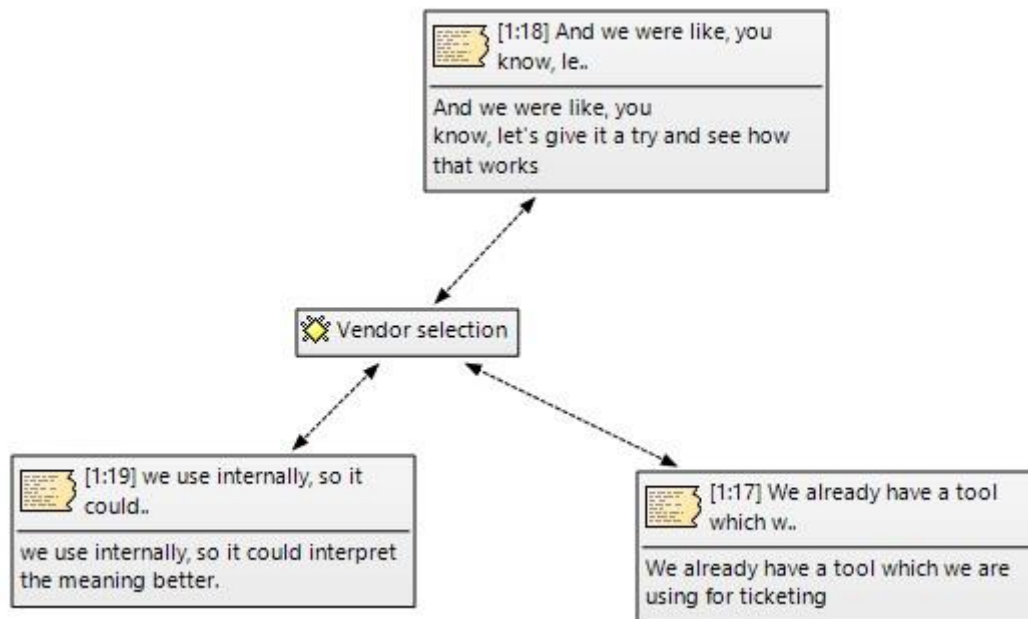
It shows that Leaders consider technology wisely and focus on how it might impact users, and they try to ensure any disruption does not hinder the quality of their service. Furthermore, it was clear that AI often lacks the expression of empathy and the delicate aspects of human relationships. People in charge recognized that AI would never be able to completely take over the essential support functions that are provided by staff. As Respondent 1, clearly expressed,

"When it comes to AI, it cannot be trained to replicate certain human qualities."

This underscores a key leadership belief: technology should augment not replace, the human. Lastly, the Respondent 3, IT support Lead from the Payment as a service industry also noted that leaders in their organization also supported the adoption of Artificial intelligence and noted, *"Leaders were fully behind the initiative. The CTO made sure the company took full advantage of AI and made it part of their "Secure by Design" approach. The CIO made sure the company had the necessary funds for AI investment. Curiously, though other departments were trying out AI tools, IT support had to be especially careful due to security concern. It was important for the support team to find a solution that provided real benefit and didn't increase risks or unnecessary costs"*.

Theme 5: Vendor Selection Process

Figure 10: Network Analysis showing Vendor Selection Process



Source: ATLAS TI REPORT

Choosing the supplier for adding AI to the IT department was carefully planned to ensure the system stays operational and use past investments. As Respondent 1, said, the organization had experience with a ticketing system and wanted to use it again instead of replacing it.

“We already have a tool which we are using for ticketing, and we wanted to continue with the tool because we have already invested in the licenses and the process and everything.”

By choosing this route, the company hopes to benefit from what they already have and avoid disrupting the processes they are comfortable with. Once the team saw that the tool they were using had an AI-powered virtual assistant feature, they wanted to explore this concept with a careful but willing attitude.

“And we came to know that that tool can provide a virtual assistant as AI. And we were like, you know, let's give it a try and see how that works.”

This made the adoption easier as it allowed them to try new things with AI in a system they already knew well. The company took great care to select users for the AI pilot based on data. Members of the team highlighted individuals who kept asking IT for help and those who created tickets for equivalent problems. Respondent 2 highlighted the following.

“We selected the user based on who is the one who reaches out to IT more frequently and also the user who generally raises tickets on the same topic again and again.”

Using this strategy, the AI was evaluated with participants who would gain the most from online ticketing. It becomes evident from additional details that preparing for testing is a significant and early part of the process. Respondent 3 explained that they collected various types of tickets and forms to help the AI master difficult situations experienced by users.

“Before involving test users, we collected different types of tickets and forms to teach the AI the complex workflows, which users find difficult to navigate so the AI could guide users properly.”

The Respondent 3, IT support Lead from the payment as a service noted that the team evaluated various AI vendors to help their IT service management system, making sure the vendors were easy to use and worked well with existing Jira tools. Special needs, such as following GDPR rules and keeping data on site, were essential to focus on by saying,

“The team reviewed a variety of vendors during the process. Making the system easy to work with and compatible with the current system was the main goal. Such tools were needed since they had already implemented Jira in their ITSM processes. Because of legal and privacy demands, both compliance with GDPR and on-premises hosting of data were needed. Several vendors were evaluated for the project. Aisera is built on AI technology for ITSM applications. Moveworks supplied privacy-focused chatbots to assist everyone. Jira Virtual Service Agent was selected because it works well with current Atlassian applications.”

By completing the detailed vendor selection and AI training in detail, the method gives priority to users which makes the AI valuable for enhancing IT support.

4.2 DISCUSSION OF FINDINGS

This study aims to explore how AI is affecting the way IT support tasks are done. The results showed that by using responses from the interviews, a key shift was made from using manual operations to adopting an AI-supported system. The findings are considered against research studies and are supported with examples and theories. Before AI was used, supporting IT relied heavily on people, who would have to manually open tickets by themselves, often without knowing much about grouping issues. As a result, items in the supply chain were sent in the wrong directions and things were not done efficiently. The research corresponds with that of Knoth et al. (2024), stating that

the conventional IT support approach fails to scale well and is not as prompt at resolving issues because humans are involved. In addition, Kent and Aglibar (2022) pointed out that the majority of IT departments using manual ticketing systems faced delays because people often put tickets in the wrong place; this is similar to what the respondents reported.

Since the system was inconvenient, users bypassed it and reached IT using email or WhatsApp. With these types of conversations, it was hard for the IT team to record and take responsibility for their work. This is consistent with what Knoth et al. (2024) revealed, that usability decreases, people are inclined to bypass ITSM processes which then impairs the ITSM data gathered by the service desk. This is consistent with a ServiceNow survey which concluded that 57% of IT users are frustrated by the complexity of formal portals and stop actively using them.

The reason for adopting AI in this company was that support requests were increasing and there were not enough IT workers. According to Gartner (2021), a large majority of service desks have adopted AI primarily for answering the same types of routine questions. It shows that the study's finding is true, that AI was brought in to relieve operations and increase the cases successfully settled on the first try.

The choice of AI was to make IT more efficient and show the team as a supportive partner in business processes. This is similar to the outcome reported by Rahman et al. (2020) that service desks using AI can cut ticket volume by 30% and increase service quality. I found that the leaders in the organization were strong advocates for user benefits, ensuring that any new technology met their priorities. This study and the findings of Stan and Molleman (2023) both showed that companies avoided giving tasks to AI that required understanding emotional meaning, as AI methods are not skilled enough.

According to Truss and Bhum (2024), the firm enhanced its old system using AI instead of choosing a completely new platform, choosing development over disrupting the system. As a result, technology is added carefully to support what users already trust. Yet, security concerns are not considered in this discussion about adopting AI. Several teams admitted during interviews that they were not eager to dig into advanced AI because they were worried about privacy, complying with laws and cybersecurity. The result suggests that, beyond usability and logistics, trust and data protection are the main challenges for AI in places with laws like GDPR. So, to promote more widespread confidence, future policy around AI should also handle such valid security fears.

5. Discussion

This chapter discusses the result generated from the interview on AI in IT supports roles in this thesis referenced in section 4 as well as the key findings, highlighting the advantages of AI, implications, performance and challenges of using AI in IT support roles. Some of the literatures reviewed in this study spoke on AI's evolutions, key milestones in LLM development for IT supports, current applications of AI in IT supports, AI in IT service management tools (ITSM) tools, AI vs Human (Replacement or Augmentation).

5.1. Result's Discussion

RQ 1: What are the practical ways LLM could affect IT support tasks?

In this study we interviewed It support experts and managers on AI adoptions in their IT supports roles and processes. The study employed structured interview method to analyse ways managers have applied AI in their IT supports roles, what prompted them and how efficient was this decision and AI. It analysed traditional method of IT supports tasks without the use of AI and experiences companies had in those periods to identify ways IT supports can adopt AI. The study revealed that the practical ways LLM could affect IT support tasks include; ticketing for customer requests so as to channel issues to appropriate team, swift communications with customers through chat bots, processes of training users on how to raise a tickets for complains, customer experience and customer representatives as revealed in section 4.2. It reveals that the implications of this is that faster response time to issues raises, faster means of sorting out tickets, increased customer experience which would have led to frustration in traditional methods and lastly, reduction in costs of operations coming from cost incurred in recruiting many IT supports staffs for primary IT roles.

RQ2: How fast, accurate, and user-satisfying are LLM models in IT support roles?

AI models are said to be very effective, fast and accurate across various fields where they have been implemented. Even though, many organisations are still skeptical about it adoptions in certain levels due to data privacy. The study revealed that in IT supports roles, AI help in solving less technical issues, sorting requests very fasts and analysing trouble-shooting as fast as possible.

The study interviewed that the some of the company surveyed revealed that AI was introduced to IT supports first through the training of AI on forms, tickets, in order to sorts out problems that do not need to go to the level 2 and level 3, in order to reduce workload in these levels. The respondent asserted that by handling problems at the first support

level, companies save time and money. More importantly, it quickly analyses issues and find appropriate information to answer it.

RQ 3: What are the potential challenges (such as data privacy and reliability) and limitations (including risks associated with managing high-priority issues)?

On potential challenges and limitations IT supports encounter in adopting AI, the study revealed that; firstly, many users find it difficult to navigating the interface and how to use the software to raise their complaints concerns. This makes it difficult to reduce workload of work on level 2 and 3 engineers, and often reduce response time and gives them bad customer's experience. According to Section 4.3 "They often selected the wrong forms when raising tickets which ended up with tickets being sent to the wrong teams and fixing the problems took longer." Secondly is the issue of customers not want to even use any ticketing system but rather chose to speak directly to IT supports which makes it very difficult to solve their problem since there is no where to categorise their issues.

Additionally, many users have fear that their data privacy will be breached with communication with AI and giving their responses to AI. So prefer to go through talking to human engineers than AI.

5.2. Limitations

The study major limitations were in the areas of getting data due to data protection act, many company ensure their data are protected as much as possible. Makes it very difficult to engage stakeholders and more importantly use quantitative data of case study companies. In order to maintain data privacy and ethical policy, the study had to employed an interview method and engage with key stakeholders in AI in IT supports like managers and IT supports heads.

5.3. Implications

The usage of AI in IT supports revealed that consistent usage of AI might leads to reduction in potentials of getting employed for level 1 IT support staffs and companies now employs AI to do level 1 IT support tasks.

Secondly, AI usage in IT now makes customers' experiences better and smoother with the use of the technology in streamlining process and burden of work on IT users. Further implications is that in years to come advancement in AI may pose threat to individuals and businesses who have not learnt to adapts to the use of AI to augment their task and task processes. This may pose serious threat to the labour market across the globe. Optimistically, the adoption of AI may leads to change of roles and responsibility in IT support roles and operational efficiency in the long-run. Additionally, for the companies,

it will lead to reduction in cost of operations as cost of human resources reduces, with the introduction of AI in systems. Little challenge includes' resistance due to fear of data privacy and other cyber crimes which may be exploited using the technology. It therefore means, that many companies will have to invest heavily in cyber security to protect their own infrastructure and customers.

5.4. Future Work

Future study can focus on investigating the use of context-aware AI systems, such that is developed to focus on organisation needs, user behaviour and response tones. This is because the available AI are mostly generic rather than for special AI support task.

Studies can also examine the systems for optimal collaborations between humans (IT supports) and AI software for better process augmentations. Studies can also go in line of examine ethical concerns leading to resistance in the complete use and acceptance of AI usage.

6. Conclusion

The incorporation of Artificial Intelligence (AI) in IT support roles starts the evolutionary change in how businesses and institutions address technical issues, requests, customers' complaints, and operational efficiency. This research aims to achieve a comprehensive understanding of the use of large language models (LLMs) in IT support and the implications of their adoption in this field.

Key findings indicated that IT support tasks like addressing IT supports complaints and requests which was previous sent through emails or calling in or ticket systems which causes too much time wasting, congested request systems and resulted in poor user experiences as most users found themselves having to go through a lot of screens to log an issue were identified as one of the places AI can be used to aid process. The surge in user needs at these times caused support teams to become overloaded which made it harder and slower to serve users, to deal with these problems, organizations started adding LLMs to their IT support systems.

Evaluating the performance of these models, focusing on aspects such as response time, resolution accuracy, and user satisfaction. The study further revealed that the models were built by through the analyses of historical records of events and processes in the organisations, current knowledge and previous ticket information. Because of this, the AI interacts with users in everyday language, understands the issues and provides suitable advice without any human help. More importantly, AI system was useful because outcomes were faster and client satisfaction improved. Due to its combination of humans

and robots, the AI was able to produce tickets, suggest articles from the knowledge base or pass along complex issues to human agents as appropriate.

Lastly, the study revealed that Introducing LLMs into customer service operations lessened IT teams' duties, made answers more accurate and pleased users. However, there were still issues existing that made users unhappy like the mix of ticket categories which caused problems in sending tickets to the right team and delayed fixes. Even with this challenge, the AI system was useful because outcomes were faster and client experiences improved. The report finds that although LLMs do not substitute for human agents, they greatly support the growth and efficiency of IT support. Other challenges include; data privacy and reliability which made the technology to not be introduced in certain part of IT roles.

In conclusion, AI avails the opportunity for firms to redefine IT supports roles and most importantly more efficient in their roles and responsibilities. More importantly, far beyond what it is now, AI may bring certain firms and operations obsolete if proper restructuring and adoption are not done. However, in the area of implications of AI in IT supports roles, study shows that major implications includes employment of fewer individuals to handle less technical responsibilities since AI are more efficient in those aspects and focus more on technical roles.

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Appendix

Case Study Questionnaire: AI in IT Support

(For Interview/Response)

1. Company Background

- 1.1. Briefly describe your organisation (industry, size, geographic presence).
- 1.2. How would you characterise your IT support environment (e.g., internal support for employees, external customer-facing support, hybrid)?
- 1.3. Why is your organisation a relevant case for studying AI in IT support? (e.g., early AI adoption, representative of Finnish/European IT trends, unique challenges/solutions).
- 1.4. What makes your IT support team's structure or processes distinctive?

2. Traditional IT Support Setup (Pre-AI)

- 2.1. Describe your IT support workflow before AI adoption:
 - Primary channels (phone, email, portal, etc.).
 - Team structure (e.g., Tier 1/2/3, outsourced vs. in-house).
 - Average monthly ticket volume and key categories (e.g., password resets, hardware issues).
- 2.2. What were the **key challenges** in the pre-AI system? (e.g., lengthy resolution times, high costs, user frustration, ticket misrouting).
- m2.3. Were there specific pain points in ticket management? (e.g., too many ticket forms, unclear categorisation).
- 2.4. How did you measure success pre-AI (e.g., SLAs, user satisfaction scores)?

3. AI Adoption Drivers and Planning

- 3.1. What motivated the decision to integrate AI into IT support? (e.g., rising ticket volumes, cost pressures, strategic digital transformation goals).
- 3.2. How did leadership (e.g., CIO, management) influence this decision?
- 3.3. Did you evaluate multiple AI solutions or vendors? If so, what criteria guided your selection?
- 3.4. Was there a pilot project or phased rollout? Describe the planning process (timeline, stakeholder involvement, change management).

4. Current AI-Enabled IT Support Process

4.1. AI Tools in Use:

- Which AI solutions are deployed? (e.g., chatbots, auto-classification, knowledge base recommendations).
- How are they integrated with existing ITSM tools (e.g., ServiceNow, Jira)?

4.2. Implementation Details:

- How did you train the AI models (e.g., historical ticket data, domain-specific fine-tuning)?
- How do human agents interact with AI outputs (e.g., supervision, override options)?

4.3. Key Features:

- Does the AI handle Tier-1 queries autonomously (e.g., password resets)? If so, what percentage?
- How does AI improve ticket routing/classification? (e.g., reduced misrouting from 20% to 5%).
- Does AI identify recurring issues or suggest proactive solutions?

4.4. Metrics Since Implementation:

- Reduction in average resolution time (e.g., from 24h to 8h).
- Change in ticket volume handled by humans vs. AI.
- User satisfaction scores (pre- vs. post-AI).

5. Outcomes and Benefits

5.1. What quantitative improvements have you observed? (e.g., cost savings, ticket backlog reduction, FCR rates).

5.2. What qualitative benefits stand out? (e.g., employee morale, user feedback, operational insights from AI analytics).

5.3. Has AI freed up support staff to focus on higher-value tasks? Provide examples.

5.4. Were there unexpected positive outcomes?

6. Challenges and Lessons Learned

6.1. What were the most significant hurdles during AI implementation? (e.g., data quality, user resistance, integration complexity).

6.2. How did you address initial scepticism from staff or users?

6.3. Did the AI require significant adjustments post-launch? (e.g., retraining models, tweaking workflows).

6.4. What advice would you give others planning AI adoption in IT support?

7. Future Outlook for AI in IT Support

7.1. What are your organisation's plans for AI in IT support? (e.g., expanding chatbot capabilities, predictive analytics).

7.2. Are you exploring generative AI (e.g., drafting responses, troubleshooting guides)?

7.3. How do you balance automation with the need for human oversight?

7.4. What industry trends do you see shaping AI's role in IT support over the next 3–5 years?

8. Additional Insights

8.1. Are there specific **cases** of AI resolving a complex issue or transforming a process?

8.2. Can we supplement this case study with anonymised data or reports? (Optional).

8.3. Is there anything else you'd like to highlight about your AI journey?

Personal Notes for Interviewee:

- Please feel free to anonymise company/product names if required.
- Metrics can be approximate (e.g., "~30% reduction").
- Let us know if you'd prefer to skip any questions.